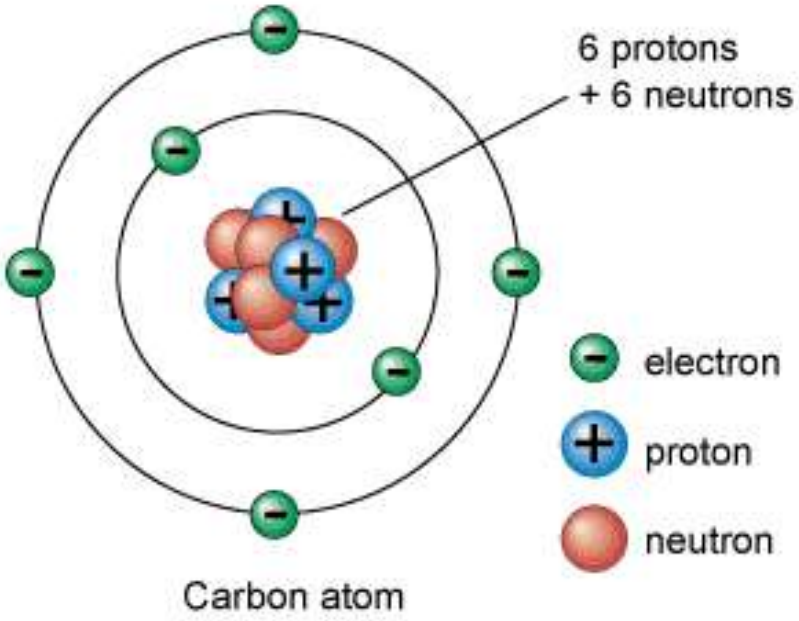
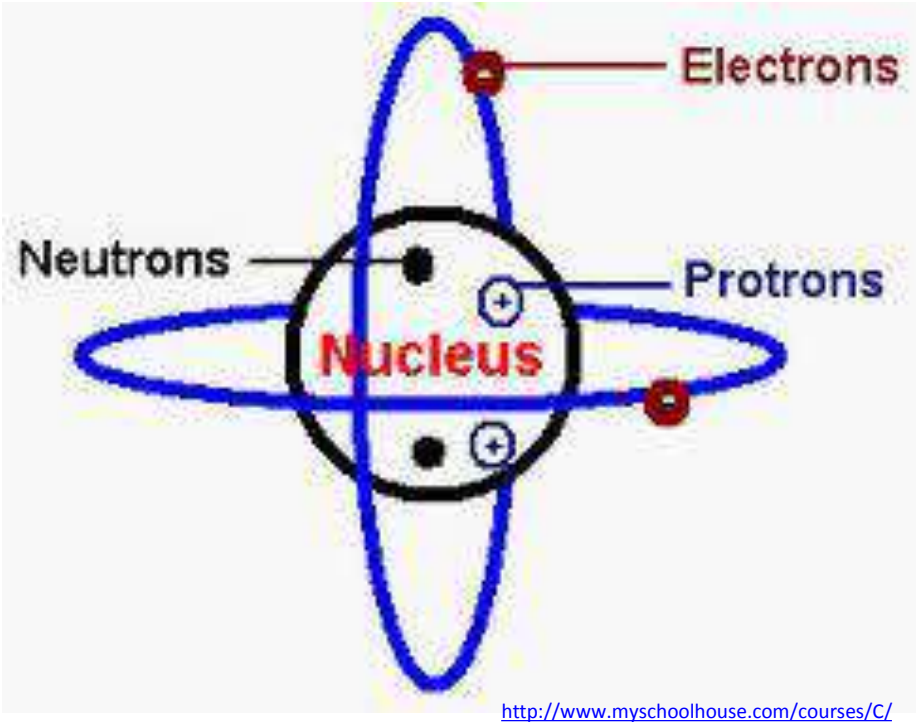
Introduction to Matter Unit Vocabulary

1. Atoms

The smallest unit of an element that maintains the properties of that element.



