

Friday, July 09, 2010

# Energy

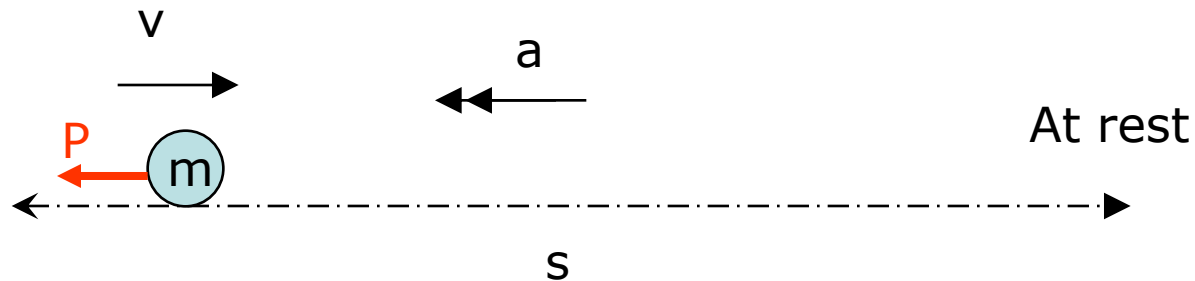
The **Energy** of a body is its capacity for doing work and exists in many different forms –mechanical, heat, light, electrical, chemical.

We consider mechanical energy, which exists in two forms.

## Kinetic energy (KE)

The KE of a body is that which possess it virtue of its motion and is measured by the amount of work it can do in coming to rest.

Let a particle of mass  $m$  be moving along a straight line with velocity  $v$ , and be brought to rest by a force  $P$  opposing motion in a distance  $s$ .



Work Done on particle = Work Done against resistance

$$= P \cdot s$$

$$= ma \cdot s$$

$$= m \frac{v^2}{2s} s$$

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

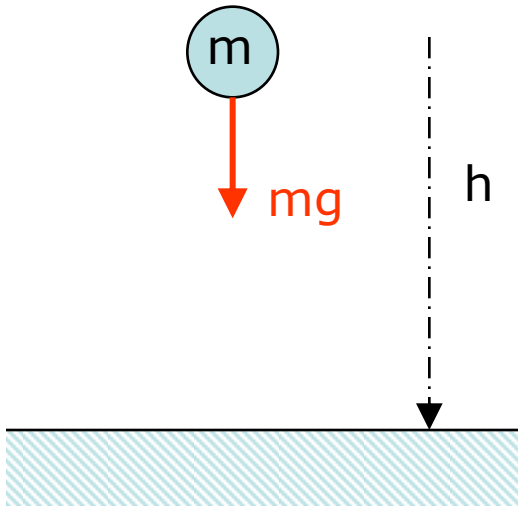
Using N2

Using  $v^2 = u^2 + 2as$

## Potential Energy (PE)

The PE of a body is that which it possess in virtue of its position and is measured by the amount of work it can do in moving to some standard position, an arbitrary level chosen for zero PE

$$\begin{aligned}\text{Work Done in moving to base} &= P.S \\ &= mg.h\end{aligned}$$



Formulas used for mechanical Energy:

$$\text{KE of particle} = \frac{1}{2}mv^2$$

$$\text{PE of particle} = mgh$$