

GCSE Physics equations

Equations required for Higher Tier papers only are indicated by HT in the left hand column.

Equation number	Word equation	Symbol equation
1	weight = mass × gravitational field strength (g)	$W = m g$
2	work done = force × distance along the line of action of the force	$W = F s$
3	force applied to a spring = spring constant × extension	$F = k e$
4	moment of a force = force × distance normal to direction of force	$M = F d$
5	pressure = $\frac{\text{force normal to a surface}}{\text{area of that surface}}$	$p = F/A$
6	distance travelled = speed × time	$s = v t$
7	acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	$a = \Delta v/t$
8	resultant force = mass × acceleration	$F = m a$
9 HT	momentum = mass × velocity	$p = m v$
10	kinetic energy = 0.5 × mass × speed ²	$E_k = \frac{1}{2} m v^2$
11	gravitational potential energy = mass × gravitational field strength (g) × height	$E_p = m g h$
12	power = $\frac{\text{energy transferred}}{\text{time}}$	$P = E/t$
13	power = $\frac{\text{work done}}{\text{time}}$	$P = W/t$
14	efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
15	efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	
16	wave speed = frequency × wavelength	$v = f \lambda$
17	charge flow = current × time	$Q = I t$
18	potential difference = current × resistance	$V = I R$
19	power = potential difference × current	$P = V I$
20	power = current ² × resistance	$P = I^2 R$
21	energy transferred = power × time	$E = P t$
22	energy transferred = charge flow × potential difference	$E = Q V$
23	density = $\frac{\text{mass}}{\text{volume}}$	$\rho = m / V$

GCSE Physics equations Fill in gaps

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1	_____ = mass × gravitational field strength (<i>g</i>)	$W = m g$
2	work done = force × distance along the line of action of the force	$W = _ _ s$
3	force applied to a spring = _____ × extension	$F = k e$
4	moment of a force = _____ × distance normal to direction of force	$M = F d$
5	pressure = $\frac{\text{force normal to a surface}}{\text{area of that surface}}$	$p = _ / _$
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