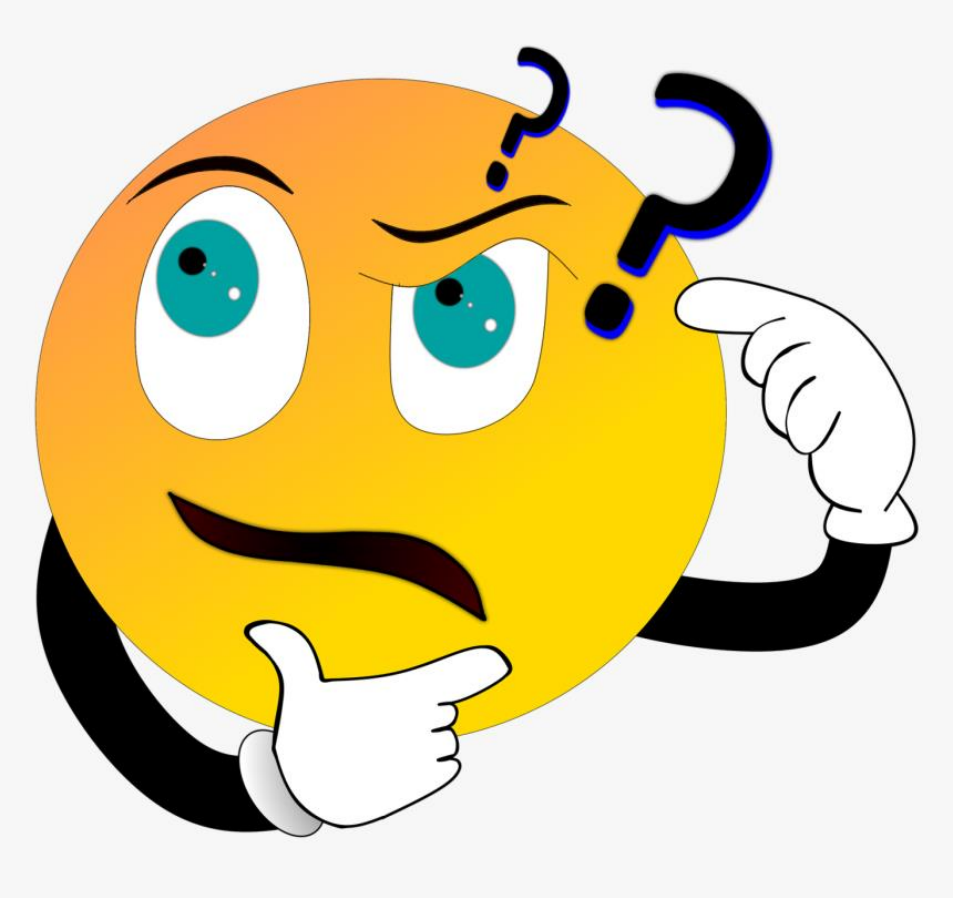
Energy

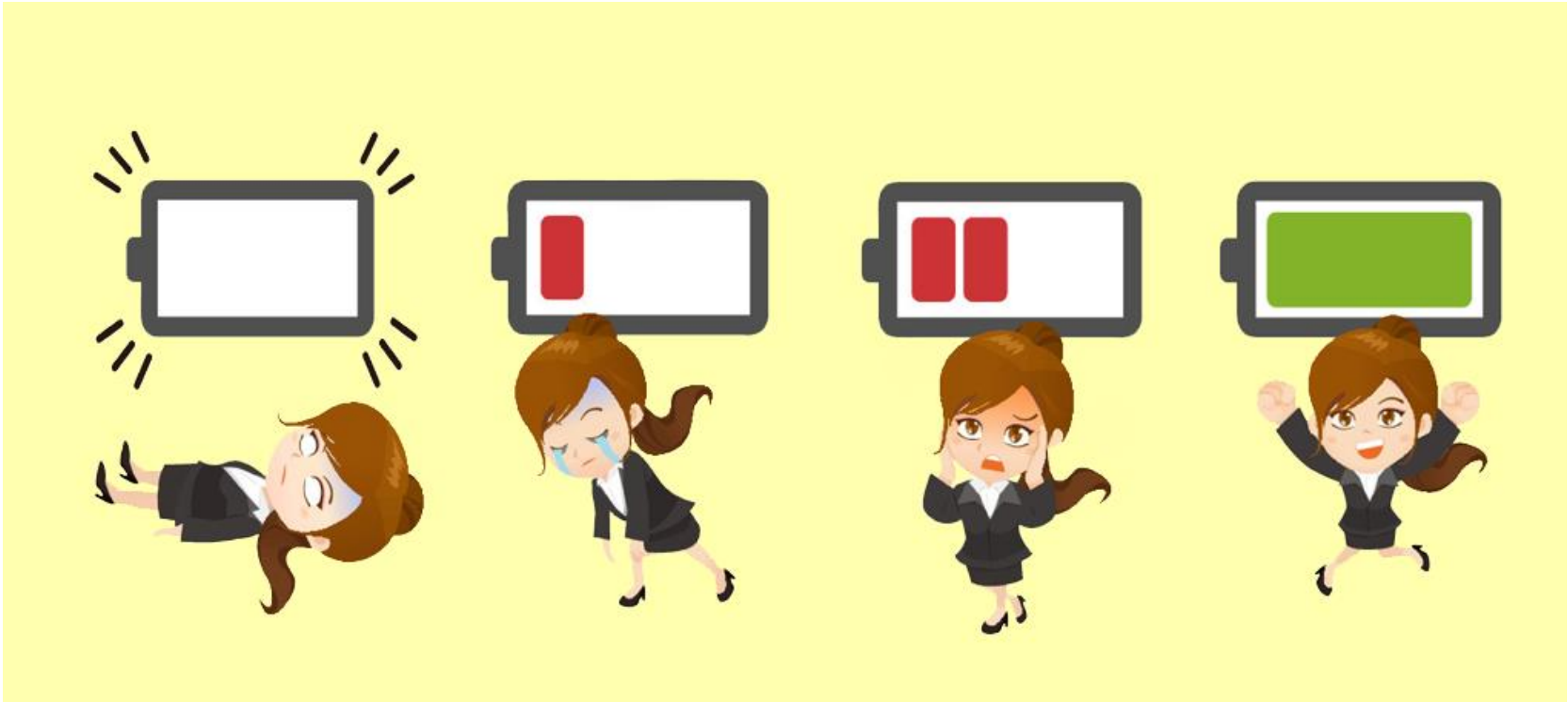
Warm-up

- What is Energy? Where do you see energy?



What is Energy?

- Energy is the ability to do work



Types of Energy

- In science, there are many types of energy:
  - Kinetic
  - Potential
  - Thermal
  - Electrical
  - Biological
  - Chemical
