Work-energy theorem: Work $= \Delta K = -\Delta U$

Center of mass, system of point masses: $\mathbf{r}_{cm} = \frac{1}{M}\sum m_i \mathbf{r}_i$ (M = total mass)

Impulse-linear momentum theorem: $\Delta p = F_{avg}\Delta t$

$\theta = s/R$; $\omega = v/R$; $\alpha = a/R$

$\Delta\theta = \omega_0 \Delta t + \frac{1}{2}\alpha\Delta t^2$; $\omega = \omega_0 + \alpha t$

Linear momentum: $\mathbf{p} = m\mathbf{v}$; Angular momentum: $\mathbf{L} = \mathbf{r} \times \mathbf{p}$

Conservation of linear momentum: $\mathbf{p}_i = \mathbf{p}_f$; $m_i\mathbf{v}_i = m_f\mathbf{v}_f$

Conservation of angular momentum: $\mathbf{L}_i = \mathbf{L}_f$; $I_i\omega_i = I_f\omega_f$

Translational kinetic energy: $K = \frac{1}{2}mv^2$

Rotational kinetic energy: $K = \frac{1}{2}I\omega^2$

Rotational inertia for system of point masses: $I = \sum m_i {r_i}^2$

Parallel axis theorem: $I = I_0 + mh^2$ (h = displacement from center of mass)

Torque $= \mathbf{r} \times \mathbf{F} = rF\sin\theta = I\alpha$

Gravitational force: $F = Gm_1m_2/R^2$; $G = 6.67 \times 10^{-11} Nm^2/kg^2$

Gravitational potential: $U = -Gm_1m_2/R$

Density: $\rho = m/V$

Archimedes principle: $m = m_f$, (m_f = mass of displaced fluid)

Bernoulli's equation: $P_1 + \frac{1}{2}\rho {v_1}^2 + \rho g y_1 = P_2 + \frac{1}{2}\rho {v_2}^2 + \rho g y_2$

Period of point-mass pendulum: $T = 2\pi\sqrt{R/g}$

Period of physical pendulum: $T = 2\pi\sqrt{I/mgR}$