

Key Equations: GCSE Physics

Electricity

Word Equation	Symbol Equation	Units
Power = Potential Difference \times Current	$P = V \times I$	W, V, A
Potential Difference = Current \times Resistance	$V = I \times R$	V, A, Ω
Charge = Current \times time	$Q = I \times t$	C, A, s
Energy = Potential Difference \times Charge	$E = V \times Q$	J, V, C

Energy

Word Equation	Symbol Equation	Units
Grav. Pot. Energy = mass \times grav. field strength \times height	$GPE = mgh$	J, kg, ms^{-2}, m
Kinetic Energy = $\frac{1}{2} \times$ mass \times velocity ²	$\frac{1}{2}mv^2$	J, kg, ms^{-1}
Work = Force \times distance	$W = F \times d$	J, N, m
Power = Energy (Work Done) \div time	$P = E \div t$	W, J, s
Efficiency = useful energy output \div total energy input	-	-

Forces and Motion

Word Equation	Symbol Equation	Units
distance travelled = speed \times time	$d = s \times t$	m, ms^{-1}, s
acceleration = change in velocity \div time	$a = \Delta v \div t$	ms^{-2}, ms^{-1}, s
Force = mass \times acceleration	$F = m \times a$	N, kg, ms^{-2}
momentum = mass \times velocity	$p = m \times v$	$kgms^{-1}, kg, ms^{-1}$
Power = mass \times velocity	$P = m \times v$	W, kg, ms^{-1}
Density = mass \div volume	$\rho = m \div V$	kgm^{-3}, kg, m^3
Pressure = Force \div Area	$P = F \div A$	Nm^{-2}, N, m^2
Moment = force \times distance	$M = F \times d$	Nm, N, m
Force exerted by a spring = spring constant \times extension	$F = k \times x$	N, Nm^{-1}, m
Force due to gravity = mass \times grav. field strength	$F = m \times g$	N, kg, Nkg^{-1}

Waves

Word Equation	Symbol Equation	Units
velocity = frequency \times wavelength	$v = f \times \lambda$	ms^{-1}, Hz, m

By your exams, these equations should come fairly naturally to you. Try saying them to yourself and practicing using them to help your revision.