Standard (SI) Units

Quantities can be measured in a variety of different ways. Speed, for example, is commonly given in miles-per-hour (mph), kilometres-per-hour (km/h) or metres-per-second (m/s). The numbers involved are very different and that can cause confusion, as illustrated below;

10 m/s = 22.37 mph = 36 km/h

To avoid this confusion, there is international agreement in the scientific community about the units that will be used to measure all quantities. These are known as the SI units.

You are expected to know the names and symbols of the standard units for common quantities. Note: The name of a quantity, such as current, is not the same as the name of the unit used to measure it, which is the ampere (often shortened to amp) for current. Similarly, the symbol for current, which is a capital I, is not the same as the symbol for the ampere, which is a capital A.

The quantities and units you are expected to know are as follows.
(The lines shown in ***italic bold*** are required for Higher Tier papers only in GCSE Physics.)

Quantity name	Quantity symbol	Unit name	Unit symbol
acceleration	a	metres-per-second-squared	m/s^2
charge	Q	coulomb	C
current	I	ampere	A
density	ρ (“curly p”)	kilograms-per-cubic-metre	kg/m^3
distance (also displacement)	s (but h is used for height and e is used for extension of a spring	metre	m
energy	E	joule	J
force	F	newton	N
frequency	f	hertz	Hz
magnetic flux density	***B***	***tesla***	***T***
mass	m	kilogram	kg
momentum	***p***	***kilogram-metres-per-second***	***kgm/s***
potential difference	V	volt	V
power	P	watt	W
resistance (electrical)	R	ohm	Ω (Greek letter omega)
speed (also velocity)	v	metres-per-second	m/s
temperature	T	degree Celsius	^0C
time	t	second	s
volume	V	cubic-metre	m^3
wavelength	λ (“upside-down y”)	metre	m
work done	W	joule	J