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CBSE FOUNDATION BOOSTER

Class 11 Physics

Formula Bank & Key Concepts

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Founder & Director: **Mrs. Neeru Nanda**

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1945 P, Sainik Colony, Sector 49, Faridabad, Haryana 121001

Call / WhatsApp: +91 98916 12831 (9891612831) • toppershubacademy.odoo.com

Kinematics & Laws of Motion

- Equations of motion: $v = u + at$; $s = ut + \frac{1}{2}at^2$; $v^2 = u^2 + 2as$.
- Newton's second law: $F = ma$. Momentum $p = mv$.
- Impulse = change in momentum = $F \times t$.
- Friction: $f = \mu N$ (N is the normal reaction).

Work, Energy & Circular Motion

- Work: $W = F s \cos\theta$. Power: $P = W/t = F v$.
- Kinetic energy: $KE = \frac{1}{2}mv^2$. Potential energy: $PE = mgh$.
- Work-energy theorem: net work = change in kinetic energy.
- Centripetal acceleration: $a = v^2/r$; force $F = mv^2/r$.

Gravitation & SHM

- Gravitation: $F = G m_1 m_2 / r^2$.
- Acceleration due to gravity: $g = GM / R^2$.
- Escape velocity: $v = \sqrt{2gR}$.
- Simple harmonic motion: time period $T = 2\pi \sqrt{m/k}$.

Thermodynamics & Properties of Matter

- First law of thermodynamics: $\Delta U = Q - W$.
- Ideal gas equation: $PV = nRT$.
- Pressure: $P = F/A$. Density = mass / volume.
- Heat: $Q = mc\Delta T$ (c is specific heat capacity).

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