Quarter 4-Lesson 5: Conservation of Mechanical Energy

There are two basic forms of mechanical Energy: Potential energy which is defined as the energy associated with height or position (PE = mgh) and kinetic energy which is associated with motion (KE= $1/2mv^2$). Potential energy is type of energy that is waiting to be used or considered a stored energy.

There are 3 different types of Potential energy.

a. **Gravitational Potential Energy (GPE)** The energy possesses by an object due to its position or location. Thus, the higher the position of the object, the higher the GPE. An object is lifted possess GPE
b. **Elastic Potential Energy (EPE)** Anything that can act like a spring, or a rubber band can have elastic potential energy.
c. **Chemical Potential Energy (CPE)** A chemical bond can be thought of as an attractive force between atoms.

Mechanical energy conservation applies to GPE and EPE. The principle of the conservation of mechanical energy states that the total mechanical energy in a system (i.e., the sum of the potential plus kinetic energies) remains constant if the only forces acting are conservative forces. This means that potential energy can become kinetic energy, or vice versa, but energy cannot "disappear". It is only converted from one form to another form like potential energy converted to kinetic or vice versa.

Key Concepts

- Mechanical energy is the sum of the potential and kinetic energies in a system.
- The principle of the conservation of mechanical energy states that the total mechanical energy in a system (i.e., the sum of the potential plus kinetic energies) remains constant if the only forces acting are conservative forces. This means that potential energy can become kinetic energy, or vice versa, but energy cannot "disappear".
- Law of Conservation of Mechanical Energy: The total amount of mechanical energy, in a closed system in the absence of dissipative forces (e.g., friction, air resistance), remains constant.

SEATWORK. Write **TRUE** if the statement is correct and **FALSE** if otherwise.

_____1. The total mechanical energy of a given system is changeable.

_____2. Conservation of mechanical energy refers to the total sum of the potential energy and kinetic energy of a system that remains the same if the only forces acting are conservative forces.

_____3. In the law of conservation of energy, the decrease in potential energy is the same as the increase in kinetic energy.

_____4. A thrown baseball has kinetic energy.

_____5. Potential energy is energy of motion.

_____6. The faster an object moves, the smaller kinetic energy it has.

_____7. When you are holding a book, energy is stored between the book and Earth; this type of energy is called potential energy.

_____8. Mechanical energy is the total amount of potential energy and total amount of kinetic energy.

_____9. The wind blowing through your hair is an example of potential energy.

_____10. The "Law of Conservation of Mechanical Energy" states that the total mechanical energy in a system remains constant if the only forces acting are conservative forces.

Prepared by: Zaira J. Batac
Science Teacher

LIVEWORKSHEETS