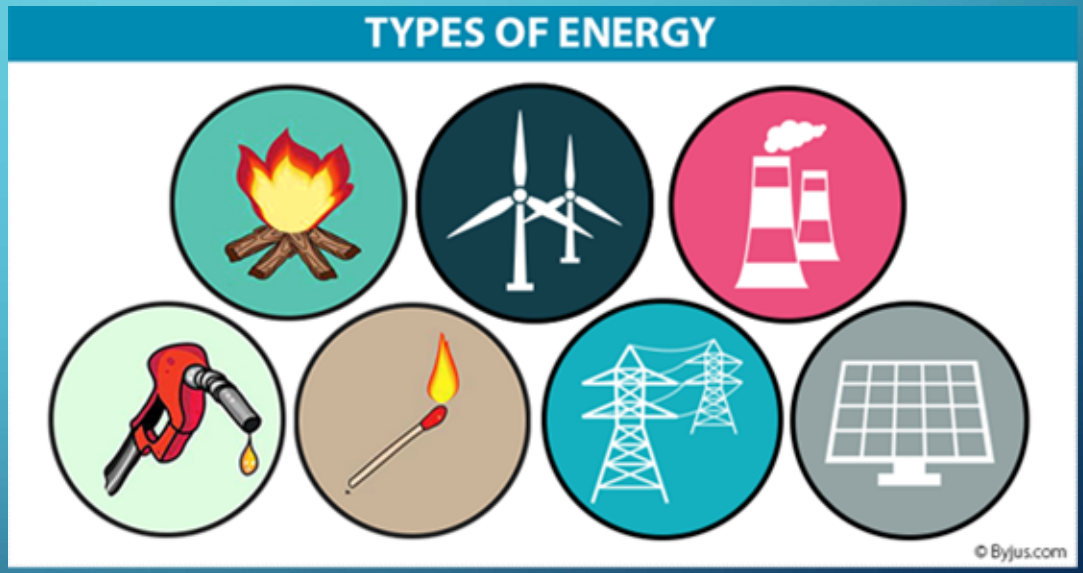
PHYSICS I

ENERGY

TYPES OF ENERGY



WHAT IS ENERGY?

https://www.youtube.com/watch?v=jCrOtF7T4HE&ab_channel=TheScienceAsylum

ENERGY

- Energy is all around us. It is defined as the ability to do work. If an object or organism does work (exerts a force over a distance to move an object), it uses energy.

- Example: a car uses energy to carry people

  : electric charges in a current uses energy to move along a wire.

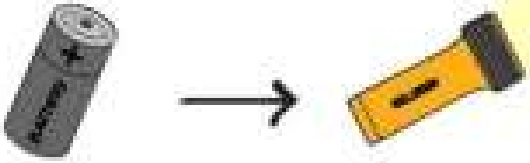
ENERGY

- Energy is neither created or destroyed. It can be transformed from one kind of energy to another kind of energy. This means that energy is conserved.

- We are able to transform many types of energy into forms of energy.

Energy Conversion

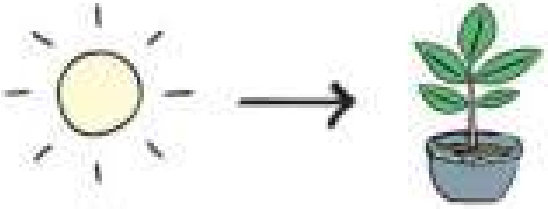
Chemical → Mechanical



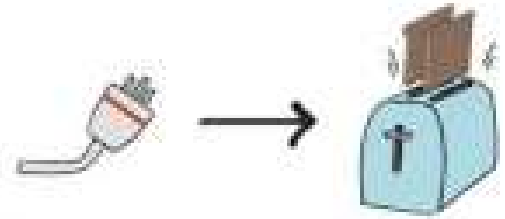
Chemical → Light

Electrical → Light

Chemical → Mechanical



Light → Chemical



Electrical → Heat

ENERGY IS…

https://www.youtube.com/watch?v=dmcevC55K3s&ab_channel=TED-Ed

FORMS OF ENERGY

- There are two main forms of energy: Kinetic Energy and Potential Energy.

What is Kinetic Energy?

- Kinetic energy is the energy of motion.

- We are able to categorize many types of energy as kinetic energy.

EXAMPLES OF KINETIC ENERGY

- Mechanical Kinetic Energy
  - Energy of an object that is in motion
- Radiant/Solar/Light Energy
  - Energy of electromagnetic waves from an energy source. This source of energy generally comes from the Sun.
- Thermal Energy (Heat)
  - Energy of random motion of particles in a substance; it is detected as heat
    - Example: geysers, volcanoes, hot springs

EXAMPLES OF KINETIC ENERGY

- Sound Energy
  - Energy of vibrations of particles

- Electrical Kinetic Energy
  - Energy of electrons moving along a wire

WHAT IS POTENTIAL ENERGY?

- Potential energy is the stored energy of an object as a result of its condition or its position.

- We are able to categorize many types of energy as potential energy.

TYPES OF POTENTIAL ENERGY

- **Elastic Potential Energy**
  - Energy stored in a stretched or compressed object
- **Chemical Potential Energy**
  - Energy stored in chemical bonds
  - This is the form of energy we acquire from food and store in our muscles.
    - Example: batteries store chemical energy; fossil fuels (coal, oil, natural gas) store chemical energy.
- **Gravitational Potential Energy**
  - Energy due to the position of an object

TYPES OF POTENTIAL ENERGY

- **Nuclear Energy**
  - Energy stored in the nucleus of an atom
  - When the nucleus of an atom splits or fuses (with another), nuclear energy is released.
  - This takes the form of Light (solar) and Heat.
  - This is the most concentrated form of energy
  - There are two main ways we can get nuclear energy:
    - Nuclear fusion: New atoms are made as smaller atoms collide and fuse together (occur on the Sun and in stars)
    - Nuclear fission: New atoms are made by splitting larger atoms (carried out in reactors on Earth).

TYPES OF POTENTIAL ENERGY

- Electrical Potential Energy
  - Energy is stored by a separation of positive and negative charges
- Magnetic Potential Energy
  - Energy stored in a magnetic field