PENANG SANGAM HIGH SCHOOL
YEAR 11 PHYSICS
WEEK 11

Strand	ENERGY
Sub Strand	Work Power And Energy.
Content Learning Outcome	At the end of the lesson students should be able to • show understanding of the concepts of gravitational potential energy and kinetic energy, using associated formulae in simple applications of these.

Lesson Notes

MECHANICAL ENERGY

Mechanical energy can either be kinetic energy or potential energy

KINETIC ENERGY - due to motion or the objects velocity

$E_K = ½ m v^2$ (mass in kg, velocity in m/s and kinetic energy in joules)

Eg A 6kg mass is moving at 8m/s. Find its kinetic energy.

$E_K = ½ m v^2$
$= ½ (6) (8)^2$
$= 192 J$

1. A ball of mass 0.4kg is kicked with a velocity of 12m/s. find its kinetic energy

2. The velocity of a 40kg cart changes from 5m/s to 9m/s. Find the gain in kinetic energy.

3. A 7kg mass has a kinetic energy of 300J. Find its velocity.

POTENTIAL ENERGY

This means the energy is stored and can be used to do work at a later stage.

The two types of potential energy we will study are

a. Potential energy due to an objects position in a planets gravitational field
b. Potential energy due to the shape of an object eg in stretched rubber band, bent stick, extended or compressed spring.

a. Potential energy due to an objects position in a planets gravitational field and this is given by

$E_P = m\ g\ h$ (mass in kg, g is the size of gravity in m/s^2 and h is the height in m)

On earth the size of gravity is $10m/s^2$

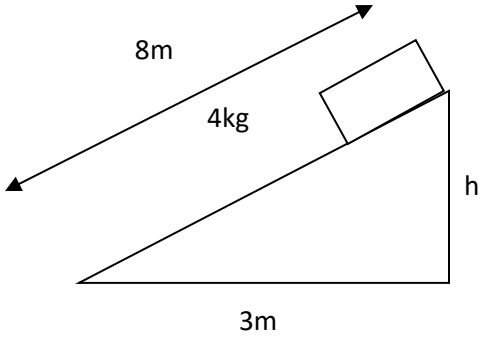
Eg A 7kg mass is placed at a height of 12m find the potential energy it has.

$E_P = m\ g\ h$

$= 7\ (10\ )\ (12)$

$= 840J$

1. A bird of mass 2.5kg is at a height of 20m above the ground. Find its potential energy.
2. A 9kg mass has a potential energy of 600J. find the height it is placed at.
3. A 4kg mass is placed as shown



Find its potential energy