



AQA GCSE Physics Equation Sheet

Topic 1 - Energy

Equation	Symbol	Unit
$E_k = \frac{1}{2} mv^2$	E_k = kinetic energy m = mass v = speed	E_k = J (joules) m = kg (kilograms) v = m/s (meters per second)
$E_e = \frac{1}{2} ke^2$	E_e = elastic potential energy k = spring constant e = extension	E_e = J (joules) k = N/m (newton's per meter) e = m (meters)
$E_p = mgh$	E_p = gravitational potential energy m = mass g = gravitational field strength h = height	E_p = J (joules) m = kg (kilograms) g = N/kg (newton's per kilogram) h = m (meters)
$\Delta E = mc\Delta\theta$	ΔE = change in thermal energy m = mass c = specific heat capacity $\Delta\theta$ = temperature change	ΔE = J (joules) m = kg (kilograms) c = J/kg $^{\circ}$ C (joules per kilogram per degree Celsius) $\Delta\theta$ = $^{\circ}$ C (degree Celsius)
$P = \frac{E}{t}$	P = power E = energy transferred t = time	P = W (watts) E = J (joules) t = s (seconds)
$P = \frac{W}{t}$	P = power W = work done t = time	P = W (watts) E = J (joules) t = s (seconds)
Efficiency = $\frac{\text{useful energy out}}{\text{total energy in}}$		
Efficiency = $\frac{\text{useful power out}}{\text{total power in}}$		



Topic 2 - Electricity

Equation	Symbols	Units
$Q = It$	Q = Charge I = Current t = Time	$Q = C$ (coulombs) $I = A$ (amps) $t = s$ (seconds)
$V = IR$	V = Potential difference I = Current R = Resistance	$V = V$ (volts) $I = A$ (amps) $R = \Omega$ (ohms)
$P = VI$	P = Power V = Potential difference I = Current	$P = W$ (watts) $V = V$ (volts) $I = A$ (amps)
$P = I^2R$	P = Power I = Current R = Resistance	$P = W$ (watts) $I = A$ (amps) $R = \Omega$ (ohms)
$E = Pt$	E = Energy P = Power t = Time	$E = J$ (joules) $P = W$ (watts) $t = s$ (seconds)
$E = QV$	E = Energy Q = Charge V = Potential difference	$E = J$ (joules) $Q = C$ (coulombs) $V = V$ (volts)

Topic 3 - Particle Model of Matter

Equation	Symbols	Units
$\rho = \frac{m}{V}$	ρ = density m = mass V = volume	$\rho = \text{kg/m}^3$ (kilograms per meter cubed) $m = \text{kg}$ (kilograms) $V = \text{m}^3$ (meters cubed)
$\Delta E = mc\Delta\theta$	ΔE = change in thermal energy m = mass c = specific heat capacity $\Delta\theta$ = temperature change	$\Delta E = J$ (joules) $m = \text{kg}$ (kilograms) $c = J/\text{kg}^\circ\text{C}$ (joules per kilogram per degree Celsius) $\Delta\theta = ^\circ\text{C}$ (degree Celsius)
$E = mL$	E = Energy m = mass L = specific latent heat	$E = J$ (joules) $m = \text{kg}$ (kilograms) $L = J/\text{kg}$ (joules per kilogram)



Topic 5 - Forces

Equation	Symbols	Units
$W = mg$	W = weight m = mass g = gravitational field strength	W = N (newton's) m = kg (kilograms) g = N/kg (newton's per kilogram)
$W = Fs$	W = work done F = force s = distance	W = J (joules) F = N (newtons) s = m (meters)
$F = ke$	F = force k = spring constant e = extension	F = N (newtons) k = N/m (newtons per meter) e = m (meters)
$E_e = \frac{1}{2} ke^2$	E_e = elastic potential energy k = spring constant e = extension	E_e = J (joules) k = N/m (newtons per meter) e = m (meters)
$s = vt$	s = distance v = speed t = time	s = m (meters) v = m/s (meters per second) t = s (seconds)
$a = \frac{\Delta v}{t}$	a = acceleration Δv = change in velocity t = time	a = m/s ² (meters per second squared) Δv = m/s (meters per second) t = s (seconds)
$v^2 - u^2 = 2as$	v = final velocity u = initial velocity a = acceleration s = distance	v = m/s (meters per second) u = m/s (meters per second) a = m/s ² (meters per second squared) s = m (meters)
$F = ma$	F = force m = mass a = acceleration	F = N (newtons) m = kg (kilograms) a = m/s ² (meters per second squared)
$p = mv$	p = momentum m = mass v = velocity	p = kg m/s (kilograms metre per second) m = kg (kilograms) v = m/s (meters per second)



Topic 6 - Waves

Equation	Symbols	Units
Period = $\frac{1}{\text{frequency}}$		Period = s (seconds) Frequency = Hz (hertz)
$T = \frac{1}{f}$	T = Period f = frequency	T = s (seconds) f = Hz (hertz)
$v = f\lambda$	v = velocity f = frequency λ = wavelength (lambda)	v = m/s (meters per second) f = Hz (hertz) λ = m (meters)

Topic 7 - Magnetism and Electromagnetism

Equation	Symbols	Units
$F = BIl$ Note this is a capital I and a lowercase l	F = force B = magnetic flux density I = Current l = length	F = N (newtons) B = T (tesla) I = A (Amps or Amperes) l = m (meters)