O Level Physics 5054 equation sheet

Exams in 2026, 2027 and 2028 · From the official Cambridge syllabus

Motion, forces and momentum

Speed	$v = s \div t$
Acceleration	$a = \Delta v \div \Delta t$
Weight	$W = mg$ ($g = 9.8$ N/kg)
Density	$\rho = m \div V$
Force	$F = ma$
Spring constant	$k = F \div x$
Moment	force × perpendicular distance from the pivot
Momentum and impulse	$p = mv$, impulse $= F\Delta t = \Delta(mv)$
Resultant force	$F = \Delta p \div \Delta t$

Energy and pressure

Kinetic energy	$E_k = \frac{1}{2}mv^2$
Gravitational potential energy	$\Delta E_p = mg\Delta h$
Work done	$W = Fd$
Power	$P = W \div t = \Delta E \div t$
Efficiency	(useful output ÷ total input) × 100%
Pressure	$p = F \div A$, $\Delta p = \rho g \Delta h$

Thermal physics

Gas at constant temperature	$p_1V_1 = p_2V_2$
Temperature in kelvin	$T\,(K) = \theta\,(°C) + 273$
Specific heat capacity	$c = \Delta E \div (m\Delta\theta)$

Waves and light

Wave speed	$v = f\lambda$
Refractive index	$n = \sin i \div \sin r$, $n = 1 \div \sin c$
Linear magnification	image length ÷ object length
Speed of electromagnetic waves	3.0×10^8 m/s in a vacuum

Electricity

Current	$I = Q \div t$
e.m.f. and p.d.	$E = W \div Q$, $V = W \div Q$
Resistance	$R = V \div I$
Potential divider	$R_1 \div R_2 = V_1 \div V_2$
Power and energy	$P = IV$, $E = IVt$
Transformer	$V_p \div V_s = N_p \div N_s$

Space physics

Orbital speed	$v = 2\pi r \div T$

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