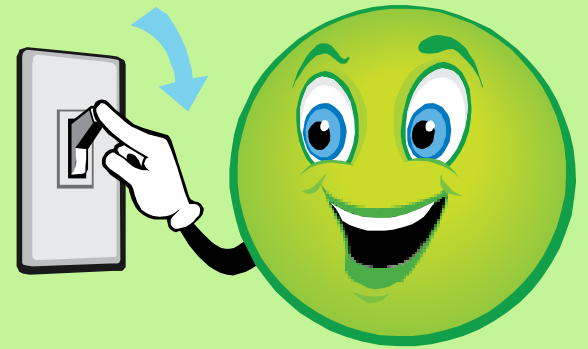
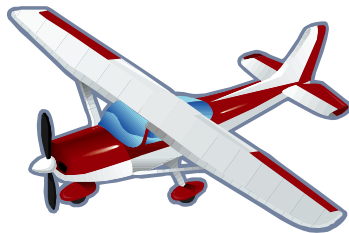


Energy



What is Energy?

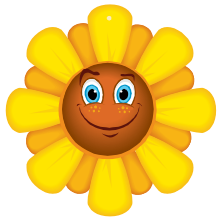


That which helps in doing work is *Energy*

Types of energy

There are two main types of energy

Potential energy



Kinetic energy



A decorative header with a green background. On the left, there are two light bulbs: one is unlit and the other is lit, glowing yellow. The title "Potential energy" is written in a bold, dark green font.

Potential energy

- The stored up energy which has the potential to do work is called ***potential energy***.



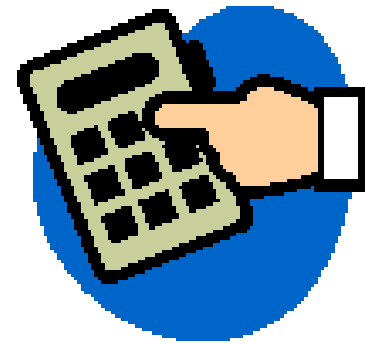


Potential Energy

- Energy due to position or *stored energy*.

Measure by:

$$PE = (\text{weight}) (\text{gravity}) (\text{Height})$$



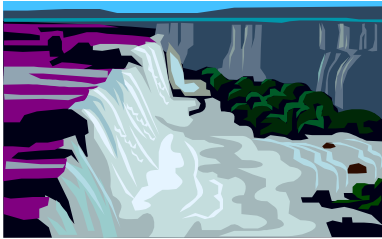
Potential energy is calculated by:

The object's weight, multiplied by the earth's gravitational pull (9.8 m/sec sq), multiplied by the distance the object can fall.

Examples of Potential Energy

Stretching a rubber band..

-Stores energy

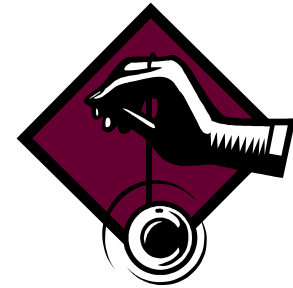


Water at the top of a waterfall..

-Stores energy

Yo–Yo in held in your hand..

-Stores energy because of position



Drawing a Bow...

-Stores energy because of position



Potential Energy

- When the position of an object is altered it, creates Potential Energy.
- A yo-yo on the table, doesn't have energy, but when picked up, it alters its position and now it has the ability (or potential) to do work.
- A bow doesn't have the capacity to do work, unless it's held at an elevated position.

A decorative header with a green background. On the left, there are two glowing light bulbs. The first is a standard incandescent bulb, and the second is a more modern, glowing bulb. The text 'Kinetic Energy' is written in a bold, green, sans-serif font.

Kinetic Energy

- Every moving object has energy. The energy that a body gets because of its motion is called ***kinetic energy***.



Definition of Kinetic Energy

The energy of motion.

Measured by:

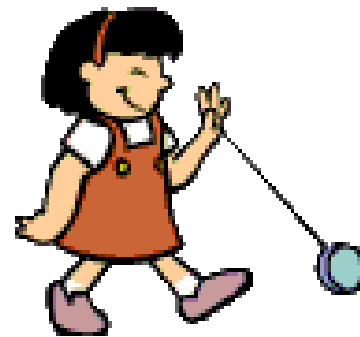
$$KE = \frac{1}{2} (\text{Mass}) (\text{Velocity})^2$$

Kinetic energy is calculated by one half of the object's mass, multiplied by the object's speed-squared.



Examples of Kinetic Energy

- Shooting a rubber band.
- Water falling over the fall.
- A Yo-Yo in motion.
- Releasing the arrow from the bow.



Conversion of Energy



Potential Energy gets converted to Kinetic Energy

Potential Energy Converted to Kinetic Energy

When stored energy begins to move, the object now transfers from potential energy into kinetic energy.



