



Equations To Revise and Remember
(They will NOT be given in the exam paper)

Word Equation	Symbol Equation
distance travelled = average speed × time	
acceleration = change in velocity ÷ time taken	$a = \frac{v-u}{t}$
force = mass × acceleration	$F = m \times a$
weight = mass × gravitational field strength	$W = m \times g$
momentum = mass × velocity	$p = m \times v$
change in gravitational potential energy = mass × gravitational field strength × change in vertical height	$\Delta GPE = m \times g \times \Delta h$
kinetic energy = $\frac{1}{2} \times$ 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	$v = f \times \lambda$
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	$P = \frac{E}{t}$
moment of a force = force × distance normal to the direction of the force	
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 (joule, J) ÷ 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	$\rho = \frac{m}{V}$
force exerted on a spring = spring constant × extension	$F = k \times x$
pressure = force normal to surface ÷ area of surface	$P = \frac{F}{A}$

Equations in **Bold** are only for the Higher Tier Paper



Equations To Revise

(They will be on a Formula List in the Exam)

Word Equation	Symbol Equation
(final velocity) ² - (initial velocity) ² = 2 × acceleration × distance	$v^2 - u^2 + 2 \times a \times x$
force = change in momentum ÷ time	$F = \frac{mv - mu}{t}$
energy transferred = current × potential difference × time	$E = I \times V \times t$
force on a conductor at right angles to a magnetic field carrying a current = magnetic flux density × current × length	$F = B \times I \times l$
<u>Potential Difference across primary coil</u> = <u>N° of turns in primary coil</u> <u>Potential Difference across secondary coil</u> <u>N° turns in secondary coil</u>	$\frac{V_p}{V_s} = \frac{N_p}{N_s}$
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	$\Delta Q = m \times c \times \Delta \theta$
thermal energy for a change of state = mass × specific latent heat	$Q = m \times L$
to calculate pressure or volume for gases of fixed mass at constant temperature	$P_1 \times V_1 = P_2 \times V_2$
energy transferred in stretching = 0.5 × spring constant × (extension) ²	$E = \frac{1}{2} \times k \times x^2$
pressure due to a column of liquid = height of column × density of liquid × gravitational field strength	$P = h \times \rho \times g$