  - Radiant
  - Sound
  - Nuclear
  - Gravitational

This is not all of them and we'll focus on only a few of these

Kinetic Energy

- Kinetic Energy is the energy of an object which is moving

Potential Energy

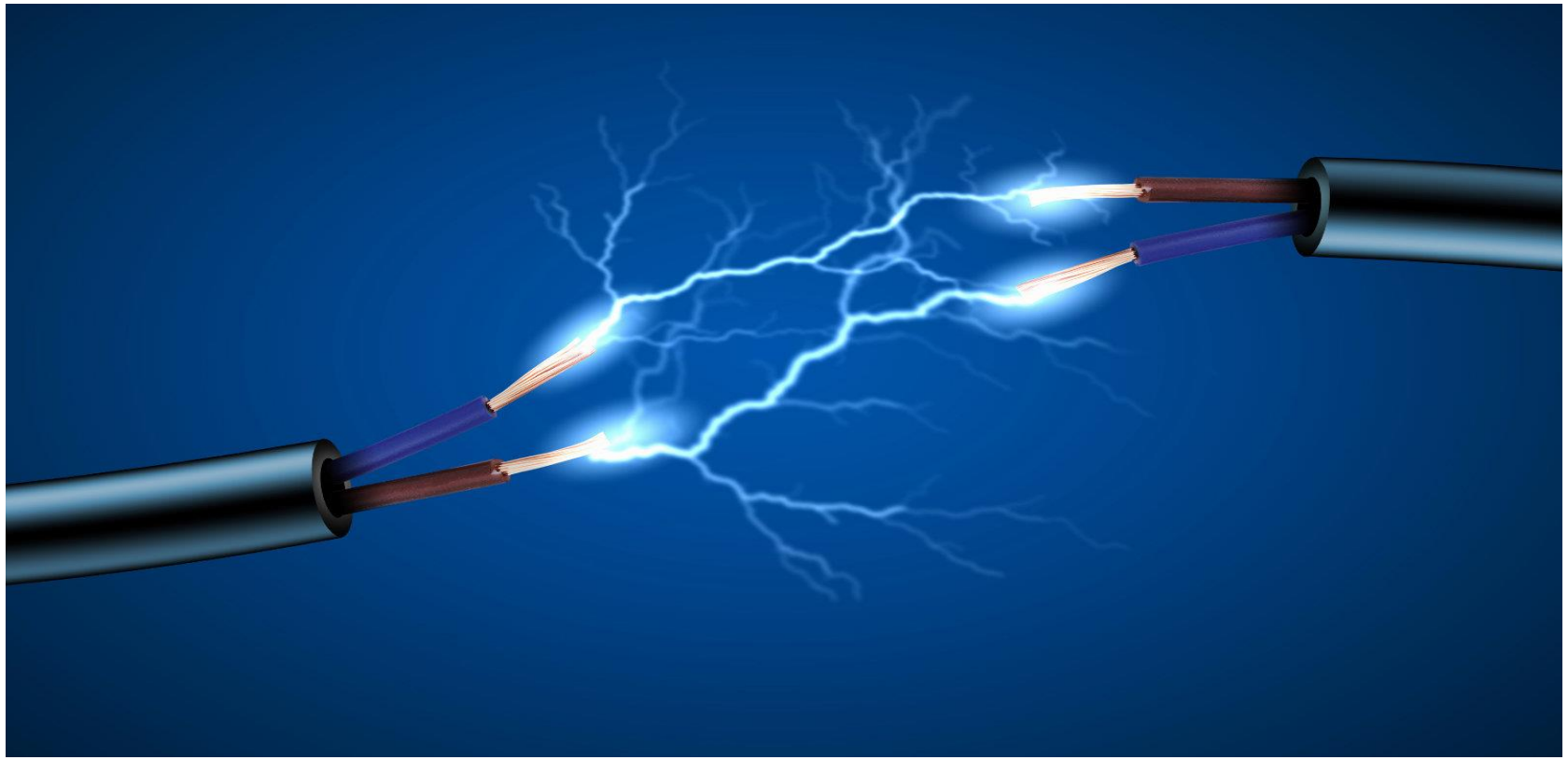
- Potential Energy is energy an object has due to gravity or stored physical energy like a spring.

