



# Physical Science Reference Guide

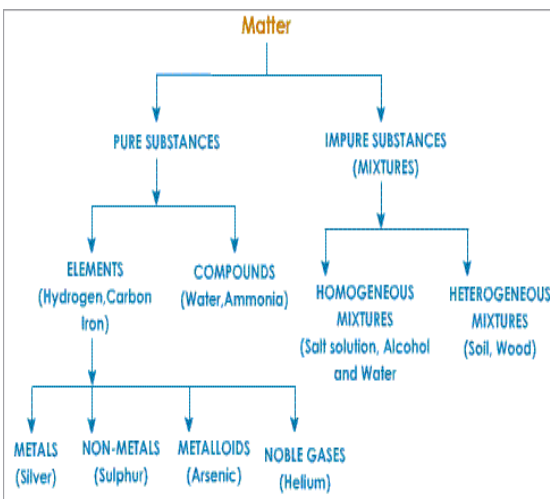
**Physical Change:** no new substance is produced; may involve a change of state; is usually reversible



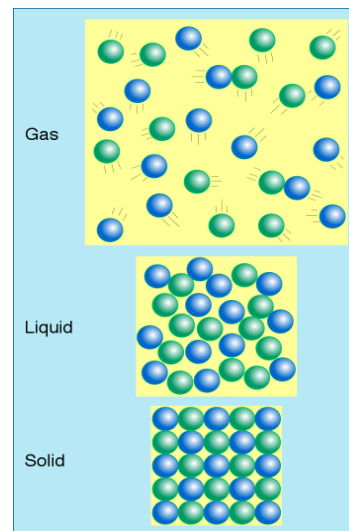
**Chemical Change:** one or more new substances are produced; usually involve heat or light being released, an odor, a color change, and/or a gas being formed; difficult to reverse



## Matter



## Phases of Matter



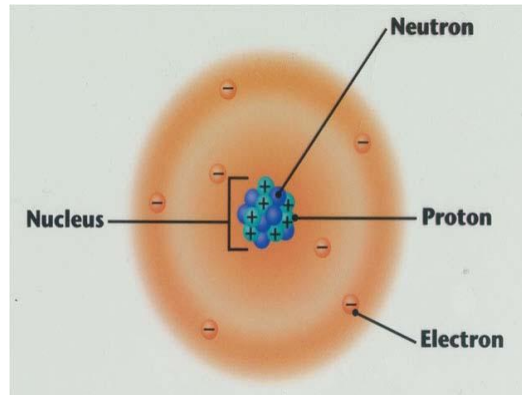
**In chemical changes, no matter how big the bang, mass is neither gained nor lost.**



**LAW OF CONSERVATION OF MATTER:** Matter cannot be made or destroyed by ordinary chemical means.

## Atomic Structure

Atoms are the smallest unit of an element



## Factors in an Experiment

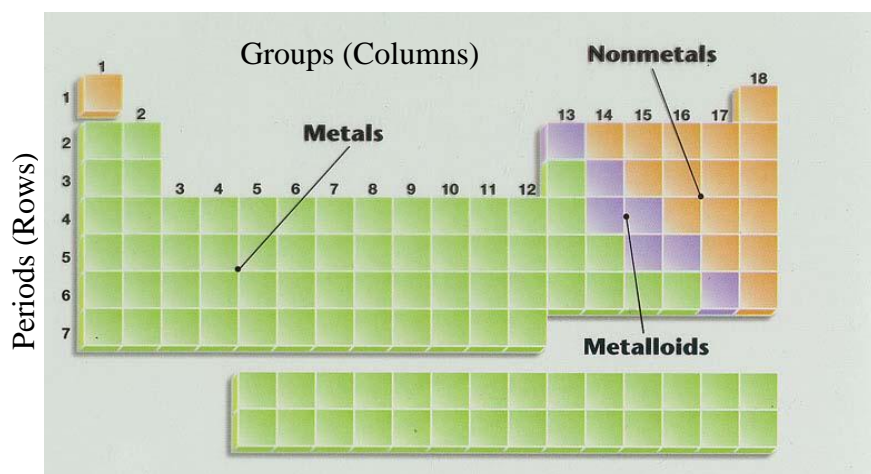
**Dependent Variable:** factor being measured (also called outcome variable), always indicated on the y axis when graphed

**Independent Variable:** factor being altered (also called the test variable), always indicated on the x axis when graphed

**Control:** standard used for comparison to the experimental data

**Constant:** factor(s) that do(es) not change so that a relationship between the independent and dependent variables can be established

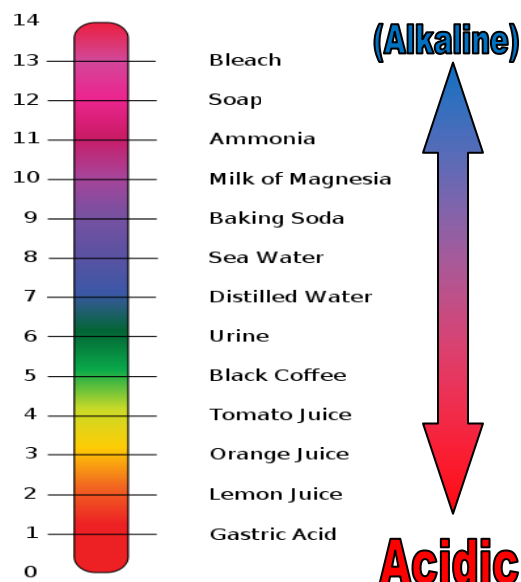
## Periodic Table



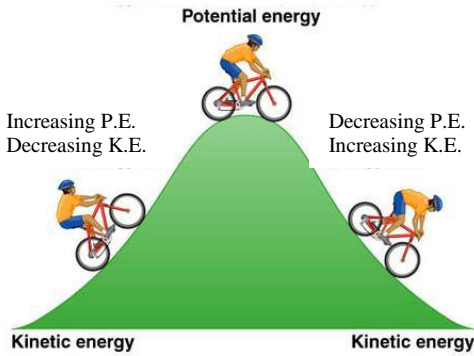
**Atomic Number = number of protons/electrons**

