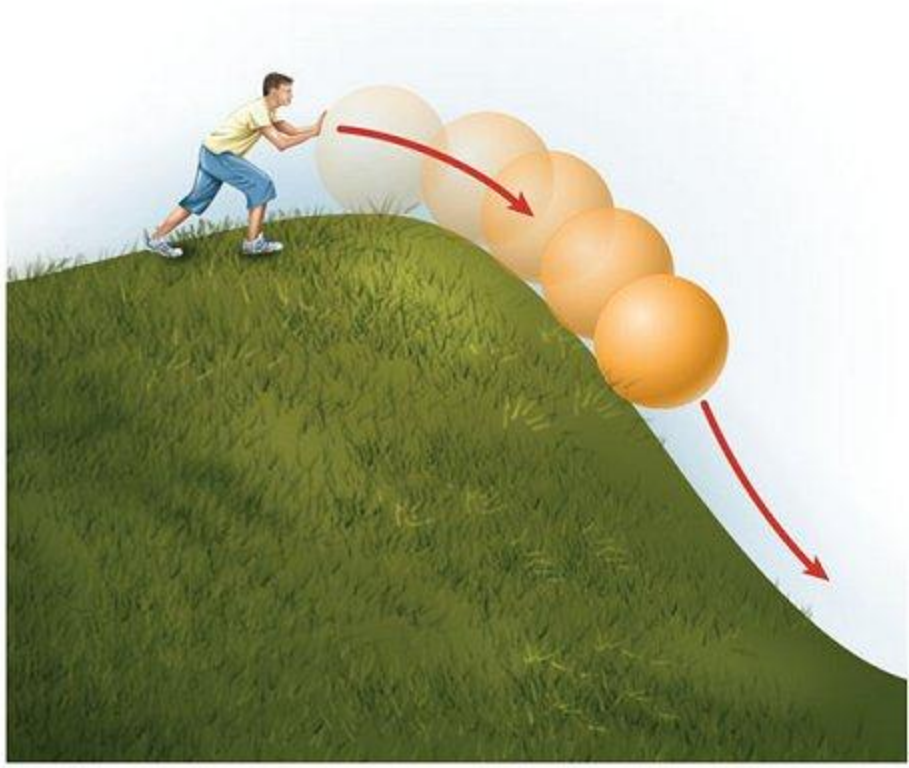
Unit 10 NOTES
Energy

a) Potential energy



(b) Kinetic energy

- **Energy** is a measure of usable power. The measure of work.

- **Power** is the rate at which work is done.

- **Work** is the amount of force applied over a distance.

- **Pressure** is the amount of force applied over an area.

Energy = Measure of Work

Work (Joule) Work = Force(N) x Distance(m)

$$W=Fd$$

Pressure (N/cm^2) $\text{Pressure} = \frac{\text{Force (N)}}{\text{Area}(cm^2)}$

$$p=F/A$$

Power (J/s) $\text{Power} = \frac{\text{Work (J)}}{\text{Time (s)}}$

$$P = W/t$$

Kinetic energy = the energy of **motion**

Measured by how much work must be done to put an object in motion or to rest.

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

$$\frac{\text{mass x velocity}^2}{2}$$

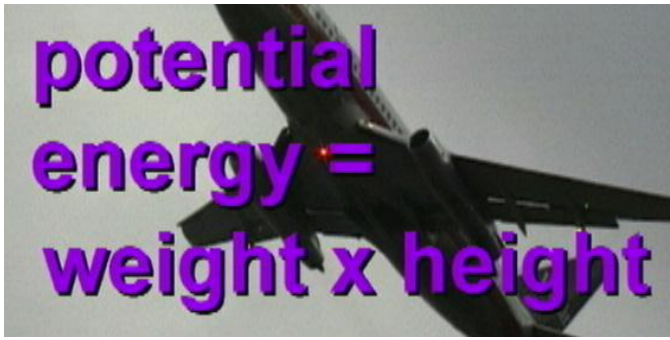
Potential energy = **stored** energy

Mostly determined by height and **Gravity**.