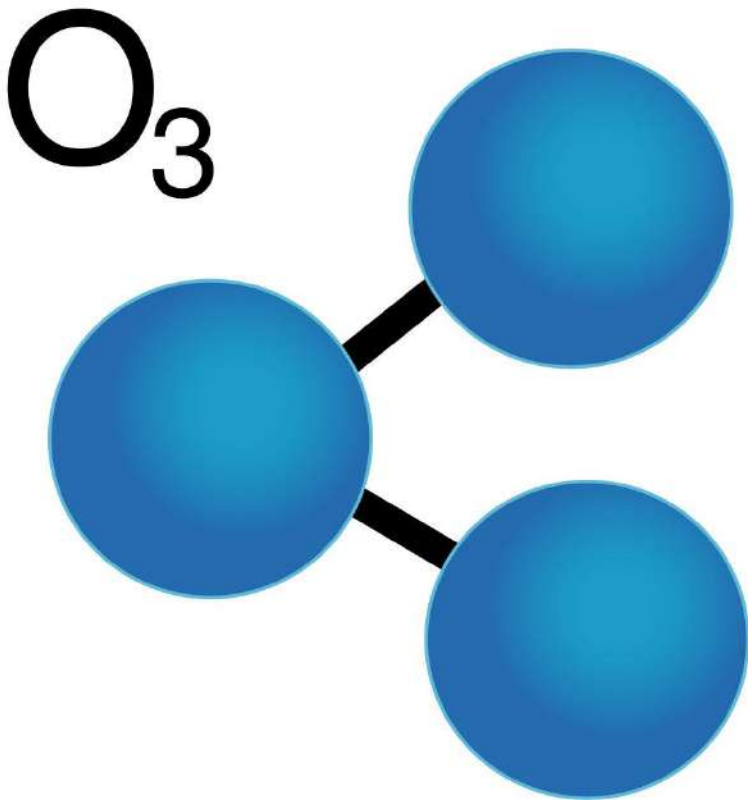
http://d1jqu7g1y74ds1.cloudfront.net/wp-content/uploads/2010/02/c-atom_e1.gif



http://www.myschoolhouse.com/courses/C/6/Images/10.atom.gif

2. Molecule

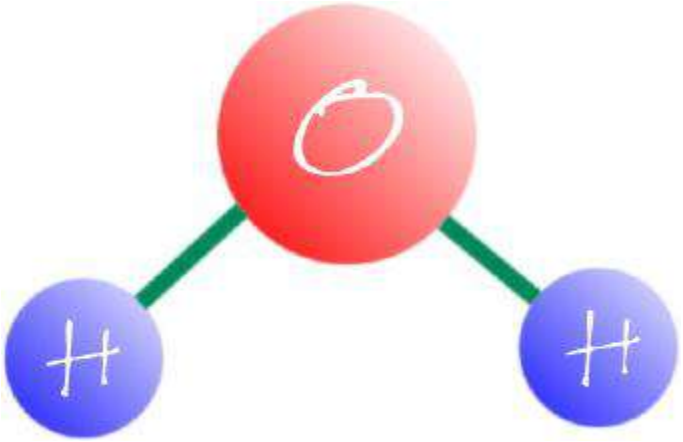
The smallest unit of a substance that keeps all of the physical and chemical properties of that substance.