Thermal Energy

- Thermal (heat) energy is energy caused by the movement of molecules in the system.

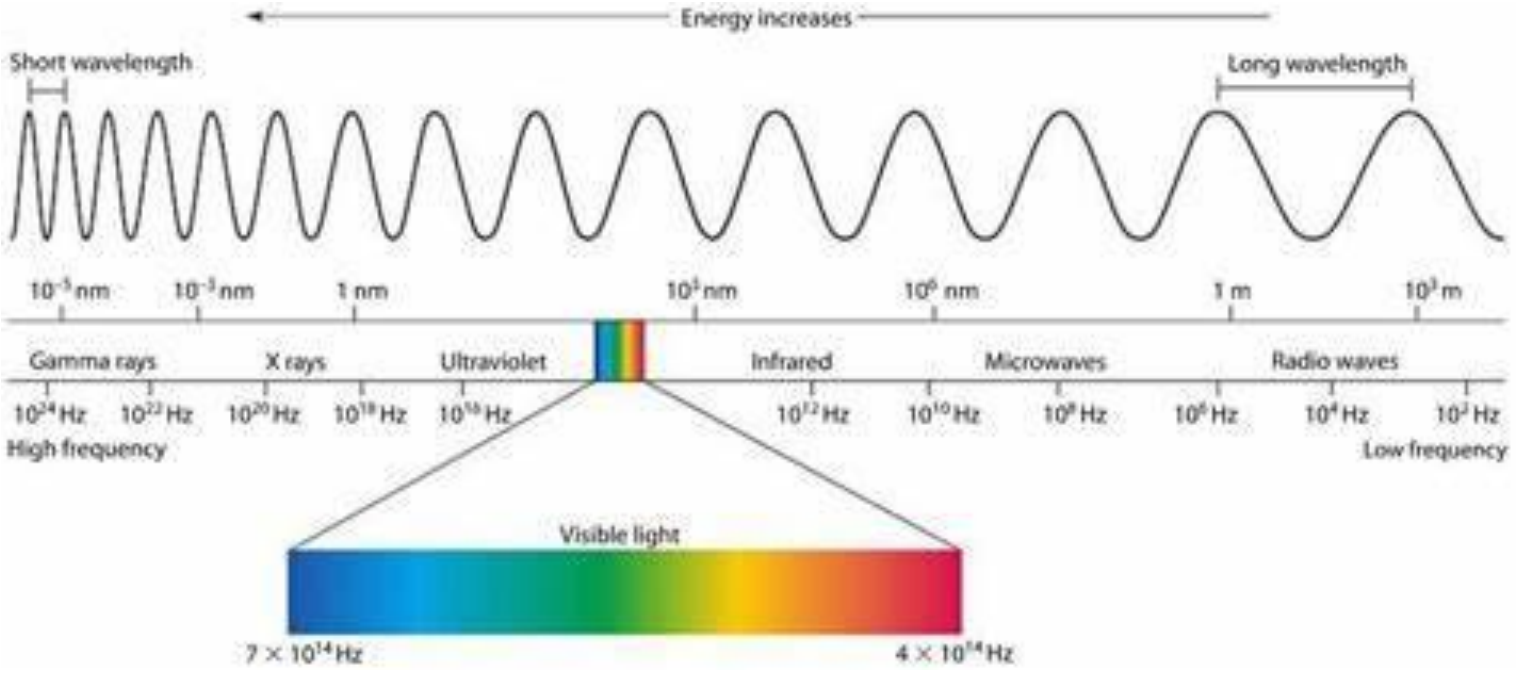
Electrical Energy

- Electrical Energy is created from a flow of electrical charge



Radiant Energy

- Radiant (Electromagnetic) Energy is energy transferred from electromagnetic radiation (Light, X-Rays, Microwaves, etc.)

