Physics Formula Sheet

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Electricity

$$\text{Voltage(V)} = \frac{\text{Work done (J)}}{\text{Charge (C)}}$$

$$\text{Current (A)} = \frac{\text{Charge (C)}}{\text{Time (s)}}$$

$$\text{Voltage} = \text{Current x Resistance}$$

Resistance in Series: $R_{Total} = R_1 + R_2$

Resistance in Parallel: $\frac{1}{\text{R Total}} = \frac{1}{\text{R1}} + \frac{1}{\text{R2}}$

Transformer Equation: $\frac{\text{number of turns in primary coil (Np)}}{\text{number of turns in secondary coil (Ns)}} = \frac{\text{voltage in primary coil (Vp)}}{\text{voltage in secondary coil (Vs)}}$

Power = voltage x current

Energy transfer = power x time

Motion and Energy

$$\text{Speed} = \frac{\text{distance}}{\text{time}}\ (\text{m s}^{-1})$$

$$\text{Acceleration} = \frac{\text{change in velocity}}{\text{time}} = \frac{\Delta v}{\Delta t}\ (\text{m s}^{-2})$$

Momentum = mass x velocity

Force = mass x acceleration

$$\text{Force (N)} = \frac{\text{change in momentum (kg m/s)}}{\text{change in time (s)}}$$

Work done (J) = force (N) x distance (m)

$$\text{Power (W)} = \frac{\text{energy (J)}}{\text{time (s)}}$$

$$\text{Kinetic energy} = \frac{1}{2}\text{x mass x velocity2}$$

Potential energy = mass x acceleration due to gravity x height

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Thermal Physics

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Energy = mass x specific heat capacity x change in temperature = mcΔT

$$\text{Percentage efficiency} = \frac{\text{useful output}}{\text{total input}} \text{ x } 100$$

Waves

Time period = $\frac{1}{\text{Frequency}}$

Velocity = frequency x wavelength = f λ

Angle of incidence = angle of reflection