GCSE PHYSICS EQUATIONS

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YouTube tutorials for GCSE and A-Level

ENERGY

$$\text{kinetic energy} = \frac{1}{2} \times \text{mass} \times \text{velocity}^2$$

J kg m/s

$$\text{gravitational potential energy} = \text{mass} \times \text{gravitational field strength} \times \text{height}$$

J kg N/kg m

$$\text{work done} = \text{power} \times \text{time}$$

J W s

$$\text{energy} = \text{power} \times \text{time}$$

J W s

$$\text{efficiency} = \frac{\text{useful energy out}}{\text{total energy in}} = \frac{\text{useful power out}}{\text{total power in}}$$

ELECTRICITY

$$\text{charge} = \text{current} \times \text{time}$$

C A s

$$\text{potential difference} = \text{current} \times \text{resistance}$$

V A Ω

$$\text{power} = \text{potential difference} \times \text{current}$$

W V A

$$\text{power} = \text{current}^2 \times \text{resistance}$$

W A Ω

$$\text{energy} = \text{charge} \times \text{potential difference}$$

J C V

FORCES

$$\text{weight} = \text{mass} \times \text{gravitational field strength}$$

N kg N/kg

$$\text{work done} = \text{force} \times \text{distance}$$

J N m

$$\text{force} = \text{spring constant} \times \text{extension}$$

N N/m m

$$\textit{moment} = \textit{force} \times \textit{distance}$$

Nm N m

$$\textit{force} = \textit{pressure} \times \textit{area}$$

N Pa m^2

$$\text{momentum} = \text{mass} \times \text{velocity}$$

kg m/s kg m/s

$$\text{distance} = \text{speed} \times \text{time}$$

m m/s s

$$\text{change in velocity} = \text{acceleration} \times \text{time}$$

m/s m/s^2 s

$$\text{force} = \text{mass} \times \text{acceleration}$$

N kg m/s^2

OTHER

$$\text{mass} = \text{density} \times \text{volume}$$

kg kg/m^3 m^3

$$\text{wave velocity} = \text{wavelength} \times \text{frequency}$$

m/s m Hz

These are all the equations and units you need to learn by heart for your GCSE Physics exam!

**Equations in italics are for physics only.*