

SECOND TERM 2023-2024 (WEEK 3, LESSON 4)

JS 2

BASIC SCIENCE

TOPIC: WORK ENERGY AND POWER(I)

Measuring Work, Energy, and Power:

- **Work:** Work is measured in joules (J), which is the product of force (measured in newtons, N) and displacement (measured in meters, m) in the direction of the force:

$$\text{Work done} = \text{Force} \times \text{Displacement (Distance)}$$

- **Energy:** Energy is also measured in joules (J). There are various forms of energy, such as kinetic energy (energy of motion), potential energy (stored energy), thermal energy, etc.
- **Power:** Power is the rate at which work is done or the rate at which energy is transferred or converted. It is measured in watts (W), where 1 watt is equal to 1 joule per second.

Power can be calculated using the formula: ***Power = Work done / Time taken.***

Measuring Potential and Kinetic Energy:

- **Potential Energy:** Potential energy is the energy stored in an object due to its position or configuration. It is measured in joules (J). For example, gravitational potential energy is calculated using the formula:

$$\text{Potential Energy} = \text{Mass} \times \text{Gravity} \times \text{Height.}$$

- **Kinetic Energy:** Kinetic energy is the energy possessed by an object due to its motion. It is also measured in joules (J).

The formula to calculate kinetic energy is: ***Kinetic***

$$***Energy = \frac{1}{2} \times Mass \times Velocity^2***$$