**Atomic Mass = number of protons + number of neutrons**

## pH Scale

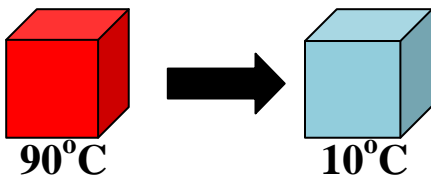


## Law of Conservation of Energy



## Heat Transfer

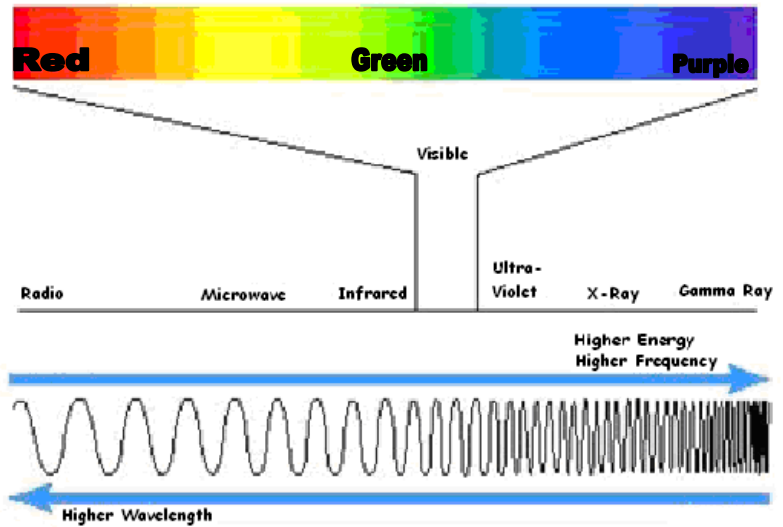
Always from Warmer to Cooler objects



## Light

- White light is made up of many colors
- Visible light is part of a broader electromagnetic spectrum

DIAGRAM OF THE ELECTROMAGNETIC SPECTRUM



## Unbalanced Forces Create or change motion



## Mass ≠ Weight

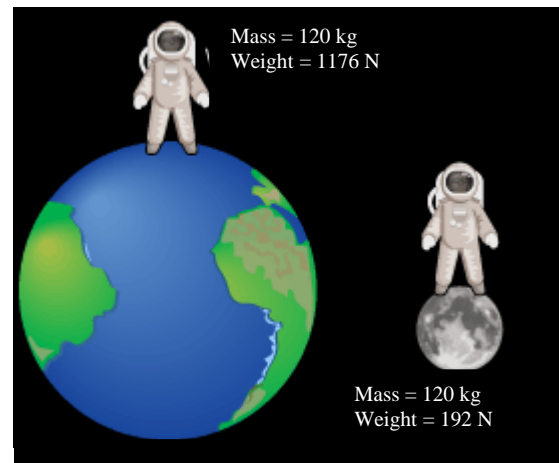


Mass = amount of matter in a substance  
measured in kilograms (kg)

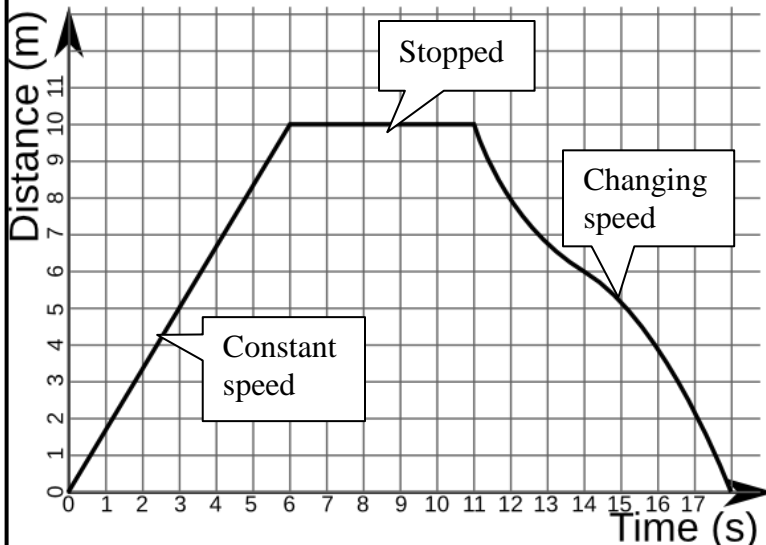
Weight = force on that matter by gravity  
measured in Newtons (N)

Gravity on Earth is 6 times greater than gravity on the Moon.

Weight changes when gravity changes. Mass does not change.



## Distance vs Time Graph



## Density

$$d = \frac{m}{v}$$

Density of  
Water = 1 g/mL

