Paper Reference 1SC0/2PH

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

Combined Science

PAPER 6

Higher Tier

Equation Booklet

DO NOT RETURN THIS BOOKLET WITH THE QUESTION PAPER.

Pearson

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

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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)^2 × resistance $P = I^2 \times R$
density = mass ÷ volume $\rho = \frac{m}{V}$

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force exerted on a spring = spring constant × extension $F = k \times x$
(final velocity)^2 – (initial velocity)^2 = 2 × acceleration × distance $v^2 - u^2 = 2 \times a \times x$
HT force = change in momentum ÷ time $F = \frac{(mv - mu)}{t}$
energy transferred = current × potential difference × 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 × current × length $F = B \times I \times l$
For transformers with 100% efficiency, potential difference across primary coil × current in primary coil = potential difference across secondary coil × current in secondary coil $V_P \times I_P = V_S \times I_S$
change in thermal energy = mass × specific heat capacity × change in temperature $\Delta Q = m \times c \times \Delta\theta$

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thermal energy for a change of state = mass × specific latent heat $Q = m \times L$
energy transferred in stretching = 0·5 × spring constant × (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 $\frac{\text{potential difference across primary coil}}{\text{potential difference across secondary coil}} = \frac{\text{number of turns in primary coil}}{\text{number of turns in secondary coil}}$ $\frac{V_p}{V_s} = \frac{N_p}{N_s}$
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