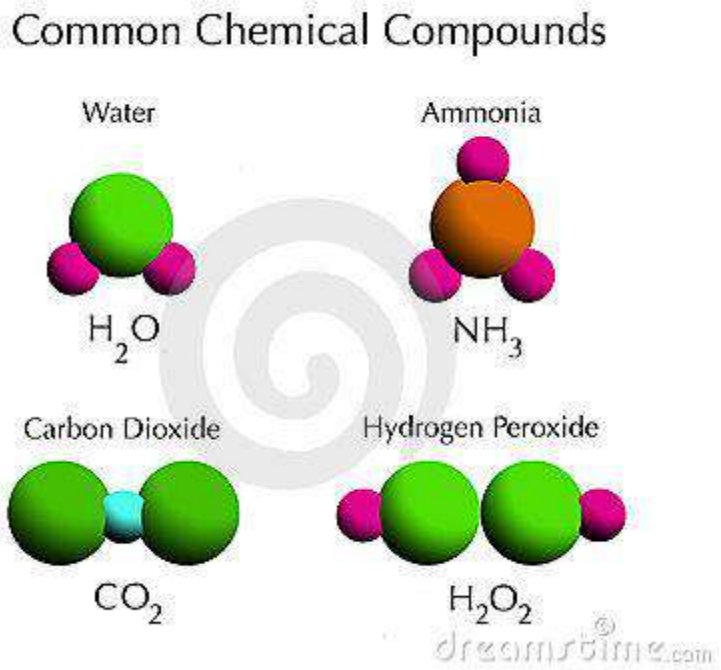


http://www.ozoneminnesota.com/wp-content/uploads/2012/12/ozone-molecule.jpg

3. Chemical compound

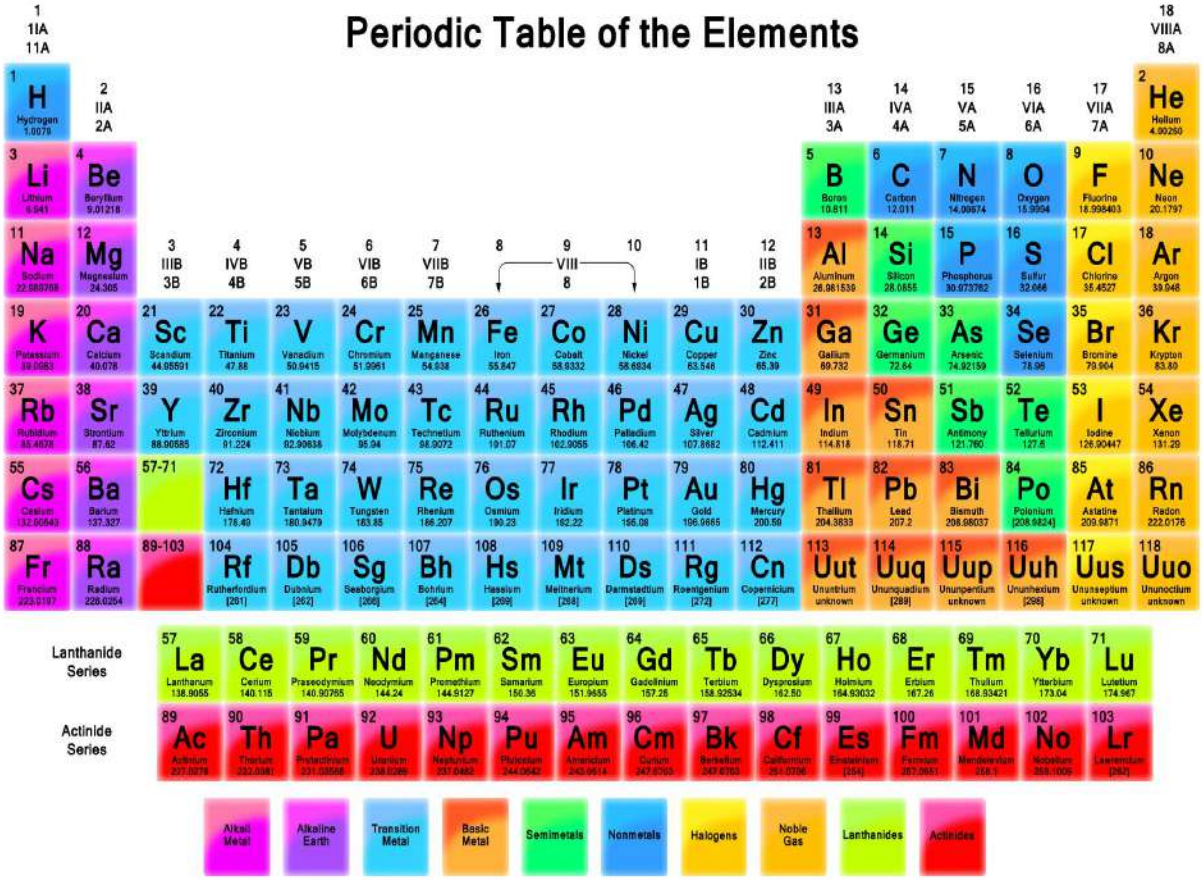
- A chemical substance consisting of two or more different chemically bonded chemical elements.





4. Element

- A substance that cannot be separated or broken down into simpler substances by chemical means.



5. Chemical energy

- Energy released by a chemical reaction or absorbed in the formation of a compound.

6. Chemical reaction

- The process by which one or more substances change to produce one or more different substances.

