$$v_f = v_0 + at$$

$$s_f = s_0 + v_0 t + \tfrac{1}{2} a t^2$$

$$v_f^2 = v_0^2 + 2a(s_f - s_0)$$

$$\sum F = F_{net} = ma$$

$$F_f \le \mu N$$

$$a_c = \frac{v^2}{r}$$

$$\tau = rF\sin\theta = rF_\perp$$

$$p = mv$$

$$F\Delta t = \Delta p$$

$$KE = \tfrac{1}{2} m v^2$$

$$GPE = mgh$$

$$W = Fs_{\parallel} = Fs\cos\theta$$

$$P_{avg} = \frac{W}{\Delta t}$$

$$P = Fv$$

$$F_s = -ks$$

$$EPE = \tfrac{1}{2} k s^2$$

$$T_s = 2\pi\sqrt{\frac{m}{k}}$$

$$T_p = 2\pi\sqrt{\frac{\ell}{g}}$$

$$T = \frac{1}{f} = \frac{2\pi r}{v}$$

$$F_g = \frac{Gm_1 m_2}{r^2}$$

$$U_g = -\frac{Gm_1 m_2}{r}$$

$$\gamma = \frac{1}{\sqrt{1 - \left(\frac{v^2}{c^2}\right)}}$$

$$t_M = t_P \gamma$$

$$L_M = \frac{L_P}{\gamma}$$

$$v_M = \frac{v_P + u}{1 + \left(\frac{v_P u}{c^2}\right)}$$

$$m = m_0 \gamma$$

$$p = m_0 v \gamma$$

$$KE = TE - RE$$

$$KE = mc^2 - m_0 c^2$$

$$KE = m_0 c^2 (\gamma - 1)$$