

Lesson 3

Energy

Energy is the ability to perform work or to change an object. Work is the measurement of the energy used to perform a task. $\text{Work} = \text{force} \times \text{distance}$. The unit of measure for work and energy is joules (J).

Potential Energy:

Energy does not always involve motion. **Potential energy** is energy that is stored in the position or the structure of an object.

Types of potential energy: -**Chemical potential energy** is energy in the links between atoms and molecules. Examples: food, matches

- **Elastic potential energy** is the energy stored by something that can stretch or compress. Examples: stretched rubber band, slingshot, spring, bow
- **Gravitational potential energy** is the energy an object possesses due to its position above Earth's surface. Examples: boulder on a hill, pencil on the edge of your desk

Kinetic Energy:

Kinetic energy is the energy of a moving object. Examples: roller coaster moving along the track, ball rolling across the ground. Types of kinetic energy include electricity, light, sound, heat, and motion.

The amount of kinetic energy an object has depends on the object's velocity (speed/direction).

The faster an object moves, the greater the kinetic energy the object has.

Potential energy can easily change to kinetic energy. Like when you use a bow to shoot an arrow.

Law of conservation of energy:

Energy cannot be created or destroyed; it only changes from one form to another.