Types of Chemical Reactions

Karla Hageman

Synthesis Reactions

A + X = AX

two or more substances combine to form a new compound

Examples

4Fe + 3O2 --› 2Fe2O3
Iron and oxygen react and form iron(III) oxide
or when iron rusts

Salt
2Na(s) + Cl2(g) -› 2NaCl(s)
Sodium and Chlorine react to form sodium chloride

Decomposition Reactions

AX -› A + X

when a single compound undergoes a reaction that produces 2 or more simpler substances

Examples

Mercury(II)oxide is heated it yeilds oxygen and metallic
mercury2HgO (s) + heat → 2Hg (l) + O2 (g)

the chemical reaction in fireworks
reaction of perchlorates
KClO4 -› KCl + 2O2

Double-Displacement Reactions

AX + BY = AY + BX

when the ions of two compounds exchange places in an aqueous soluton to form new compounds

Examples

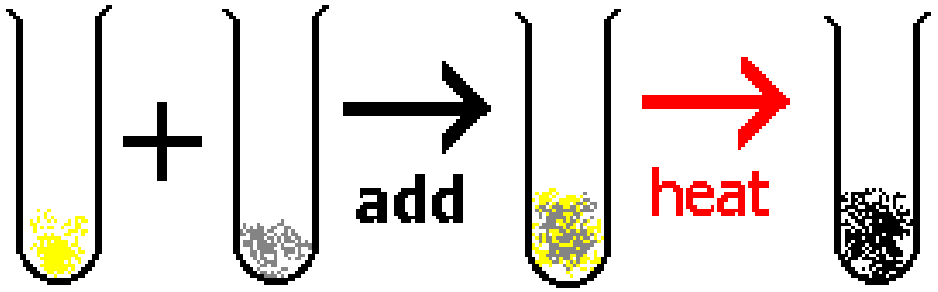
Aqueous Lead(II) nitrate and aqueous potassium iodide yeilds the precipitate lead(II) iodide
Pb(NO3)2(aq) + 2KI (aq) -› PbI2 + 2KNO3

Silver nitrate combines with sodium chloride to yield silver chloride and sodium nitrate
AgNO3 + NaCl —› AgCl + NaNO3

The neutralization of stomach acid
HCl + NaHCO3 → NaCl + H2CO3

7. Law of Conservation of Matter

- Law that states that matter cannot be created or destroyed in an isolated system.

