

$$T(F) = 9/5T(C) + 32^\circ \quad T(C) = 5/9(T(F) - 32^\circ) \quad T(K) = T(C) + 273.15$$

$$\Delta L = \alpha L_0 \Delta T \quad \Delta A = 2\alpha A_0 \Delta T \quad \Delta V = 3\alpha V_0 \Delta T = \beta V_0 \Delta T$$

$$PV = nRT \quad Q = mc\Delta T \quad Q = C\Delta T$$

$$PV = NkT \quad k = 1.38 \times 10^{-23} \text{ J/K} \quad R = 8.31 \text{ J/(mol K)}$$

$$KE_{AVE} = \frac{3}{2}kT \quad Q = mL \quad \Delta U = Q - W$$

$$e = W/Q_H \quad e = 1 - T_C/T_H \quad e = 1 - Q_C/Q_H$$

$$W = Q_H - Q_C$$

$$\Delta S = Q/T \quad U = \frac{3}{2}NkT = \frac{3}{2}nRT \quad PV^{5/3} = \text{constant}$$