$$PE = Fh$$

$$PE = mgh$$

More height, more PE

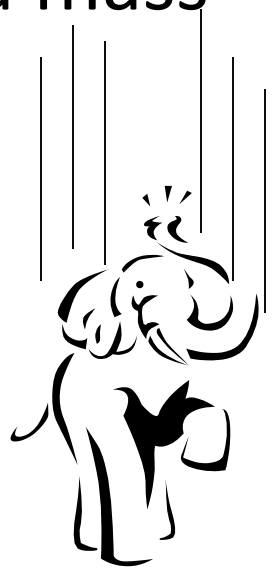


Objects at a height that can fall have Potential Energy

$$\mathbf{PE = F_g h}$$

F_g → force of gravity acting on a mass = weight (N)

$F_g = mg$ (g=9.81 m/s^2)



UNIT for ENERGY

PE = Fh

$F_g = mg$

PE = mgh

PE = *(kg)(m/s²)(m)*

PE = *(Nm) or (kg m²/s²)*

PE = ***(J)***

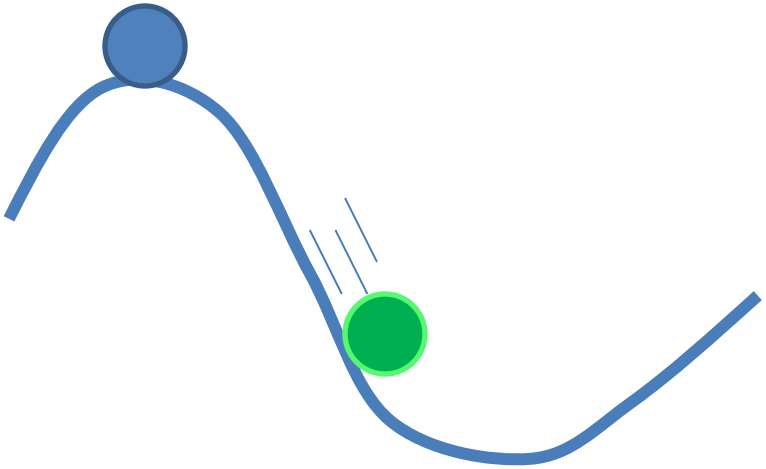