Standing still



Running

Common Examples



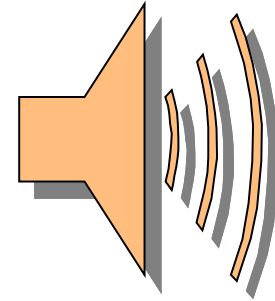
Forms of energy



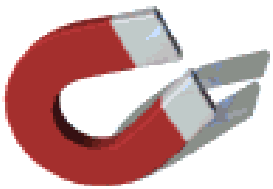
Heat



Light



Sound



Magnetic



Electricity



Chemical



Transformation of energy

- Energy can neither be ***created*** or ***destroyed***.
- It can be ***converted*** from one form into another.
 - Kinetic energy is converted into ***heat*** energy.
 - Potential energy is converted to kinetic energy
 - Chemical energy to Heat energy
- It can be ***stored***

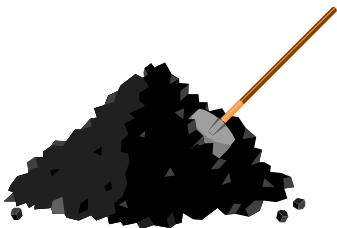
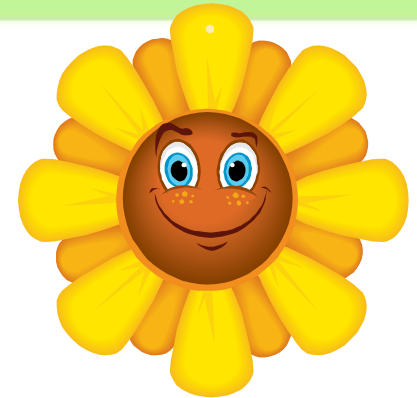
Sources of energy

- Biggest source of energy is our Sun
- Some other sources are

- Coal
- Wood
- Wind
- Water
- Food
- Electricity

Primary Sources of Energy

Secondary Sources of Energy





Sources of energy

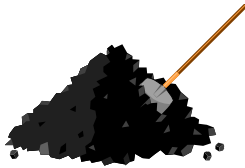
- Conventional sources
 - Coal
 - Oil
 - Gas
- These sources of energy are being used as fuel for very long time
- They are known as conventional sources of energy
- Non- conventional sources
 - Solar
 - Wind
 - Agricultural waste
 - Forestry waste
 - Biofuel
- These sources have not been traditionally used as Energy source
- However, these sources will always be available in nature and are renewable
- Hence it is best to use non-conventional sources
- Example Hydro-electric power project located at Koyna dam in Maharashtra

Uses of Energy Sources

Sun



Coal



Water



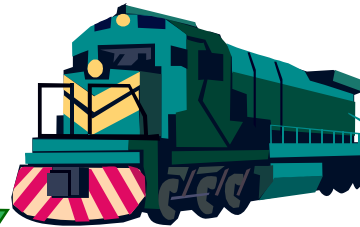
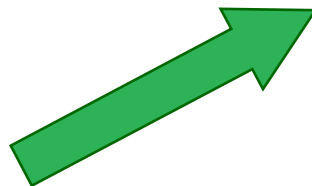
Oil



Gas



Electricity



Transportation



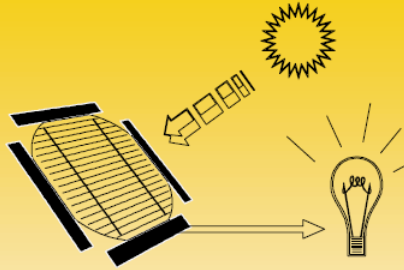
Cooking

The solar cell

- A solar cell is made using thin disc made of *pure silicon*
- Solar energy is converted into electricity in the solar cell

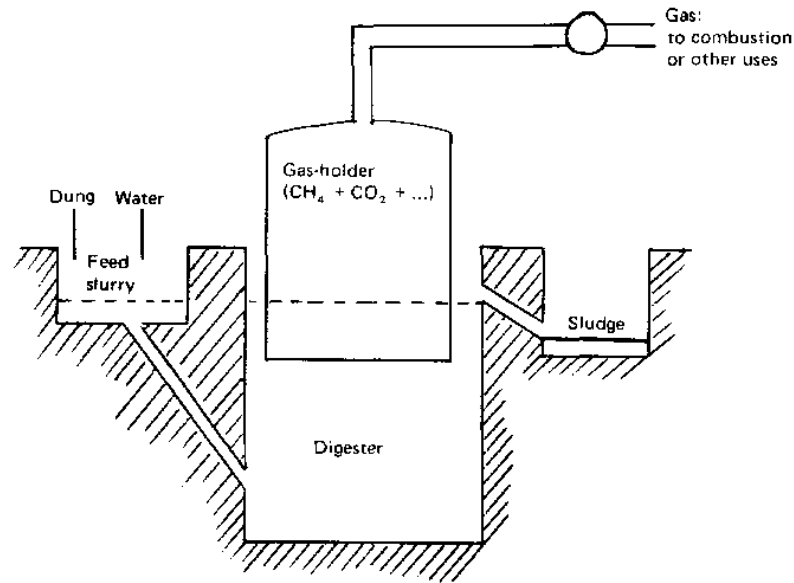
What Are Solar Cells?

- Thin wafers of silicon
 - Similar to computer chips
 - much bigger
 - much cheaper!
- Silicon is abundant (sand)
 - Non-toxic, safe
- Light carries energy into cell
- Cells convert sunlight energy into electric current- they do not store energy
- Sunlight is the “fuel”



Green energy

- Biogas
 - Cow dung , plant refuse etc. are used as energy sources in gobar (dung) gas or bio gas plants





Thank you