TURBO
KINETIC THEORY & THERMODYNAMICS
Class 11 Physics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
1	Gas Pressure	$P = \frac{1}{3}\rho C^2 = \frac{1}{3}\frac{mN}{V}v_{rms}^2$	Based on elastic collisions.
2	Speed (v_{rms})	$v_{rms} = \sqrt{\frac{3P}{\rho}} = \sqrt{\frac{3RT}{M}}$	$v_{avg} = \sqrt{\frac{8RT}{\pi M}}$, $v_{mp} = \sqrt{\frac{2RT}{M}}$.
3	Internal Energy	$U = \frac{f}{2}nRT$	f: Degrees of Freedom.
4	1st Law of TD	$\Delta Q = \Delta U + \Delta W$	Energy Conservation.
5	Thermodynamics Processes	Isobaric: $W = P\Delta V$ Isochoric: $W = 0$ Isothermal: $W = nRT\ln(V_2/V_1)$ Adiabatic: $PV^\gamma = \text{const}$	Adiabatic: $W = \frac{nR(T_1-T_2)}{\gamma-1}$.
6	Carnot Engine	$\eta = 1 - \frac{T_L}{T_H} = \frac{W}{Q_H}$	Efficiency only depends on Temp.
7	Refrigerator	$\beta = \frac{Q_2}{W} = \frac{Q_2}{Q_1-Q_2}$	Coefficient of Performance.