

Units

When we measure a particular quantity it means that we find the size (magnitude) of the quantity relative to a particular standard.

The main system used around the world is the International System of units (SI, derived from the French *le Système international d'unités*), which was formalised by international agreement in 1971. The only three countries not using the SI units are Burma, Liberia and the United States.

The SI System

There are seven fundamental units defined in the SI system, as shown in Table 1. These units represent different kinds of physical quantities. Other units can be derived from these.

Table 1: Base SI units

Quantity	Name	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Temperature	kelvin	K
electric current	ampere	A
luminous intensity	candela	cd
number of particles (amount of a substance)	mole	mol

Note that all units have lower case names. When writing all units in text, you need to write the name in full using a lower case letter for the name. Unit symbols are lower case unless they were named after a person. The only exception to this rule is for litres, for which the symbol is L so that it does not get confused with the number 1 or a capital I.

Some of the other commonly used units that you may need to know are included in Table 2.

Table 2: Other common units in Mathematics

Unit	Symbol	Description
tonne	t	Another name for a megagram: 1 000 000 grams
hectare	ha	A measure of area
kilojoule	kJ	A measure of energy derived from food.

Symbols for units are written with an upright font ('Times New Roman') so that they are different from the *italic* type used for variables (for example *m* for mass and *s* for displacement).

Table 3 shows the prefixes for the SI units.

Table 3: Prefixes for the SI units

Prefix	Factor	Numerical factor	Symbol
tera	10^{12}	1 000 000 000 000	T
giga	10^9	1 000 000 000	G
mega	10^6	1 000 000	M
kilo	10^3	1 000	k
	$10^0 = 1$	1	
deci**	10^{-1}	0.1	d
centi**	10^{-2}	0.01	c
milli	10^{-3}	0.001	m
micro	10^{-6}	0.000 001	μ^*
nano	10^{-9}	0.000 000 001	n
pico	10^{-12}	0.000 000 000 001	p

Notes:

* The small Greek letter μ or mu (pronounced mew as in new)

** Although deci and centi are not really part of the SI system because it is not a power of 10^3 , they are commonly used.

For more information

- Other Quick Tips Flyers <http://www.usq.edu.au/learningcentre/tips.htm>
- Online resources on ALSOnline
<http://www.usq.edu.au/learningcentre/alsonline/mathsci/mathsscitopic/default.htm>
- Talk with a tutor at The Learning Centre (tlc@usq.edu.au)