Name: Key Hour: _____

# SUMMARY OF ENERGY, WORK, & POWER

**I) Kinetic Energy (K.E.)**- energy of motion measured in J

**K.E.= $\frac{1}{2}mv^2$** If you are not moving, your K.E. = 0 J

**II) Potential Energy (P.E.)** - the energy due to an object's position measured in J

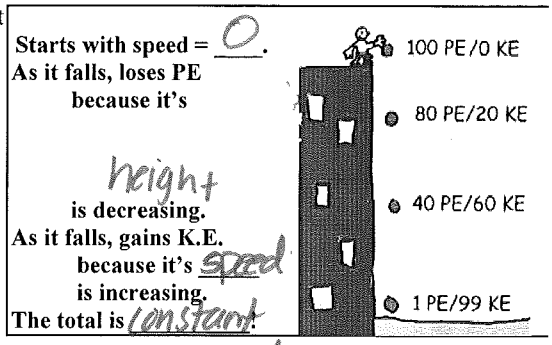
**P.E.= mgh** If you are on the ground, your P.E. = 0 J

**III) The Conservation of Energy**- means the total energy remains constant

**initial PE + the initial KE = final PE + final KE**

**$PE_i + KE_i = PE_f + KE_f$**

$$mgh_i + \tfrac{1}{2} mv_i^2 = mgh_f + \tfrac{1}{2} mv_f^2$$

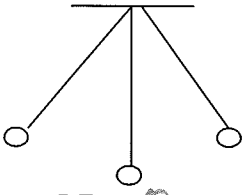



**Concept of the Conservation of Energy**

The total energy stays constant.. Example- swinging pendulum like Marble on a String Lab

*Pendulum stopped at the top.*

**P.E.= 20 J**
**K.E.= 0 J**



*When a pendulum hangs straight down, h=* 0

**P.E.= 0 J**
**K.E.= 20 J**

**WORK:** Amount of energy transferred by a force acting through a distance

Work = F·d Measured in J

**POWER:** The rate at which work is done or energy is transferred.

Power = $\frac{F \cdot d}{\Delta t} = \frac{W}{\Delta t}$ Measured in J/sec = 1 Watt

746 Watts = 1 horsepower (hp)