Science Skills

Physics

Physical quantity	SI unit	Symbol	Other units	Useful equations
Density			kg/m^3 or g/cm^3	$d = \frac{m}{v}$ where d = density **g/cm^3**, m = mass **g**, v = volume **cm^3**
Pressure	pascal	Pa	N/m^2	$p = \frac{F}{A}$ where p = pressure **Pa**, F = force **N**, A = area **m^2**
			pV	For a fixed mass of gas: $\frac{pV}{T}$ = a constant, V = volume **m^3**, T = temperature **K**, p = pressure **Pa**
Specific heat capacity			J/kgK	$Q = m c \theta$ where Q = energy **$kg\ m^2/s^2$**, m = mass **kg**, c = S.H.C. **J/kg K**, θ = change in temperature **K**
Frequency	hertz	Hz	/s	$v = f\lambda$ where v = velocity **m/s**, f = frequency **Hz**, λ = wavelength **m**
Quantity of electricity (or charge)	coulomb	C	A s	$Q = It$ where Q = charge **C**, I = current **A**, t = time **s**
Potential difference	volt	V	J/C	$V = IR$ where V = potential difference **V**, I = current **A**, R = resistance Ω
Resistance	ohm	Ω		$R = \frac{V}{I}$, $I = \frac{V}{R}$ remember as 
Electric current	ampere	A		
Electrical energy (or work done)	joule	J		$E = VQ = I^2Rt = \frac{V^2t}{R}$ where E = Energy **J**, t = time taken **s**
Electrical power	watt	W	j/s	$P = \frac{W}{t}$ where P = power **W**, W = work done **J**; $P = VI = I^2R = \frac{V^2}{R}$ $E = Pt$

Only those units named after famous scientists have a capital letter for their symbol.

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Physical quantity	SI unit	Symbol	Other units	Useful equations
Length	metre	m		1 kilometre (km) = 1000m 1 centimetre (cm) = 0.01m (10^{-2} m) 1 millimetre (mm) = 0.001m (10^{-3} m)
Area	square metre	m^2		1 hectare (ha) =10,000 m^2 1km^2 = 100ha
Volume		m^3		1m^3 = 1000 litres (l) =1,000,000 cm^3
Mass	kilogram	kg		1 metric tonne (t) =1000 kg 1kg = 1000 grams (g) 1g = 1000 milligrams (mg)
Time	second	s		60s = 1 minute (min) 60min = 1 hour (h)
Temperature	kelvin	K		1 degree Celsius (1^oC) = 1K
Velocity			m/s	$v = \frac{s}{t}$ where v = velocity **m/s** s = distance **m** t = time **s**
Acceleration			m/s^2	$a = \frac{v-u}{t}$ where a = acceleration **m/s^2** u = initial velocity **m/s** v = velocity at time **t** v = u+at $s = ut + ½ at^2$ $v^2 = u^2 + 2as$ $s = \left(\frac{u+v}{2}\right) t$
Force	newton	N	$kg\ m/s^2$	F = ma where F= force **N** m = mass **kg**
Momentum			$kg\ m/s^2$	p = mv where p = momentum **kg m/s**
Energy (or work)	joule	J	$kg\ m^2/s^2$	W = Fs where W = energy **J** or work done $ke = ½mv^2$ where ke = kinetic energy **J** pe = mgh where pe = potential energy **J** g = acceleration due to gravity **m/s^2** h= vertical height **m**
Power	watt	W	J/s	$P = \frac{W}{t}$ where P = power **W**