

Pearson Edexcel International GCSE (9–1)

May–June 2025 Assessment Window

Syllabus
reference

**4WPH1 1P/1PR
4WPH2 1P/1PR**

International GCSE Physics (modular) Equation List

**You are not permitted to take this notice into the examination.
A version of this equation list will be included with the May–June 2025
question papers. This document is valid if downloaded from the [Pearson
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These equations may be required for both International GCSE Physics modular 4WPH1 and 4WPH2 papers.

Unit 1

1. Forces and motion

$$\text{average speed} = \frac{\text{distance moved}}{\text{time taken}}$$

$$\text{acceleration} = \frac{\text{change in velocity}}{\text{time taken}} \quad a = \frac{(v-u)}{t}$$

$$(\text{final speed})^2 = (\text{initial speed})^2 + (2 \times \text{acceleration} \times \text{distance moved})$$

$$v^2 = u^2 + (2 \times a \times s)$$

$$\text{force} = \text{mass} \times \text{acceleration} \quad F = m \times a$$

$$\text{weight} = \text{mass} \times \text{gravitational field strength} \quad W = m \times g$$

$$\text{momentum} = \text{mass} \times \text{velocity} \quad p = m \times v$$

$$\text{force} = \frac{\text{change in momentum}}{\text{time taken}} \quad F = \frac{(mv - mu)}{t}$$

$$\text{moment} = \text{force} \times \text{perpendicular distance from the pivot}$$

2. Electricity

$$\text{power} = \text{current} \times \text{voltage} \quad P = I \times V$$

$$\text{energy transferred} = \text{current} \times \text{voltage} \times \text{time} \quad E = I \times V \times t$$

$$\text{voltage} = \text{current} \times \text{resistance} \quad V = I \times R$$

$$\text{charge} = \text{current} \times \text{time} \quad Q = I \times t$$

$$\text{energy transferred} = \text{charge} \times \text{voltage} \quad E = Q \times V$$

3. Energy resources and energy transfers

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy output}} \times 100\%$$

$$\text{work done} = \text{force} \times \text{distance moved} \quad W = F \times d$$

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

$$GPE = m \times g \times h$$

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

$$KE = \frac{1}{2} \times m \times v^2$$

$$\text{power} = \frac{\text{work done}}{\text{time taken}}$$

$$P = \frac{W}{t}$$

4. Solids, liquids and gases: Part 1

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

$$\rho = \frac{m}{V}$$

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

$$p = \frac{F}{A}$$

$$\text{pressure difference} = \text{height} \times \text{density} \times \text{gravitational field strength}$$

$$p = h \times \rho \times g$$

$$\text{change in thermal energy} = \text{mass} \times \text{specific heat capacity} \times \text{change in temperature}$$

$$\Delta Q = m \times c \times \Delta T$$

Unit 2

5. Waves

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

$$v = f \times \lambda$$

$$\text{frequency} = \frac{1}{\text{time period}}$$

$$f = \frac{1}{T}$$

$$\text{refractive index} = \frac{\sin(\text{angle of incidence})}{\sin(\text{angle of refraction})}$$

$$n = \frac{\sin i}{\sin r}$$

$$\sin(\text{critical angle}) = \frac{1}{\text{refractive index}}$$

$$\sin c = \frac{1}{n}$$

6. Solids, liquids and gases: Part 2

$$\frac{\text{pressure}}{\text{temperature}} = \text{constant}$$

$$\frac{p_1}{T_1} = \frac{p_2}{T_2}$$

$$\text{pressure} \times \text{volume} = \text{constant}$$

$$p_1 \times V_1 = p_2 \times V_2$$

7. Magnetism and electromagnetism

relationship between input and output voltages for a transformer

$$\frac{\text{input (primary) voltage}}{\text{output (secondary) voltage}} = \frac{\text{primary turns}}{\text{secondary turns}}$$

input power = output power

$$V_p I_p = V_s I_s$$

for 100% efficiency

9. Astrophysics

orbital speed = $\frac{2 \times \pi \times \text{orbital radius}}{\text{time period}}$

$$v = \frac{2 \times \pi \times r}{T}$$

$\frac{\text{change in wavelength}}{\text{reference wavelength}} = \frac{\text{velocity of a galaxy}}{\text{speed of light}}$

$$\frac{\lambda - \lambda_0}{\lambda_0} = \frac{\Delta \lambda}{\lambda_0} = \frac{v}{c}$$

END OF EQUATION LIST