

Combined Science:

Physics Equations that students must remember for their exams

| 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 | distance travelled = speed × time | $s = v t$ |
| 5 | acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$ | $a = \frac{\Delta v}{t}$ |
| 6 | resultant force = mass × acceleration | $F = m a$ |
| 7 HT | momentum = mass × velocity | $p = m v$ |
| 8 | kinetic energy = $0.5 \times \text{mass} \times (\text{speed})^2$ | $E_k = \frac{1}{2} m v^2$ |
| 9 | gravitational potential energy = mass × gravitational field strength (g) × height | $E_p = m g h$ |
| 10 | power = $\frac{\text{energy transferred}}{\text{time}}$ | $P = \frac{E}{t}$ |
| 11 | power = $\frac{\text{work done}}{\text{time}}$ | $P = \frac{W}{t}$ |
| 12 | efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$ | |
| 13 | efficiency = $\frac{\text{useful power output}}{\text{total power input}}$ | |
| 14 | wave speed = frequency × wavelength | $v = f \lambda$ |
| 15 | charge flow = current × time | $Q = I t$ |
| 16 | potential difference = current × resistance | $V = I R$ |
| 17 | power = potential difference × current | $P = V I$ |
| 18 | power = (current) ² × resistance | $P = I^2 R$ |
| 19 | energy transferred = power × time | $E = P t$ |
| 20 | energy transferred = charge flow × potential difference | $E = Q V$ |
| 21 | density = $\frac{\text{mass}}{\text{volume}}$ | $\rho = \frac{m}{V}$ |