Mechanical Energy and Work

Mechanical Energy = K+U

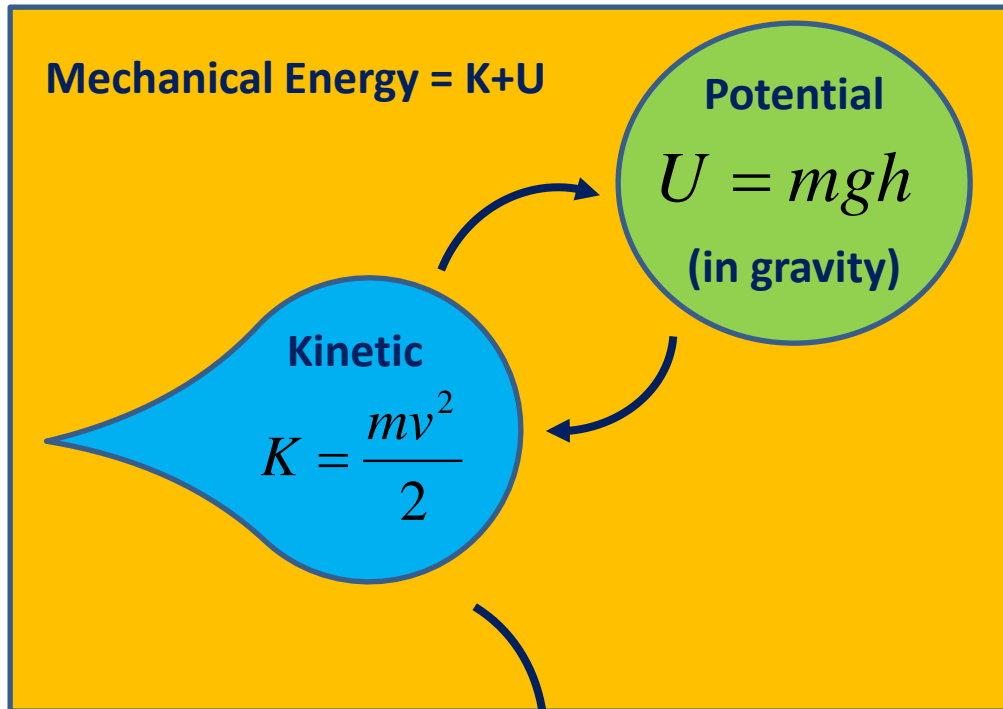**Potential**

$$U = mgh$$

(in gravity)

Kinetic

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

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

Find Energy in Joules, for the following cases:

a) Kinetic energy of yourself running as fast as you can.

b) Potential energy of yourself after climbing the mount Everest.

c) Minimal work you need to do to shut an arrow of mass 50 g to the height 100m, with a bow.

d) Kinetic energy of all molecules in 1 cubic meter of air. Assume them to have a typical speed about 500m/s. Density of air is 1.2 kg/m^3.