Momentum-Impulse Theorem and Energy Conservation

REVIEW

We will be considering only closed (isolated) systems.

Mechanical Energy

Energy, by definition, is the ability to do work. It is measured in Joules (J)

Gravitational Potential Energy: $E_g = mgh$

Kinetic Energy: $E_k = \frac{1}{2}mv^2$

Work

Work is defined as the change in energy (either kinetic, potential or both)

$W = F\Delta d$ $\quad$ $W = \Delta E_g = E_{g2} - E_{g1}$ $\quad$ $W = \Delta E_k = E_{k2} - E_{k1}$

Conservation of Mechanical Energy

In a closed system energy is not created nor destroyed, only transformed from one form to another. As a result the total mechanical energy that exists in a system remains constant.

Work Done by Friction

Work done by friction typically "robs" kinetic energy from an object in motion and can simply be subtracted from the total kinetic energy.

- In this section we will be using conservation of total mechanical energy and conservation of momentum laws to solve complex problems.