Equations from the ends of each chapter

$$T_F = \tfrac{9}{5}T_C + 32°$$

$$T_C = \tfrac{5}{9}(T_F - 32°)$$

$$T_K = T_C + 273.15$$

$$\frac{T_2}{T_1} = \frac{p_2}{p_1}$$

$$\Delta L = \alpha L_0 \, \Delta T$$

$$\Delta V = \beta V_0 \, \Delta T$$

$$\frac{F}{A} = -Y\alpha \, \Delta T$$

$$Q = mc \, \Delta T$$

$$Q = nC \, \Delta T$$

$$Q = \pm mL$$

$$H = \frac{dQ}{dt} = kA\frac{T_H - T_C}{L}$$

$$H = Ae\sigma T^4$$

$$H_{net} = Ae\sigma(T^4 - T_s^4)$$

$$pV = nRT$$

$$m_{total} = nM$$

$$M = N_A m$$

$$K_{tr} = \tfrac{3}{2}nRT$$

$$\tfrac{1}{2}m(v^2)_{av} = \tfrac{3}{2}kT$$

$$v_{rms} = \sqrt{(v^2)_{av}} = \sqrt{\frac{3kT}{m}}$$

$$\lambda = vt_{mean} = \frac{V}{4\pi\sqrt{2}r^2N}$$

$$C_V = \tfrac{3}{2}R \text{ (monatomic gas)}$$

$$C_V = \tfrac{5}{2}R \text{ (diatomic gas)}$$

$$C_V = 3R \text{ (monatomic solid)}$$

$$f(v) = 4\pi\left(\frac{m}{2\pi kT}\right)^{3/2} v^2 e^{-mv^2/2kT}$$

$$W = \int_{V_1}^{V_2} p \, dV$$

$$W = p(V_2 - V_1)$$

$$\Delta U = Q - W$$

$$dU = dQ - dW$$

$$C_p = C_V + R$$

$$\gamma = \frac{C_p}{C_V}$$

$$W = nC_V(T_1 - T_2)$$

$$= \frac{C_V}{R}(p_1V_1 - p_2V_2)$$

$$= \frac{1}{\gamma - 1}(p_1V_1 - p_2V_2)$$

$$e = \frac{W}{Q_H} = 1 + \frac{Q_C}{Q_H} = 1 - \left|\frac{Q_C}{Q_H}\right|$$

$$e = 1 - \frac{1}{r^{\gamma-1}}$$

$$K = \frac{|Q_C|}{|W|} = \frac{|Q_C|}{|Q_H| - |Q_C|}$$

$$e_{Carnot} = 1 - \frac{T_C}{T_H} = \frac{T_H - T_C}{T_H}$$

$$K_{Carnot} = \frac{T_C}{T_H - T_C}$$

$$\Delta S = \int_1^2 \frac{dQ}{T}$$

$$S = k \ln w$$

$$TV^{\gamma-1} = \text{constant}$$

$$pV^{\gamma} = \text{constant}$$

R = 8.3145 J/mol·K

K = $1.38 \cdot 10^{-23}$ J/molecule·K

ρ=m/V

g=9.80 m/s^2

P_{atm}=$1.013 \cdot 10^5$ Pascals

T_{ice}=273.15 K