

**Paper Reference 1PH0/2F**

**Pearson Edexcel Level 1/Level 2 GCSE (9–1)**

**Physics**

**PAPER 2**

**Foundation Tier**

**Friday 14 June 2024 – Afternoon**

**Time: 1 hour 45 minutes**

**Equation Booklet**

**DO NOT RETURN THIS BOOKLET WITH THE  
QUESTION PAPER.**

If you're taking **GCSE (9–1) Combined Science** or **GCSE (9–1) Physics**, you will need these equations:

**HT** = higher tier

|   |
|---|
| distance travelled = average speed × time   |
| acceleration = change in velocity ÷ time taken<br>$a = \frac{(v - u)}{t}$   |
| force = mass × acceleration<br>$F = m \times a$   |
| weight = mass × gravitational field strength<br>$W = m \times g$  |
| <b>HT</b><br>momentum = mass × velocity<br>$p = m \times v$   |
| change in gravitational potential energy = mass × gravitational field strength × change in vertical height<br>$\Delta GPE = m \times g \times \Delta h$ |
| kinetic energy = $\frac{1}{2} \times \text{mass} \times (\text{speed})^2$<br>$KE = \frac{1}{2} \times m \times v^2$                                     |
| $\text{efficiency} = \frac{(\text{useful energy transferred by the device})}{(\text{total energy supplied to the device})}$                             |
| wave speed = frequency × wavelength<br>$v = f \times \lambda$   |

**wave speed = distance ÷ time**

$$v = \frac{x}{t}$$

**work done =**

**force × distance moved in the direction of the force**

$$E = F \times d$$

**power = work done ÷ time taken**

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

**energy transferred = charge moved × potential difference**

$$E = Q \times V$$

**charge = current × time**

$$Q = I \times t$$

**potential difference = current × resistance**

$$V = I \times R$$

**power = energy transferred ÷ time taken**

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

**electrical power = current × potential difference**

$$P = I \times V$$

**electrical power = (current)<sup>2</sup> × resistance**

$$P = I^2 \times R$$

**density = mass ÷ volume**

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

force exerted on a spring = spring constant  $\times$  extension  
 $F = k \times x$

$(\text{final velocity})^2 - (\text{initial velocity})^2 =$   
 $2 \times \text{acceleration} \times \text{distance}$   
 $v^2 - u^2 = 2 \times a \times x$

HT  
 force = change in momentum  $\div$  time  
 $F = \frac{(mv - mu)}{t}$

energy transferred = current  $\times$  potential difference  $\times$  time  
 $E = I \times V \times t$

HT  
 force on a conductor at right angles to a  
 magnetic field carrying a current =  
 magnetic flux density  $\times$  current  $\times$  length  
 $F = B \times I \times l$

For transformers with 100% efficiency,  
 potential difference across primary coil  $\times$   
 current in primary coil =  
 potential difference across secondary coil  $\times$   
 current in secondary coil  
 $V_P \times I_P = V_S \times I_S$

change in thermal energy =  
 mass  $\times$  specific heat capacity  $\times$  change in temperature  
 $\Delta Q = m \times c \times \Delta\theta$

**thermal energy for a change of state =  
mass × specific latent heat  
 $Q = m \times L$**

**energy transferred in stretching =  
 $0.5 \times \text{spring constant} \times (\text{extension})^2$   
 $E = \frac{1}{2} \times k \times x^2$**

If you're taking **GCSE (9–1) Physics**, you also need these extra equations:

**moment of a force =**  
**force × distance normal to the direction of the force**

**pressure = force normal to surface ÷ area of surface**

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

**HT**

**potential difference across primary coil**  
**potential difference across secondary coil** = **number of turns in primary coil**  
**number of turns in secondary coil**

$$\frac{V_p}{V_s} = \frac{N_p}{N_s}$$

**to calculate pressure or volume for gases of fixed mass at constant temperature**

$$P_1 \times V_1 = P_2 \times V_2$$

**HT**

**pressure due to a column of liquid =**  
**height of column × density of liquid ×**  
**gravitational field strength**

$$P = h \times \rho \times g$$

**END OF EQUATION LIST**