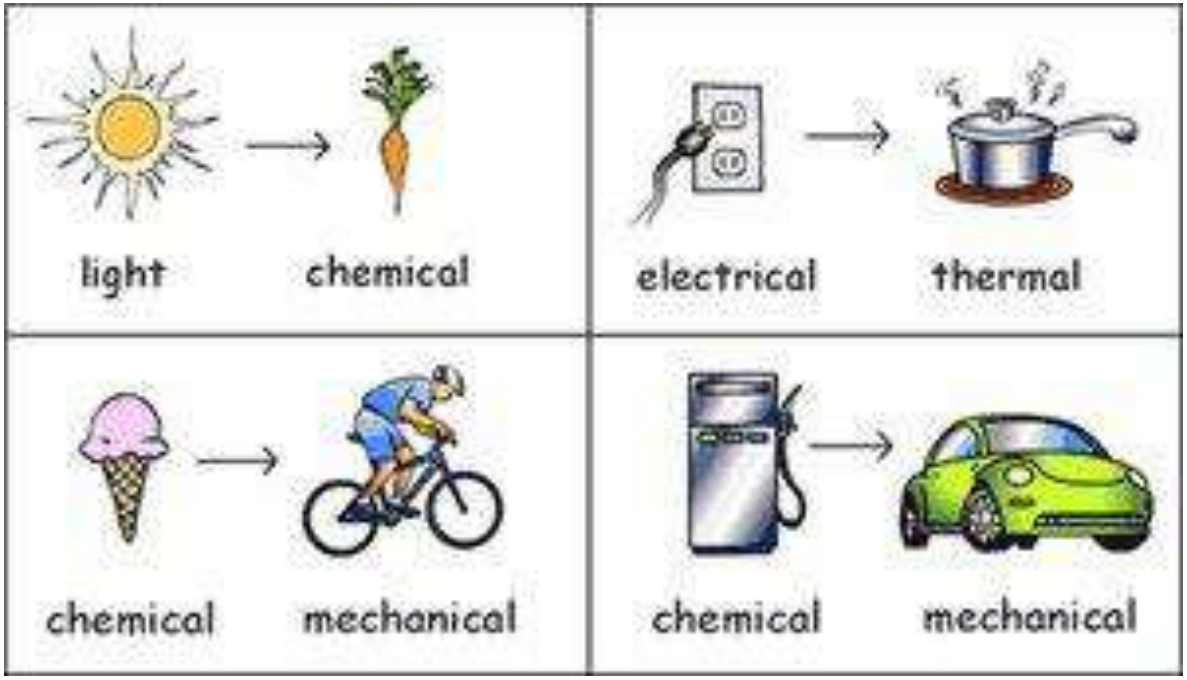


S + Fe ==> FeS

32g + 56g reactants ===> 88g products

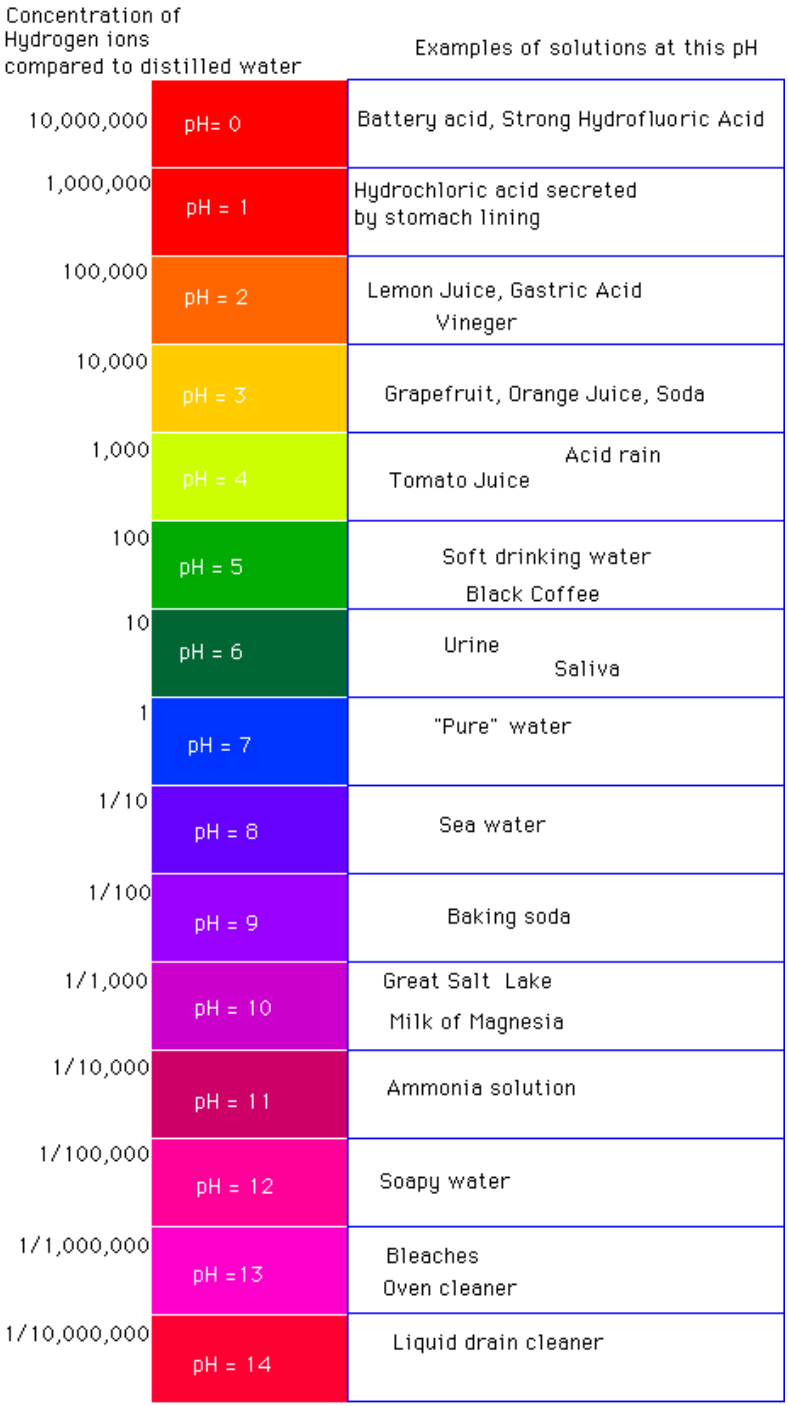
8. Law of Conservation of Energy

- Law that states that energy cannot be created or destroyed but can be changed from one form to another.



