Potential Energy

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In the last segment we solved a numerical problem based on **kinetic energy.** In this segment, we are going to learn about potential energy and try to derive its formula.

What is Potential Energy?

It is the energy possessed by an object due to the virtue of its position. The S.I. unit of potential energy is **Joules**.

Derivation: Formula of Potential Energy

Consider an object of mass 'm', placed at a height 'h'. Then the force required to raise the object to height 'h' will be,
F = m x g

So, Work done against the gravity to raise the object upto certain height 'h' is given by
W = F x h
W = mgh

This work done on the object is stored in the object in the form of potential energy (PE).
W = PE = mgh

Let us now solve a numerical problem based on potential energy.

Numerical - Kinetic Energy

A bouncy ball of mass 30kg is at a height of 10m above the ground. The gravity is equal to $9.8 m/s^2$. What is the potential energy of the ball?

Mass,m =30kg
Displacement, s=10m
Acceleration due to gravity = $9.8 m/s^2$

Potential energy
PE = mgh

PE = 30 x 9.8 x 10
PE = 2940 Joules

Summary

Potential Energy	• The potential energy is the energy possessed by the body due to virtue of its position • **P.E. = mgh**

What's next?

In our next Class 9 Science segment, we shall learn about the **law of conservation of energy.**