

What is energy? The ability to do work or cause change

List and define the 2 basic types of energy.

1. Kinetic - energy in motion
2. Potential - stored energy determined by position or shape.

Define the 3 types of potential energy and give examples of each.

1. Elastic Potential Energy - energy that can be stretched or compressed.  
Ex: Rubber band
2. Gravitational Potential Energy - Depends on the object's height  
Ex: Ball at top of the hill
3. Chemical Potential Energy - Energy stored  
Ex: Food gives us energy

What is mechanical energy and how is it calculated?

Mechanical Energy - Kinetic and potential energy associated with motion or position

Mechanical Energy = Kinetic plus potential

What 2 things does the amount of kinetic energy depend on?

- ① Mass ② Velocity

What formula is used to calculate kinetic energy?

$$\frac{1}{2}mv^2$$

What 3 things does gravitational potential energy depend on?

- ① Height ② Mass ③ Gravity

What formula is used to calculate gravitational potential energy?

- Gravitational Potential Energy  
Mass  $\times$  Gravity  $\times$  Height

What is the unit for energy?

Joules

What is nuclear energy?

Potential energy stored in the nucleus of an atom.

What is nuclear fission?

The nucleus of an atom splits - produces electricity

What is nuclear fusion?

The nucleus of an atom fuses with another atom's nucleus → Happens in the sun

What is thermal energy?

The movement of an object's molecules produce heat.

How is temperature related to thermal energy?

The higher the temperature, the faster the molecules move. This increases temperature

What is electrical energy?

The energy of electric charges

Ex: Turning on a television

What is electromagnetic energy?

Energy that travels through space as waves.

Ex: Microwave, radio, visible light

What is chemical energy?

Energy that is stored in chemical bonds

What is the Law of Conservation of Energy?

Energy can not be created or destroyed. It only changes from one form to another.

What does it mean that energy can be "transformed"? Give 4 different examples.

Transformed means changed

Roller coaster → potential to kinetic

Jumping off a bed → potential to kinetic

Gasoline in a car → chemical to kinetic

Turning on a light → electric to electromagnetic