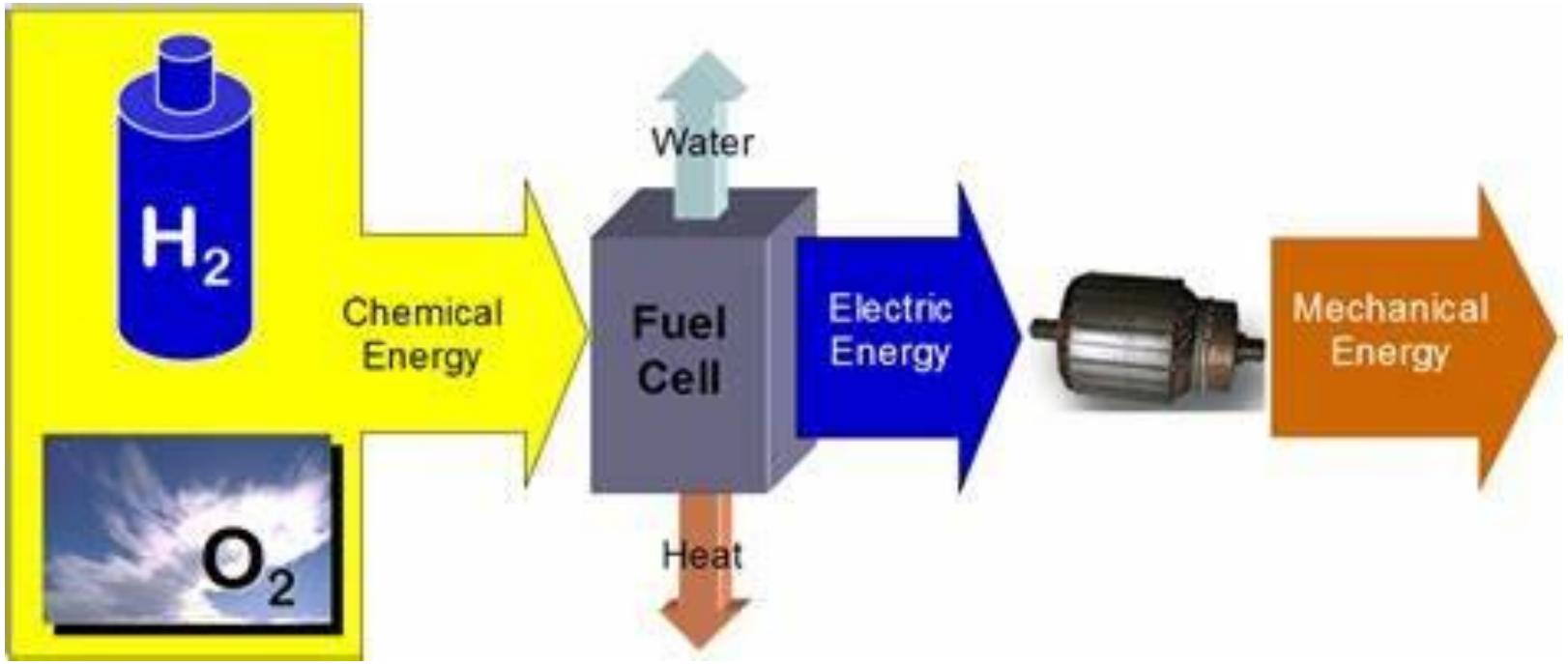


Chemical Energy

- Chemical Energy is potential energy stored in chemical bonds

Energy Conversion

- When a system changes one form of energy into another. Example of a Hydrogen fueled car engine



Discussion

- How many energy conversions can you think of that are happening throughout a roller coaster?

Discussion

- Station brakes open which allows the train to move turning potential energy (gravity) into kinetic energy
- Lift hill raises the train turning kinetic energy into potential energy (gravity)
- Train leaves hill turning potential energy (gravity) into kinetic energy (and the process repeats over and over throughout the length of track)
- The motor moving the lift hill chain converts electrical energy into kinetic energy
- The brakes stopping the train use friction which converts kinetic energy into thermal energy. As the brakes cool, that thermal energy converts to radiant energy
- There are many more and some types of rollercoaster use different ways of gaining energy