



WORK, POWER, ENERGY

WORK

$$W = \vec{F} \cdot \vec{ds} = F \cos \theta$$

F = Force Applied

\vec{ds} = Displacement

θ = Angle Between Force and Displacement



$$W = \tau \theta$$

τ = Torque

θ = Angle of Rotation

POWER



$$P = \frac{dW}{dt} = \frac{\vec{F} \cdot \vec{ds}}{dt} = \vec{F} \cdot \vec{v}$$

KINETIC ENERGY



$$K.E._{Trans} = \frac{1}{2} mv^2$$



$$K.E._{Rot} = \frac{1}{2} I \omega^2$$

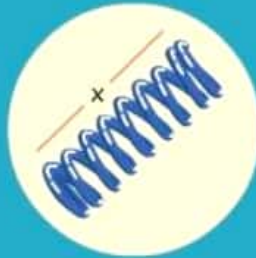


$$K.E._{Rolling} = mv^2 + \frac{1}{2} I \omega^2$$

POTENTIAL ENERGY



$$PE_{Pendulum} = mgl(1 - \cos \theta)$$



$$PE_{spring} = \frac{1}{2} Kx^2$$



$$PE_{grav} = mgh$$

