

PHYSICS

REVIEW: Torque/Momentum/Center of Gravity

Impulse

Momentum

Change in momentum

Conservation of linear momentum

Torque

Moment of inertia

Angular displacement

Angular velocity

Angular acceleration

Center of Mass

Center of gravity

Momentum = mass x velocity $p = mv$

Impulse = force x time = change in momentum so $F\Delta t = m\Delta v$

Whenever a force acts for a period of time, there will be a change in momentum

Agiven change in momentum may be accomplished by a large force acting for a short time... or a small force acting for a long time

Linear momentum is conserved in a system not acted upon by outside forces

$$m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2' \quad (\text{elastic})$$

Momentum is a vector so it has both magnitude and direction

$$m_1v_1 + m_2v_2 = V_c(m_1 + m_2) \quad (\text{inelastic})$$

$$v(m_1 + m_2) = m_1v_1' + m_2v_2' \quad (\text{"explosion"})$$

$$v = 0 \text{ kg}\cdot\text{m/s so: } m_1v_1' + - m_2v_2'$$

Moment of Inertia $I = mr^2$ Angular Velocity $\omega = \Delta\theta/\Delta t$

Angular Acceleration $\alpha = \Delta\omega/\Delta t$ also $\alpha = \tau/I$ and $\alpha = Fr\sin\theta/I$

Torque $\tau = Fr\sin\theta$ net torque Torque equation $F_1d_1 = F_2d_2$

