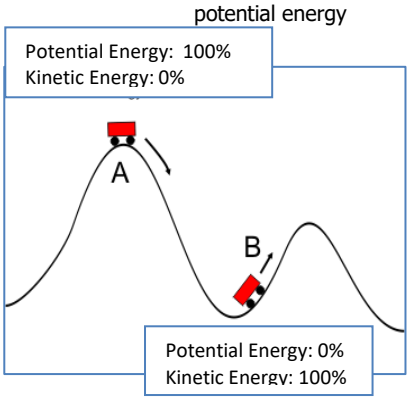
EVERYTHING YOU NEED TO KNOW ABOUT: **ENERGY**

Kinetic and Potential Energy

Energy: The ability to cause change, to make things happen

Kinetic Energy: the energy of motion
- The faster something moves the more kinetic energy it has

Potential Energy: stored energy
- The position of an object determines the potential energy
  - Higher position = more potential energy



Types of Energy

Nuclear Energy (potential energy)
- Examples: nuclear power plant

Chemical Energy (potential energy): energy stored in chemical bonds
- Examples: food, batteries

Mechanical Energy (kinetic energy): energy used to do work
- Examples: muscles working to life something

Electrical Energy (kinetic energy):
- Example: electricity

Thermal Energy (kinetic energy): heat energy
- Example: fire

Gravitational Energy (potential energy): the ability of an object to fall
- Example: dropping a ball

Radiant Energy (kinetic energy): the energy of light
- Example: lamp

Energy Transformations

Law of Conservation of Energy: Energy cannot be created or destroyed only transferred from one form to another
- An energy transformation is a change of one type of energy into another type of energy.
- For example: A battery changes chemical energy into electrical energy. A charger reverses this process.
- In photosynthesis, plants transform the energy from sunlight into the chemical energy of sugars.
- A lamp changes electrical energy into radiant energy

Non-Renewable Energy

Non-Renewable Energy: energy that is used quicker than it can be replaced.

Fossil Fuels: These are the 3 forms of non-renewable energy
1. Coal
2. Oil
3. Natural Gas

These nonrenewable resources supply 90% of our world's energy.

At the present rate of consumption, the amount of fossil fuels available may last only another 170 years!!!

We must find other sources of energy that provide a safer and renewable means of energy.

Fossil Fuels also release Carbon Dioxide when burned which is leading to Global Warming.

Renewable Energy

These sources must to **Sustainable:**
- Sustainable-it will not run out AND it has very little negative effects on the environment

Types of Renewable Energy

1. **Solar Energy**: This is the direct use of the sun's rays to supply heat or electricity
   - Problems: When it is night or it is cloudy outside, there might not be enough energy to heat a home.

2. **Wind Energy**: the direct use of wind to turn turbines to convert mechanical energy to electricity
   - Some say that in the next 50 to 60 years, wind power could meet between 5-10% of the country's demand for electricity!
   - Problems: And the cost of large tracts of land in populated areas are needed

3. **Hydroelectric Energy:** Running water drives turbines that produce electricity.
   - Water can be held in a reservoir behind a dam is a form of stored energy that can be released through the dam to produce electric power
   - Problems: Dams cannot last forever because sediments fill the reservoir and the dam cannot provide energy.

4. **Biomass Energy:** Uses wood, straw, manure and other natural materials with stored energy
   - Problems: wood releases CO_2 when burned

5. **Geothermal Energy:** This is harnessed by tapping natural underground reservoirs of steam and hot water
   - Hot water is used directly for heating and to turn turbines to generate electric power.
   - This usually occurs around volcanoes or areas of volcanic activity
   - Problems: This energy is not endless.