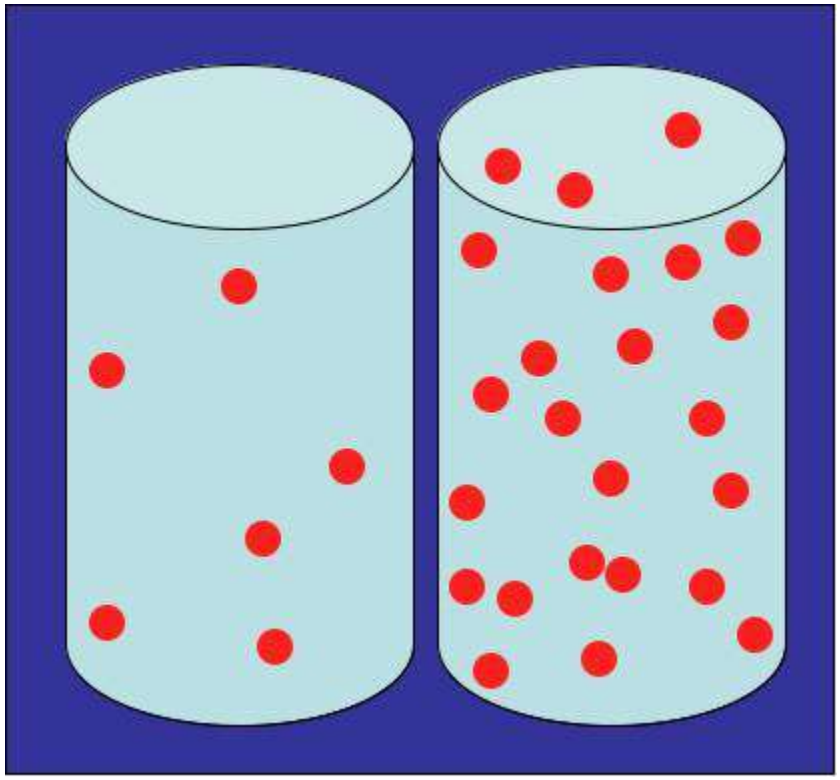
9. pH

- A value that is used to express the acidity or basicity (alkalinity) of a system.



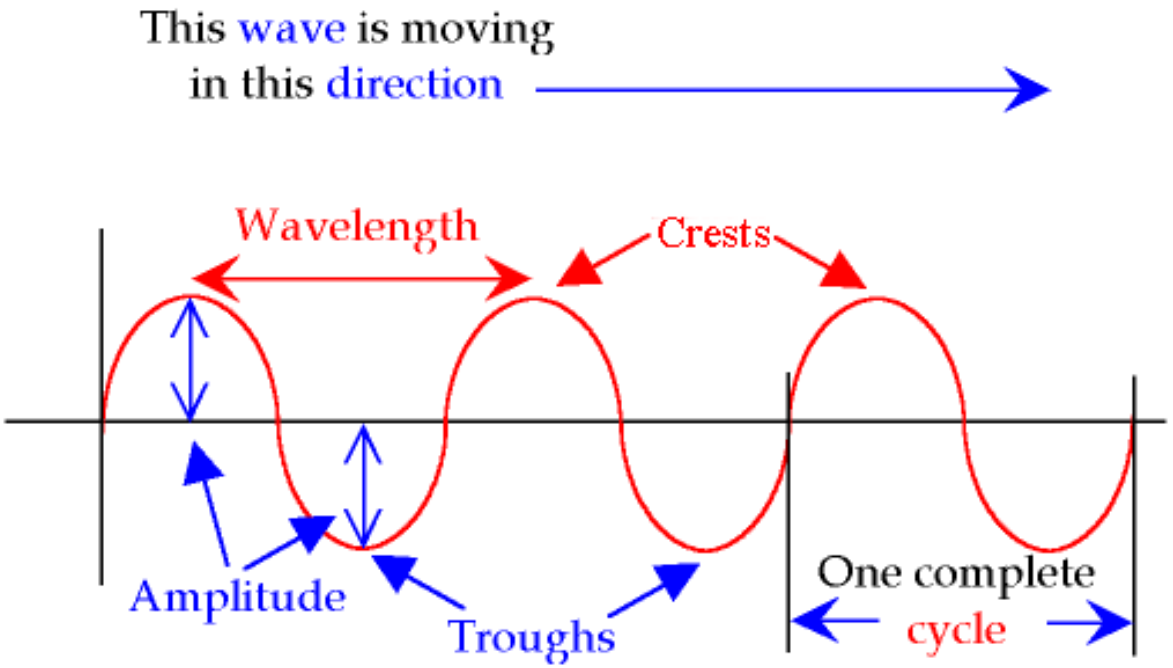
10. Density

- The ratio of the mass of a substance to the volume of the substance.



