Equations to Remember – you have to learn and remember these equations

GCSE Physics (8463) **(HT)** GCSE Combined Science: Trilogy (8464) **(HT)**

Forces Topic

#	Written Form	Formula	Units
1	weight = mass × gravitational field strength	*[W = mg]*	*W* Newtons (N) m kilograms (kg) *g* Newtons per kilogram (N/kg)
2	work done = force × distance	*[W = Fs]*	*W* Joules (J) F Newtons (N) *s* metres (m)
3	force = spring constant × extension	*[F = ke]*	F Newtons (N) *k* Newtons per metre (N/m) *e* metres (m)
4	moment = force × distance	*[M = Fd]*	*M* Newton-metres (Nm) F Newtons (N) *d* metres (m)
5	pressure = force ÷ area	*[p = F/A]*	*p* Newtons per metres squared (N/m^2) F Newtons (N) *a* metres squared (m^2)
6	distance = velocity × time	*[s = v t]*	*s* metres (m) *v* metres per second (m/s) *t* seconds (s)
7	acceleration = change in velocity ÷ time	*[a = Δv/t]*	*a* metres per second squared (m/s^2) *v* metres per second (m/s) *t* seconds (s)

8	force = mass × acceleration	*[F = ma]*	F Newtons (N) m kilograms (kg) *a* metres per second squared (m/s^2)
9	**momentum = mass × velocity**	***[p = mv]***	***p*** **kilogram-metres per second (kgm/s)** **m kilograms (kg)** ***v*** **metres per second (m/s)**

Waves Topic

#	Written Form	Formula	Units
1	wave speed = frequency × wavelength	*[v = f λ]*	*v* metres per second (m/s) *f* Hertz (Hz) (1/s) *λ* metres (m)

Magnetism and Electromagnetism Topic

No specific equations for this topic.

Space Topic

No specific equations for this topic.

Equations that are Provided – you don't have to remember these, but must be able to use them

GCSE Physics (8463) **(HT)** GCSE Combined Science: Trilogy (8464) **(HT)**

Forces Topic

#	Written Form	Formula	Units
1	elastic potential energy = 0.5 × spring constant × (extension)^2	*[$E_e = ½ke^2$]*	E_e Joules (J) k Newtons per metre (N/m) e extension (m)
2	**pressure due to a column of liquid = height of column × density of liquid × gravitational field strength (g)**	***[$p = h \rho g$]***	***p*** **Newtons per metre squared (N/m^2)** ***h*** **metres (m)** ***ρ*** **kilograms per metre cubed (kg/m^3)** ***g*** **Newtons per kilogram (N/kg)**
3	(final velocity)^2 – (initial velocity)^2 = 2 × acceleration × distance	*[$v^2 – u^2 = 2as$]*	v metres per second (m/s) u metres per second (m/s) a metres per second squared (m/s^2) s metres (m)
4	**Force = change in momentum ÷ time taken**	***[$F = m \Delta v / \Delta t$]***	***F*** **Newtons (N)** ***m*** **kilograms (kg)** ***Δv*** **metres per second (m/s)** ***Δt*** **seconds (s)**

Waves Topic

#	Written Form	Formula	Units
1	$\text{Period} = \frac{1}{\text{Frequency}}$	*[T = 1/f]*	T seconds (s) f Hertz (Hz)
2	$\text{Magnification} = \frac{\text{Image Height}}{\text{Object Height}}$		

Magnetism and Electromagnetism Topic

#	Written Form	Formula	Units
1	**force on a conductor (at right angles to a magnetic field) carrying a current = magnetic flux density × current × length**	***[F = BIl]***	F **Newtons (N)** B **Teslas (T)** I **Amperes (A)** l **metres (m)**
2	**potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil**	$V_p I_p = V_s I_s$	V_p **Volts (V)** V_s **Volts (V)** I_p **Amps (A)** I_s **Amps (A)**
3	$\frac{\text{potential difference across primary coil}}{\text{potential difference across secondary coil}} = \frac{\text{number of turns in primary coil}}{\text{number of turns in secondary coil}}$	$\frac{V_p}{V_s} = \frac{n_p}{n_s}$	V_p **Volts (V)** V_s **Volts (V)** n_p ***[has no unit]*** n_s ***[has no unit]***

Space Topic

There are no equations provided for this topic.