KE = ½ mv²

KE = *(kg)(m/s)²*

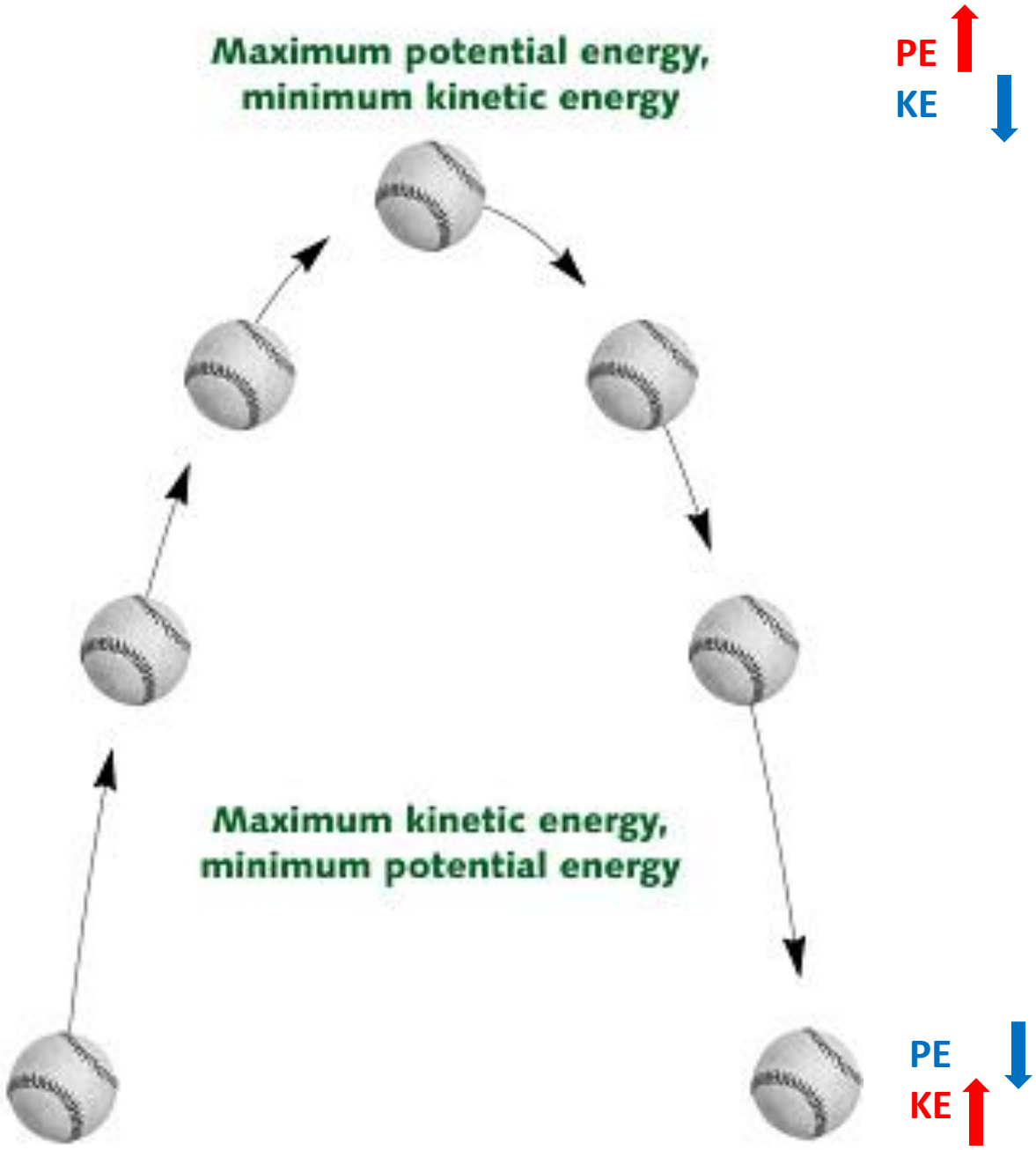
KE = *(kg m²/s²)*

KE = ***(J)***

Potential & **Kinetic** **Energy** are energy partners.



When there is **no motion**, energy is **potential**. When there is **motion**, energy is **kinetic**.

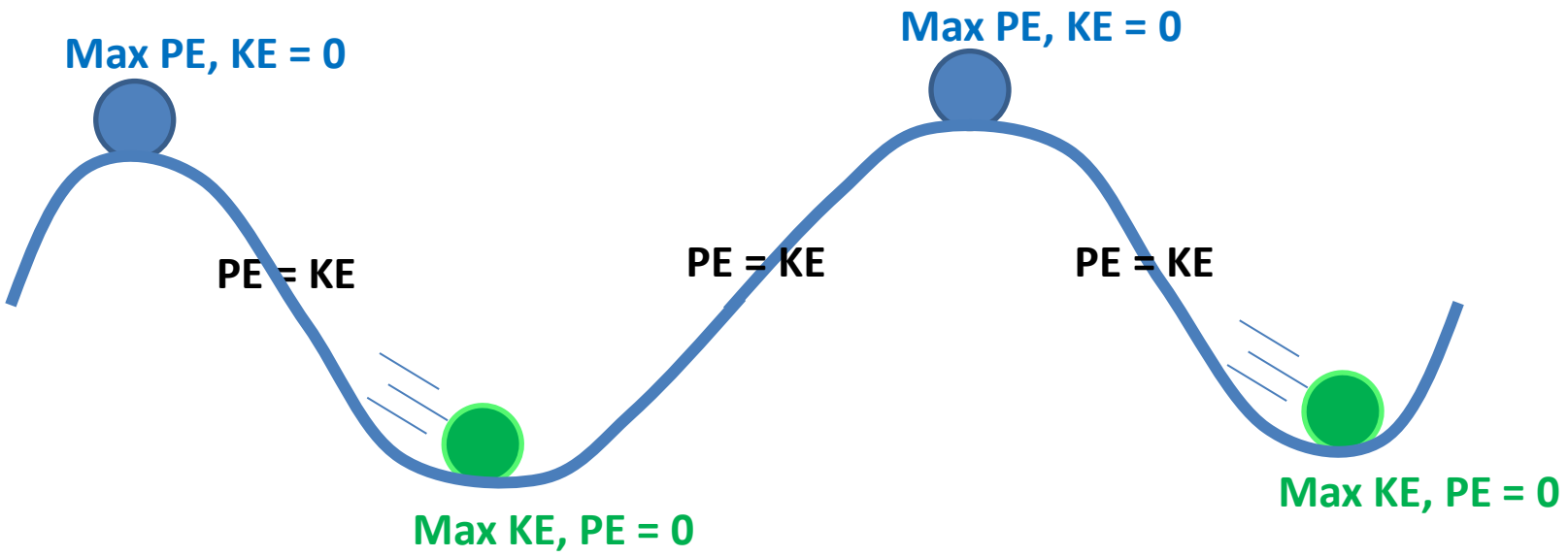

Maximum potential energy,
minimum kinetic energy
PE
KE
Maximum kinetic energy,
minimum potential energy
PE
KE