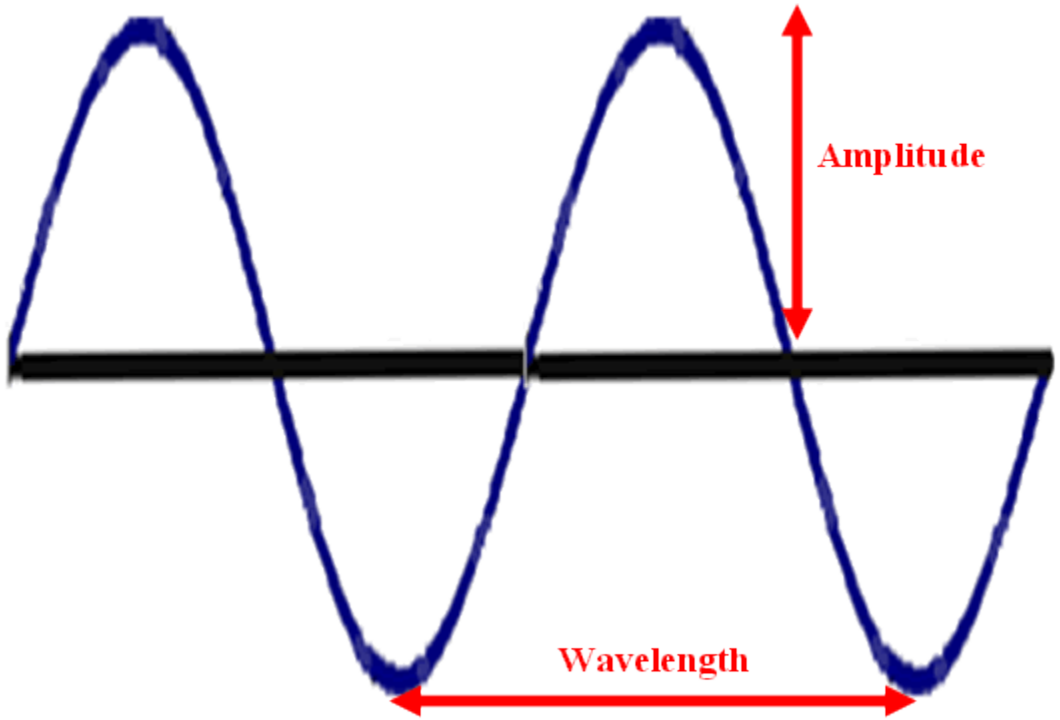
11. Wave

- A periodic disturbance in a solid, liquid, or gas as energy is transmitted through a medium



