

## TYPES OF ENERGY

Gravitational Potential,  
Mechanical, Elastic  
Potential, Sound,  
Radiant, Magnetic,  
Electrical, Nuclear  
Potential  
Chemical Potential and  
Thermal

\*\*\*Electromagnetic



## Gravitational Potential Energy

oEnergy of position, a mass has ability to fall due to acceleration due to gravity. "Potential to Move" **ENERGY IS STORED**  $GPE = m \times h \times g$



## What is Mechanical Energy?

- o Energy due to a object's motion (kinetic) or position (potential).

The bowling ball has mechanical energy.

When the ball strikes the pins, mechanical energy is transferred to the pins!



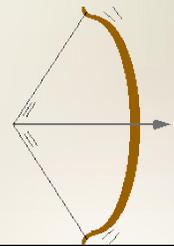
## Examples of Mechanical Energy



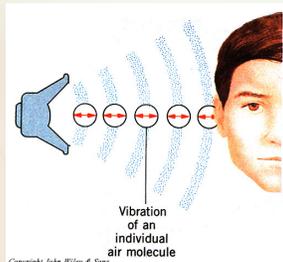
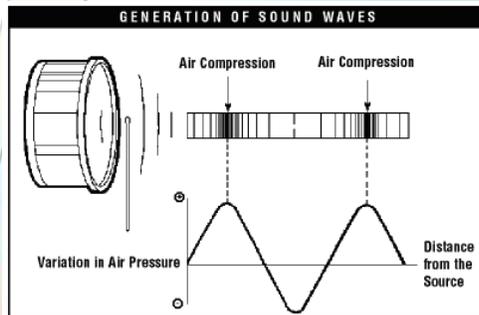
## Elastic Potential Energy



- Energy stored by compression or stretching or twisting (slinky, rubber band)



## Sound Energy



- vibrations that produce a compression (longitudinal) wave in a solid, liquid or gas. (tuning fork)



## Radiant Energy

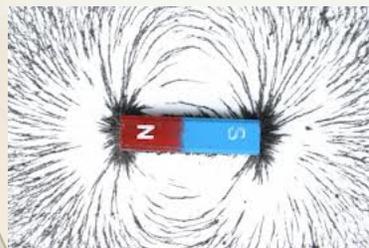
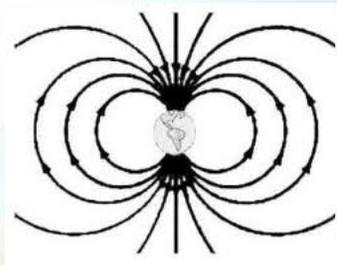


- Electromagnetic waves
- Stream of photons



A candle begins with chemical potential energy and transfers to radiant energy

## Magnetic Energy



- Charges moving through magnetic materials produce magnetic forces which can attract or repel another magnetic material

## What is Electrical Energy?

- o Energy caused by the movement of electrons
- o Easily transported through power lines and converted into other forms of energy



## What is Nuclear Potential Energy?

- o Energy stored in the nucleus of an atom which is released by fission OR fusion.
- o Man Made Machines - nuclear reactors



Fission and Fusion



## What is Chemical Energy?



o Energy that is available for release from chemical reactions.

The chemical bonds in a matchstick store energy that is transformed into thermal energy when the match is struck.

## Examples of Chemical Energy



## What is Thermal Energy?



EXCITED  
"HOT"  
ATOM

- o Heat energy

- o The heat energy of an object determines how active its atoms are.



LAI D BACK  
"COOL"  
ATOM

A hot object is one whose atoms and molecules are excited and show rapid movement.

A cooler object's molecules and atoms will show less movement.

## What is Electromagnetic Energy?



- o Light & Heat taking on other forms

- o Includes energy from gamma rays, xrays, ultraviolet rays, visible light, infrared rays, microwave and radio bands



## QUIZ TIME!

What type of energy cooks food in a microwave oven?



What type of energy is the spinning plate inside of a microwave oven?



## QUIZ TIME!

What type of energy cooks food in a microwave oven?

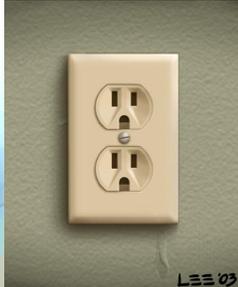
**ELECTROMAGNETIC ENERGY**



What type of energy is the spinning plate inside of a microwave oven? **MECHANICAL ENERGY**



## QUIZ TIME!

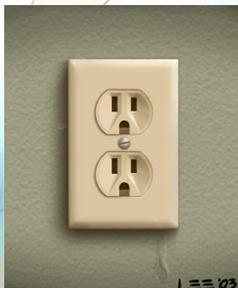


Electrical energy is transported to your house through power lines.



When you plug an electric fan to a power outlet, electrical energy is transform into what type of energy?

## QUIZ TIME!



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When you plug an electric fan to a power outlet, electrical energy is transform into what type of energy?

**MECHANICAL ENERGY**

**QUIZ TIME!**



What energy transformation occurs when an electric lamp is turned on?

**ELECTRICAL ENERGY**

↓



**QUIZ TIME!**



What energy transformation occurs when an electric lamp is turned on?

**ELECTRICAL ENERGY**

↓

**ELECTROMAGNETIC ENERGY**



**What types of energy are shown below?**



**What types of energy are shown below?**



**Mechanical and Thermal Energy  
(Don't forget friction)**

**What type of energy is shown below?**



**What type of energy is shown below?**



**Chemical Energy**

**What types of energy are shown below?**



**What types of energy are shown below?**



**Chemical to Electrical to  
Electromagnetic Energy AND Mechanical**

**What type of energy is shown below?**



**What type of energy is shown below?**



**Chemical Energy (yummy)**

**What type of energy is shown below?**

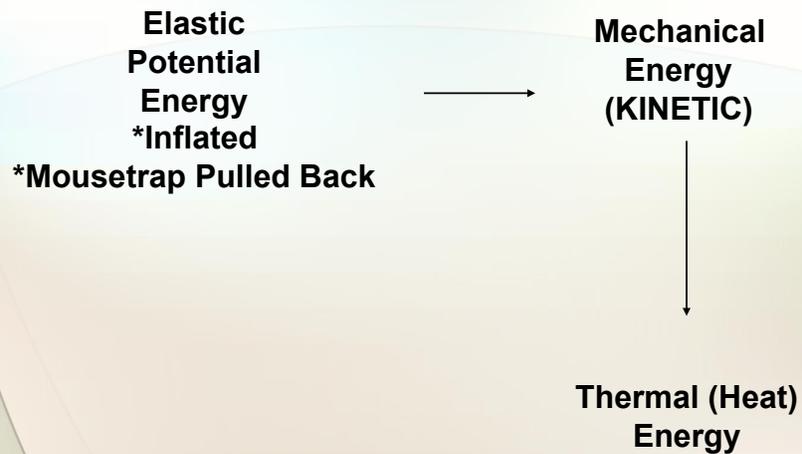


**What type of energy is shown below?**



**Thermal Energy**

## Energy of our Balloon and Mousetrap Cars



## ENERGY TRANSFER

- Draw a flow map showing the flow of energy transformations in a car from starting vehicle to driving. You should have 4 different types of energy.

