ODM EDUCATIONAL GROUP
Changing your Tomorrow

ENERGY

CHAPTER NO.3

SUB: PHYSICS

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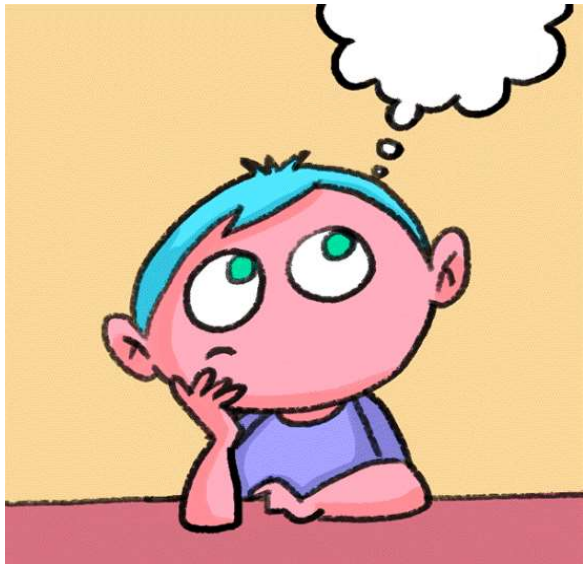
LEARNING OBJECTIVE

Students will be able

- ✓ Define energy
- ✓ Know SI Unit of energy



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Energy

Energy is ability to do work.

Energy possessed by an object is the amount of work it can do.

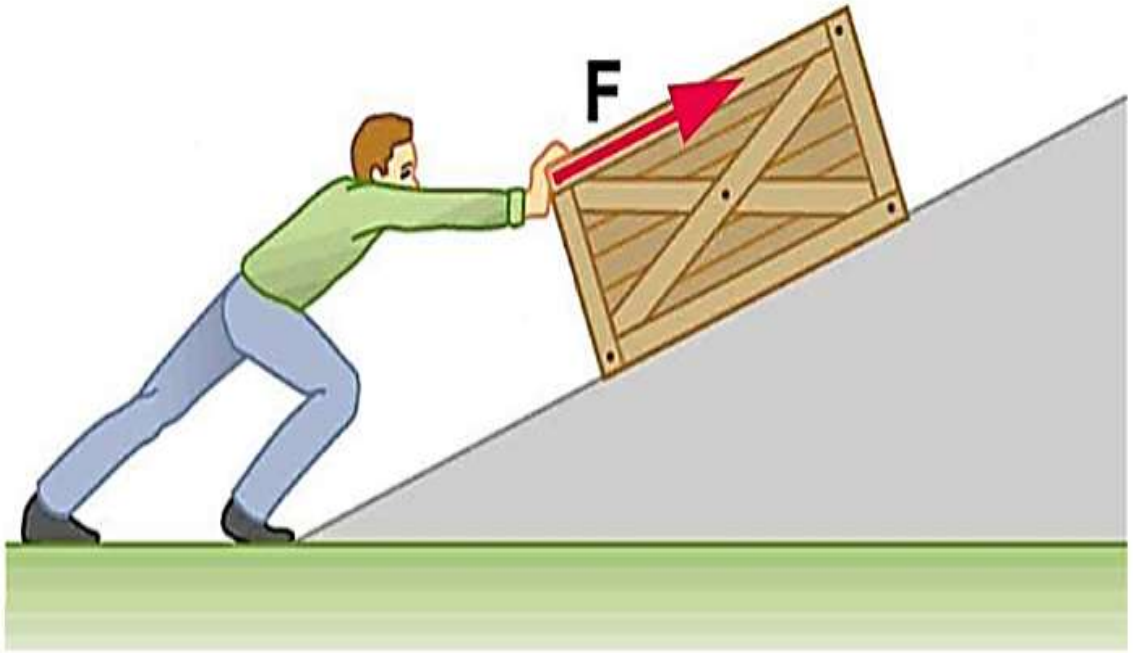
If an object can do more work, it has more energy and vice versa.

For example; a raised hammer can do work so it has energy and similarly a bomb can do work so it has also energy, a running bike can do work so it has energy, etc.

Work (W)

Work is defined as a force acting upon an object to cause a displacement

It is expressed as the product of force and displacement in the direction of force.



$$W = F \times s$$

Here, W= work done on an object

F = Force on the object

s = Displacement of the object

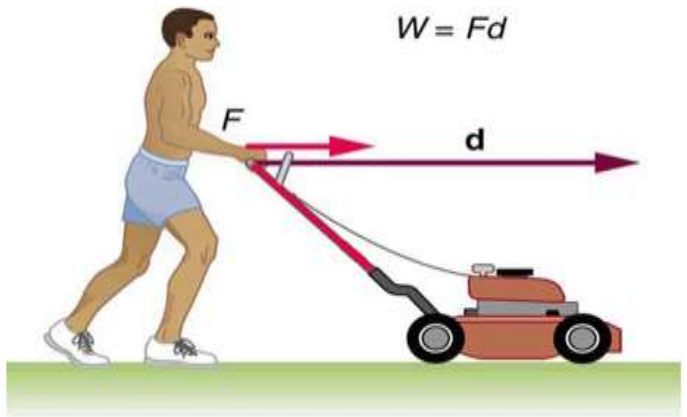
UNITS OF WORK

- The unit of Work is Newton metre (Nm) or joule (J).
  What is 1 Joule Work?
- A situation where 1 Newton force is applied on an object that can move the object by a distance of 1m in the direction of the applied force, then 1 joule of work is said to be done.

Sign Conventions for Work Done

when both the force and the displacement are in the same direction, positive work is done.

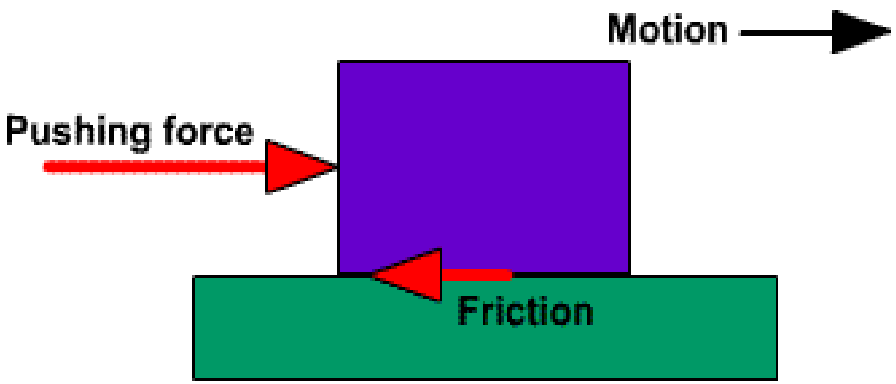
$W = F \times s$



when force acts in a direction opposite to the direction of displacement, the work done is negative.

$W = -F \times s$

Angle between force and displacement is 180^{o}.



Energy

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- Energy possessed by an object is the amount of work it can do.
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For example;

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SI Unit of Energy:

The SI unit of energy is joule and denoted by 'J'.

- Larger unit of energy is kilo joule and is denoted by kJ.
- 1kJ = 1000J
- Energy required to do 1J of work is 1J of energy.
- Another unit of energy is calorie where 1cal =4.2 J

HOME ASSIGNMENT

Q1.Define the term energy .

Q2.State the unit of energy and define it.

THANKING YOU
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