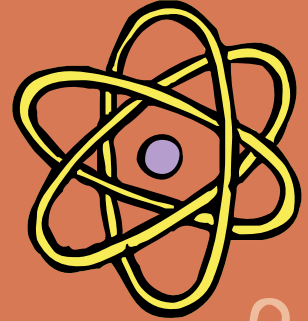




Energy is everywhere

# Energy and Life

*Teacher: Irina Voicu*



# In this lesson on Energy you

will explore different types of energy by learning key vocabulary



# Energy



Energy, in Physics, is the capacity of a object to do work.  
Energy can cause the motion of objects and other types of change.



# Units of Energy

**J (joule)**

The SI unit of energy is the **joule (J)** or newton-meter ( $N \cdot m$ ). The joule is also the SI unit of work.

**Cal (calorie)**

1cal= 4.184 J

**E**

(symbol of Energy)

**kWh (kilowatt-hour)**

1kWh energy equal to one kilowatt (kW) times one hour.  
1kWh= 3600 kilojoules

**BTU (The British thermal unit)**

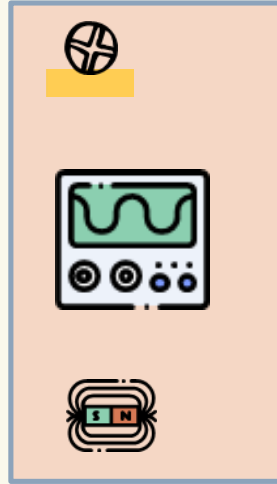
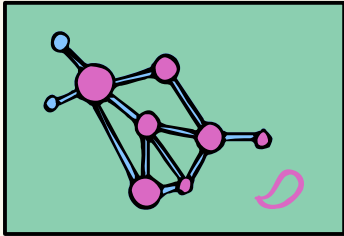
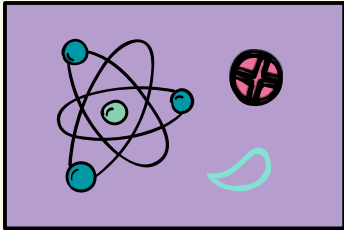
1 BTU equals about 1055 J

# Energy meter

Energy meter is a device that measures the amount of electrical energy consumed. The most common unit of measurement on the electricity measurement is the kilowatt hour [kWh]



# Conservation of energy



"Energy cannot be created or destroyed, it can only be changed from one form to another"

— Albert Einstein

# Primary Forms of Energy

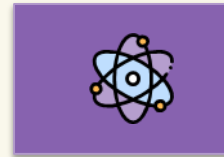
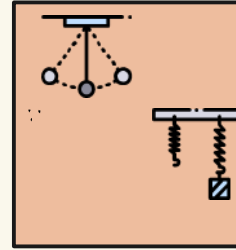
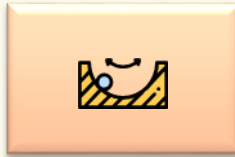


## Kinetic

Energy of mass in motion

$$E = mv^2/2$$

The faster an object moves, the more kinetic energy it has.



## Potential energy.

Energy stored within an object - due to the object's position, arrangement or state

# Types of Energy:

**electrical**



Electrical energy is the movement of electrons.

**mechanical**



Mechanical energy is the sum of kinetic and potential energy

**thermal**

Thermal energy is the energy that comes from the heated up substance

**nuclear**



Nuclear energy comes from splitting atoms

**gravitational**



It's the potential energy held by an object when it is in a high position compared to a lower position

**chemical**

Petroleum, natural gas, food contains chemical potential energy



# Types of Energy:

sound

Sound energy is energy we can hear, produced by vibrations



elastic

It's a form of potential energy stored as a result of a temporary deformation of an **elastic** object  
The energy is released when the object returns to its original shape.



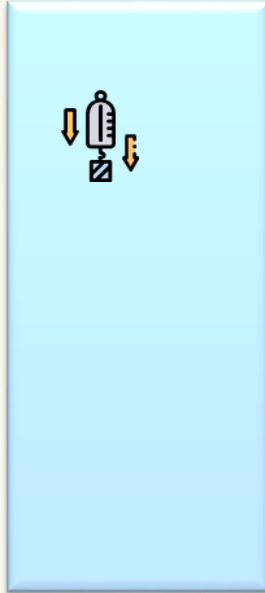
light

Light energy is a kind of kinetic energy that we can see.

Energy exists in different forms but that doesn't mean it's necessarily available to do work

The potential energy of an object is transformed in kinetic energy during its free fall :

gravitational energy



kinetic energy

This is the conservation law of energy

# Classification of Energy Sources

## 1. renewable

Sources of energy that are unlimited and are constantly being produced are considered to be renewable:









sun, wind, tides

## 2. non-renewable

Sources of energy production that are limited and will eventually run out are considered to be non-renewable:

gas, coal, petroleum

**Exercise:** Sort the pictures based on what type of energy they use or produce.  
You may be able to use a picture in more than one category

Thermal	 1. A moving ball	 2. Pocket calculator		 4. A falling apple	Light
Chemical					Nuclear
Electrical	 5.	 6.	 7. Sun	 8. TV	Sound

↑

