

CHEMISTRY

Proton

Charge = +1
Mass = 1
Nucleus

Neutron

Charge = 0
Mass = 1
Nucleus

Electron

Charge = -1
Mass = 0
Orbital shells.

Proton number

The number of protons in an atom.
This is equal to the number of electrons.

Mass number (Atomic number)

This is the total number of protons and neutrons in an atom's nucleus.

Isotopes

Atoms of the same element with different numbers of neutrons.

Relative Atomic Mass

The ratio of the average mass of one atom of an element to one twelfth of the mass of one atom of carbon-12.

$$= \frac{\text{Mass number}}{\text{Mass number}}$$

Relative Molecular Mass

The sum of relative atomic masses in a compound.

Avogadro's constant

$$6 \times 10^{23}$$

Mole

A unit of measurement for the amount of a specific substance.

Periodic Table

Group 1 & 2 are most reactive

Group 7 & 8 are most unreactive

Group 1 - Alkali Metals

Group 7 - Halogens

Group 8 - Noble Gases - unreactive

Group 7 react with metals to form salts.

Transition metals are all good conductors of electricity.

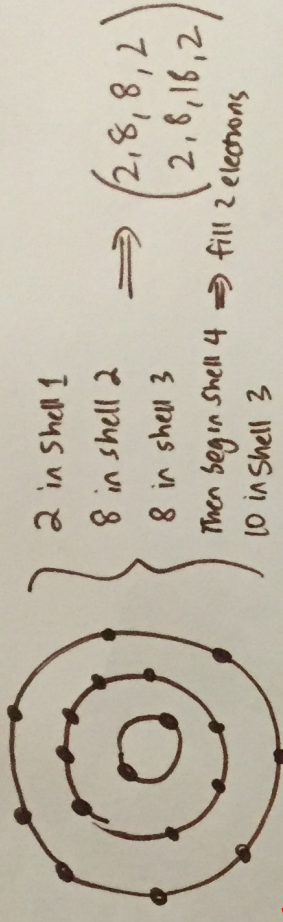
Group # = number of electrons in outer-most shell (valent electrons)

Noble gases are completely unreactive and create an inert atmosphere

Helium in balloons.

More complex covalent structures also occur such as N_2 , C_{2H_4} .

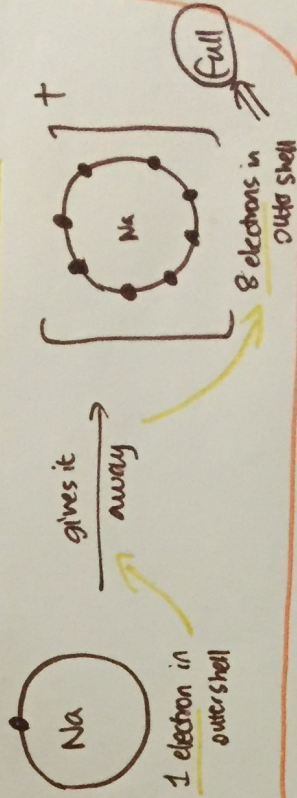
These structures have more than 3 covalent bonds.



Ions - formed by the loss/gain of electrons.

Ionic bonding

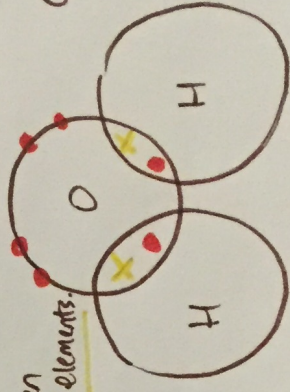
Occurs when an atom gives or takes electrons from other atoms.
Occurs between metallic and non-metallic elements.



Covalent bonding

Occurs when atoms share electrons to fill outer shells and become unreactive.

Occurs between non-metallic elements.



Covalent bonding in H_2O

double bond

both Oxygen and Hydrogen have full outer shells.