



2010 Feb 9 Tue

Lab L150-002



2010 Feb 16 Tue

finished Lab L150-002



2010 Feb 17 Wed

## Ch 7: Work & Energy

Energy is like the  
currency of the Universe

Work is like (say) a dollar bill

Default



2010 Feb 18 Thu

Work

Energy

Thermal Energy

Chemical Energy  
Nuc!

Mechanical Energy

Kinetic Energy

Potential Energy

gravitational

elastic

Work

$$I = F \Delta t$$

$$W = F \Delta x$$

$$[W] = N \cdot m \equiv J$$

J  
joule

# Kinetic Energy

$$K = \frac{1}{2} m v^2$$

KE

$$[K] = \text{kg} \left(\frac{\text{m}}{\text{s}}\right)^2 = \text{kg} \frac{\text{m}^2}{\text{s}^2} = \left(\text{kg} \frac{\text{m}}{\text{s}^2}\right) \text{m} = \text{N} \cdot \text{m}$$
$$= \text{J}$$

# Work-Energy Theorem

$$W_{\text{TOT}} = \Delta K$$

$$I_{\text{TOT}} = \Delta p$$

Potential Energy (U)  
PE energy of configuration  
 $\Delta U_g = mg \Delta y$

mass  $9.8 \frac{m}{s^2}$

$$U_g = mgh$$

## Conservation of Energy

$$K + U = E = \text{const}$$

$$\Delta(K + U) = \Delta E = 0$$

$$\Delta K + \Delta U = 0$$

$$\Delta U = -\Delta K$$

$$U = mgy$$

$$K = \frac{1}{2}mv^2$$



2010 Feb 19 Fri

L151-001: Spring Energy Inquiry

"just in time" inventory

