

PEARSON EDEXCEL IAL · YPH11

Edexcel A Level Physics Formula Sheet

The list of data, formulae and relationships, unit by unit.

1 Unit 1: Mechanics and Materials

From the list printed in the papers.

Kinematic equations	$s = \frac{(u+v)t}{2}, v = u + at$
Kinematic equations	$s = ut + \frac{1}{2}at^2, v^2 = u^2 + 2as$
Forces	$F = ma, g = \frac{F}{m}, W = mg$
Momentum and moment	$p = mv, \text{moment} = Fx$
Work and energy	$W = Fs, E_k = \frac{1}{2}mv^2, E_{\text{grav}} = mgh$
Power	$P = \frac{E}{t}, P = \frac{W}{t}$
Efficiency	$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$
Density and Stokes' law	$\rho = \frac{m}{V}, F = 6\pi\eta rv$
Hooke's law and elastic strain energy	$F = k\Delta x, E_{\text{el}} = \frac{1}{2}F\Delta x$
Young modulus	$E = \frac{\sigma}{\epsilon}, \sigma = \frac{F}{A}, \epsilon = \frac{\Delta x}{x}$

2 Unit 2: Waves and Electricity

From the list printed in the papers.

Wave speed	$v = f\lambda, v = \sqrt{\frac{T}{\mu}}$
Intensity of radiation	$I = \frac{P}{A}$
Refraction	$n_1 \sin \theta_1 = n_2 \sin \theta_2, n = \frac{c}{v}, \sin C = \frac{1}{n}$
Diffraction grating	$n\lambda = d \sin \theta$
Potential difference and resistance	$V = \frac{W}{Q}, R = \frac{V}{I}, R = \frac{\rho l}{A}$
Electrical power and energy	$P = VI, P = I^2R, P = \frac{V^2}{R}, W = VIt$
Current	$I = \frac{\Delta Q}{\Delta t}, I = nqvA$
Resistors	$R = R_1 + R_2 + R_3, \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$
Photons	$E = hf, hf = \phi + \frac{1}{2}mv^2_{\text{max}}, \lambda = \frac{h}{p}$

3 Unit 4: Further Mechanics, Fields and Particles

From the list printed in the papers.

Impulse and kinetic energy	$F\Delta t = \Delta p, E_k = \frac{p^2}{2m}$
Motion in a circle	$v = \omega r, a = \frac{v^2}{r} = r\omega^2, F = \frac{mv^2}{r}$
Electric field	$E = \frac{F}{Q}, E = \frac{V}{d}$
Coulomb's law and potential	$F = \frac{Q_1Q_2}{4\pi\epsilon_0 r^2}, E = \frac{Q}{4\pi\epsilon_0 r^2}, V = \frac{Q}{4\pi\epsilon_0 r}$
Capacitance and energy stored	$C = \frac{Q}{V}, W = \frac{1}{2}QV = \frac{1}{2}CV^2 = \frac{Q^2}{2C}$
Capacitor discharge	$Q = Q_0e^{-t/RC}, \ln Q = \ln Q_0 - \frac{t}{RC}$

In a magnetic field	$F = Bqv \sin \theta, F = BIl \sin \theta, r = \frac{p}{BQ}$
Faraday's and Lenz's laws	$\varepsilon = \frac{-d(N\Phi)}{dt}$
Mass–energy	$\Delta E = c^2 \Delta m$

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Unit 5: Thermodynamics, Radiation, Oscillations and Cosmology

From the specification's list for Unit 5.

Heating	$\Delta E = mc\Delta\theta, \Delta E = L\Delta m$
Ideal gas and kinetic theory	$pV = NkT, \frac{1}{2} m\langle c^2 \rangle = \frac{3}{2} kT$
Radioactive decay	$A = \lambda N, \lambda = \frac{\ln 2}{t^{1/2}}, N = N_0 e^{-\lambda t}$
Simple harmonic motion	$F = -kx, a = -\omega^2 x, x = A \cos \omega t$
Simple harmonic motion (continued)	$v = -A\omega \sin \omega t, \omega = \frac{2\pi}{T} = 2\pi f$
Simple harmonic oscillators	$T = 2\pi\sqrt{\left(\frac{m}{k}\right)}, T = 2\pi\sqrt{\left(\frac{l}{g}\right)}$
Gravitation	$g = \frac{F}{m}, F = \frac{Gm_1m_2}{r^2}, g = \frac{Gm}{r^2}, V_{\text{grav}} = \frac{-Gm}{r}$
Stefan–Boltzmann and Wien's laws	$L = \sigma AT^4, \lambda_{\text{max}} T = 2.898 \times 10^{-3} \text{ m K}$
Intensity, redshift and expansion	$I = \frac{L}{4\pi d^2}, z = \frac{\Delta\lambda}{\lambda} \approx \frac{v}{c}, v = H_0 d$

From the exam board's published formulas for Pearson Edexcel IAL · YPH11, checked 21 October 2026. Always check your own exam paper.

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