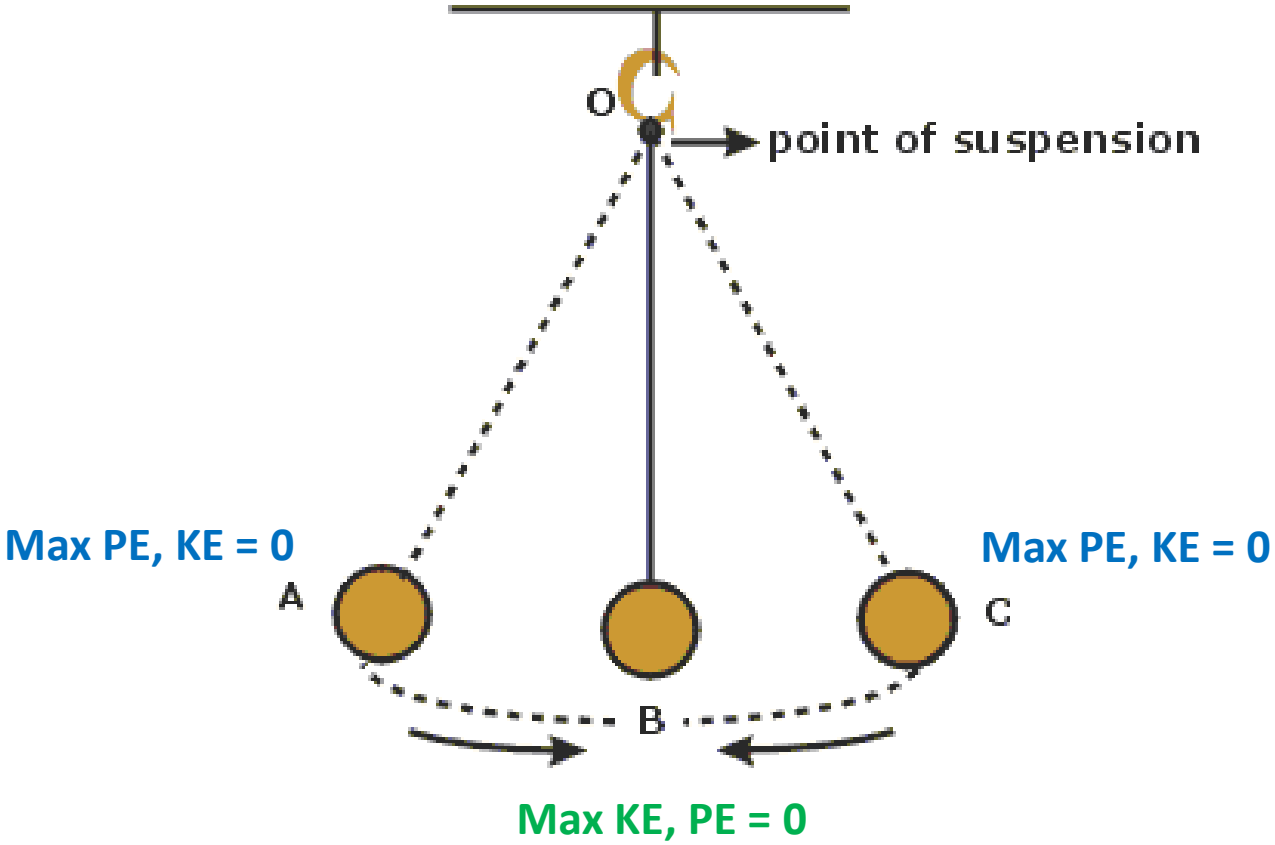
Law of Conservation of Energy

Energy cannot be destroyed or created, only change form.

Potential Energy and Kinetic Energy transfer back and forth with objects that move back and forth.

PE = KE




O
point of suspension
Max PE, KE = 0
A
B
C
Max PE, KE = 0
Max KE, PE = 0