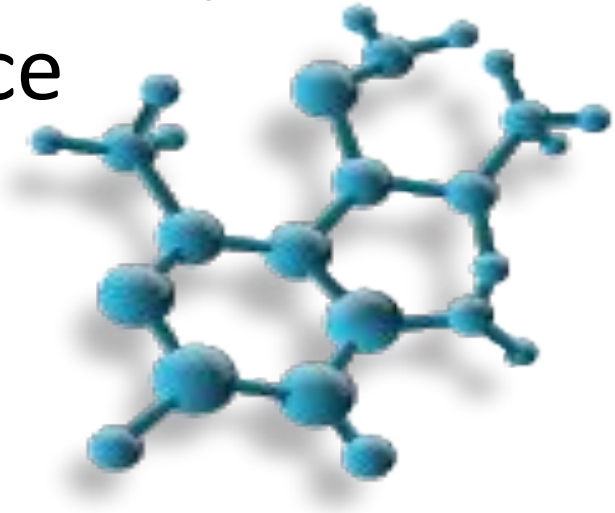
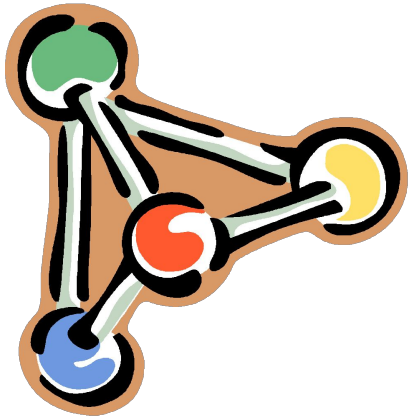
COVALENT MOLECULES

Covalent Bonds

- **Sharing of ve-** between 2 or more atoms that are nonmetals
  - **molecule** – smallest chemical unit of a substance capable of a stable independent existence

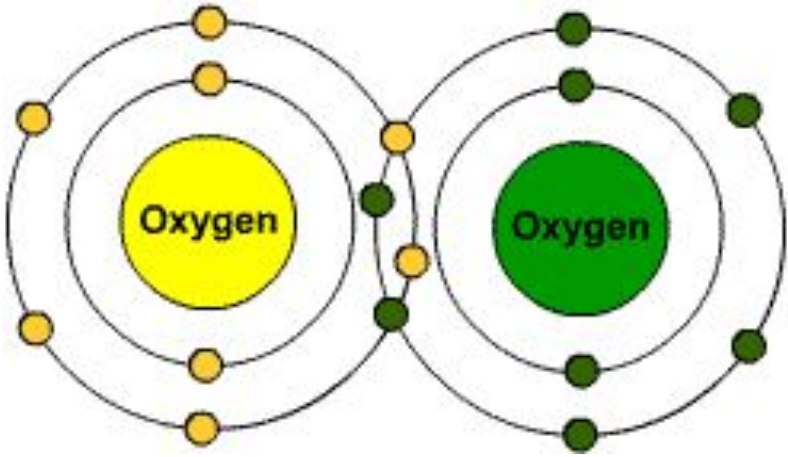




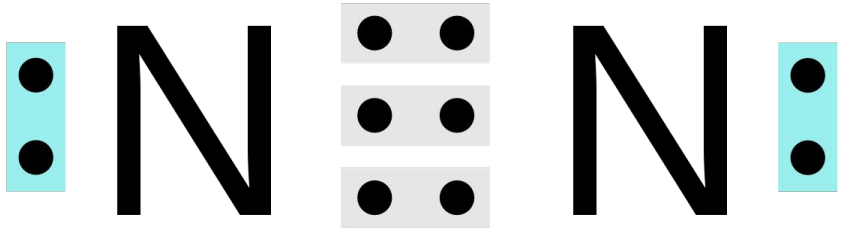
Multiple Bonds

When two atoms combine using more than 2 e^- it creates a multiple bond.