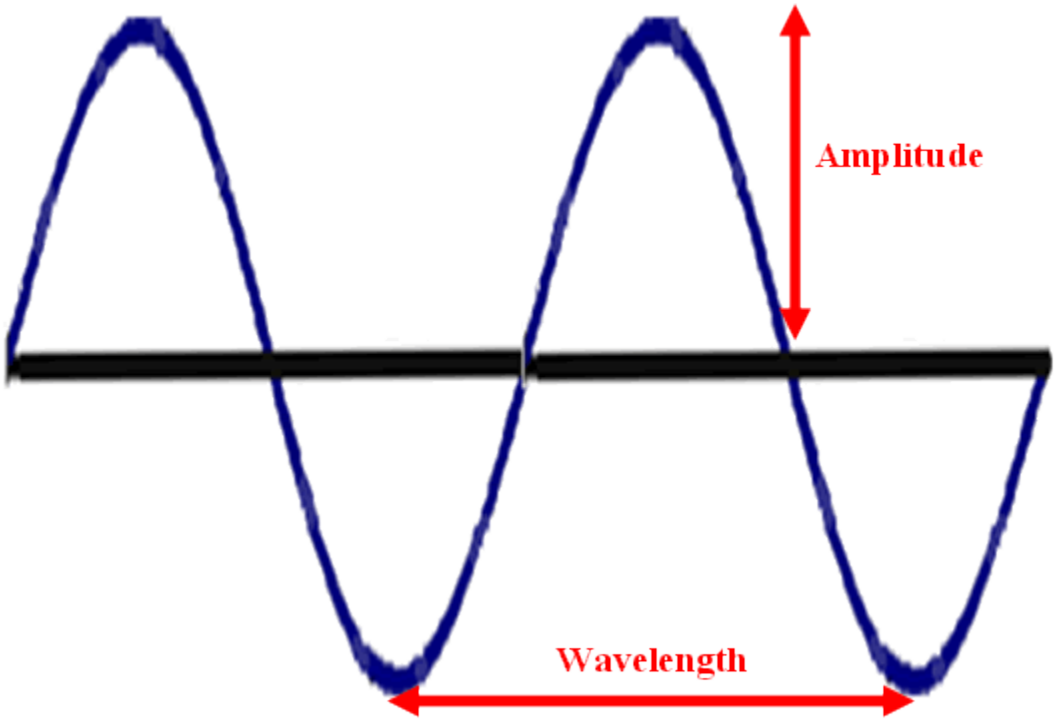
12. Amplitude

- The maximum distance that the particles of a wave's medium vibrate from their rest position



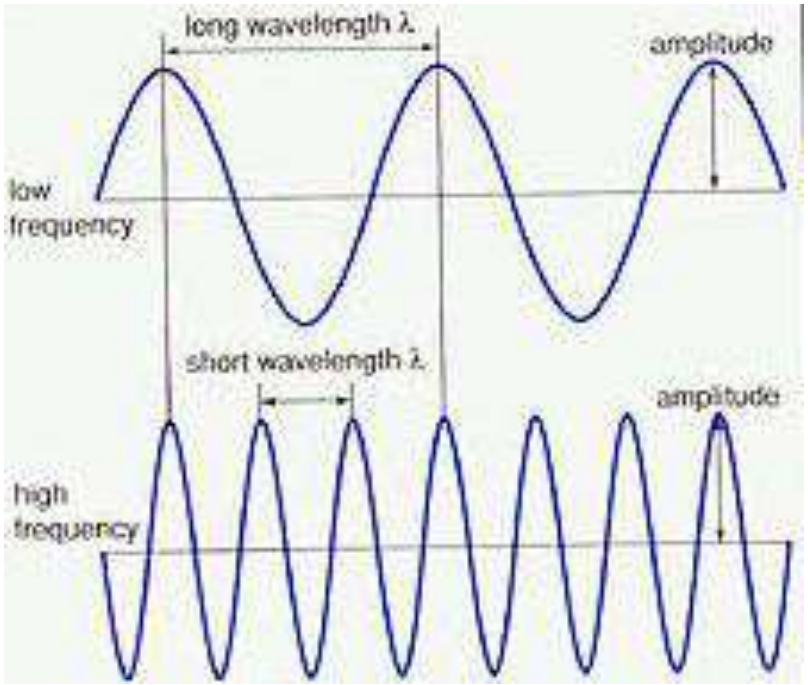
13. Wavelength

- The distance from any point on a wave to an identical point on the next wave.



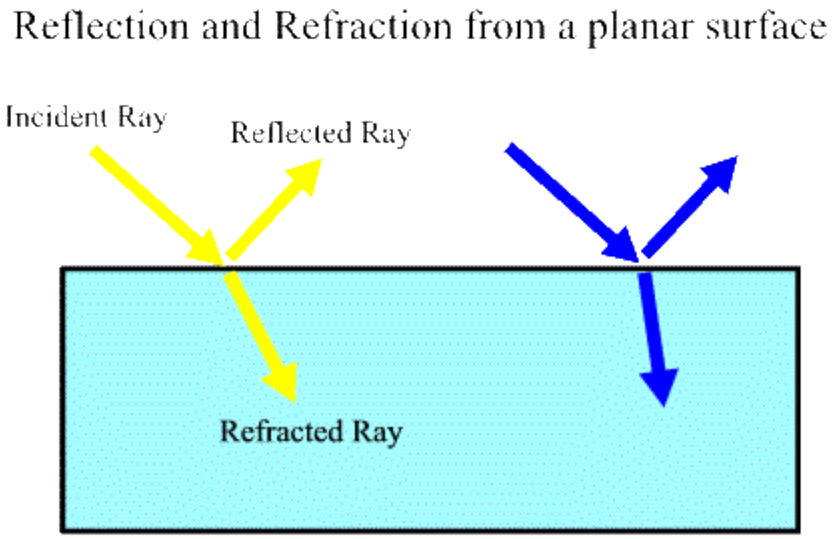
14. Frequency

- The number of waves produced in a given amount of time.



15. Refraction

- The bending of a wave as the wave passes between two substances in which the speed of the wave differs.



16. Reflection

- The bouncing back of a ray of light, sound, or heat when the ray hits a surface that it does not go through.