

Work and Kinetic Energy

“Change in **kinetic energy** is equal to the **mechanical work** done by all forces”

$$\Delta K = W$$

(Work = Force x Displacement)

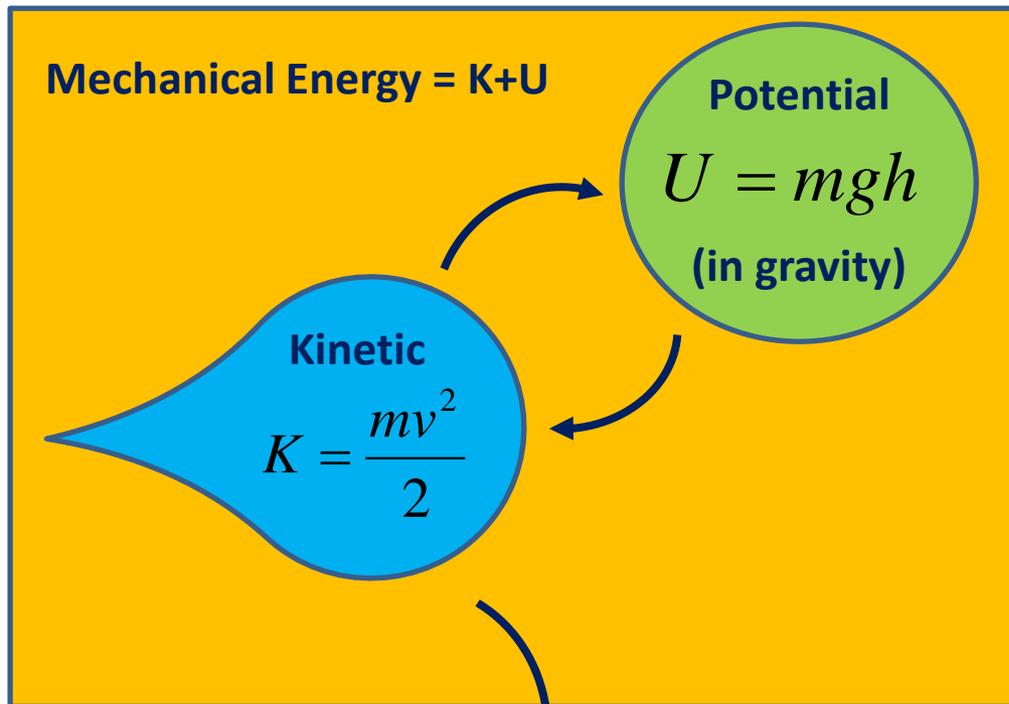
$$K = \frac{mv^2}{2},$$

is called Kinetic Energy of an object

$$W = F\Delta x,$$

is called Mechanical Work

Mechanical Energy and Work



Change in Energy = Work

$$W = F\Delta x$$

Unit of Energy & Work is called Joule (J)

$$1J = 1N \cdot m = 1 \frac{kg \cdot m^2}{s^2}$$

Homework 15

Problem 1.

A driver in the car moving with speed 30 m/s applies brakes. Friction force acting on the car is 10kN. Mass of the car is 2000kg. Find the distance that the car will travel before coming to a complete stop.

Problem 2.

A car is going down a mountainous road at a constant speed of 15 m/s. The engine is shut off, but the driver is constantly pushing the brake pedal to keep the car from being accelerated by gravity. In one minute the car descends 100 meters vertically. Find the friction force acting on the car. Mass of the car is 1800 kg.