Double bond: sharing of 4 e^-

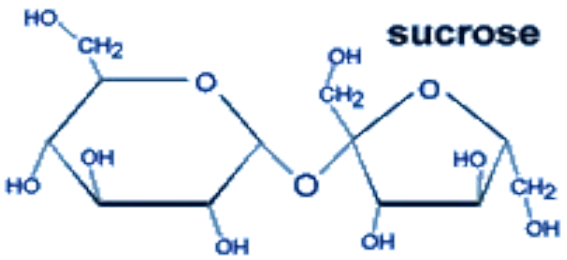


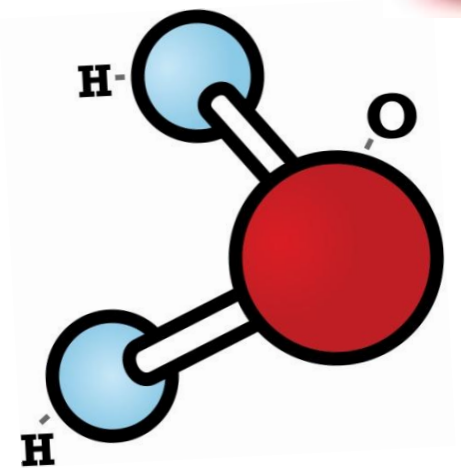
Triple bond: sharing of 6 e^-



- Covalent molecules are represented with a **<u>molecular formula</u>** – representation of actual composition of a covalent molecule
  - includes: **types** & **#s** of atoms
  - ex: H_20 (water); O_2 (oxygen);

(table sugar)





Diatomic molecules

- 2 atoms of the same element covalently bonded
- There are only seven (you must know them)
- They will not exist on their own. If they are not bonded to another element, they will be bonded to themselves.

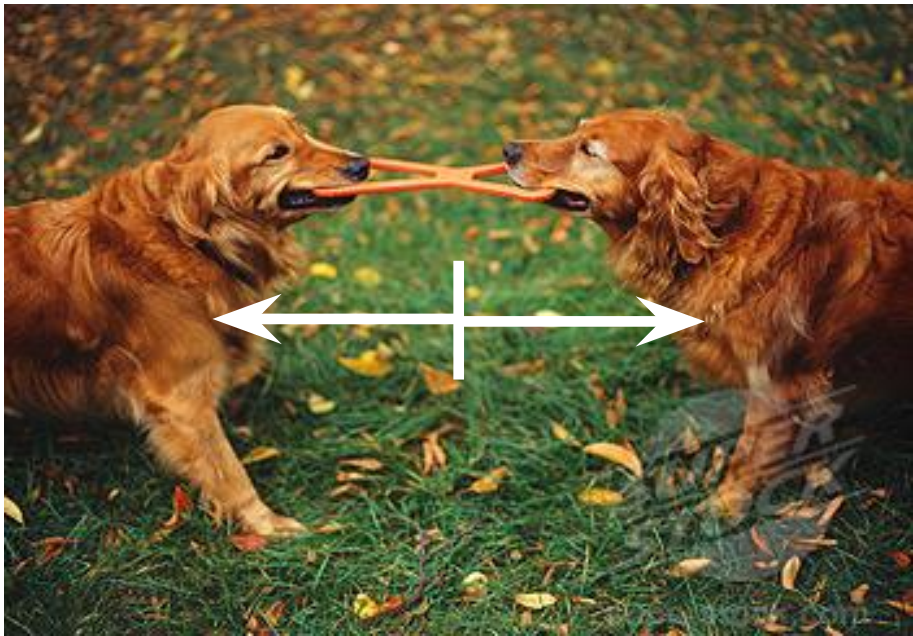
Diatomic molecules

Element	Molecular formula
Hydrogen	H_2
Nitrogen	N_2
Oxygen	O_2
Fluorine	F_2
Chlorine	Cl_2
Bromine	Br_2
Iodine	I_2

Types of covalent bonds

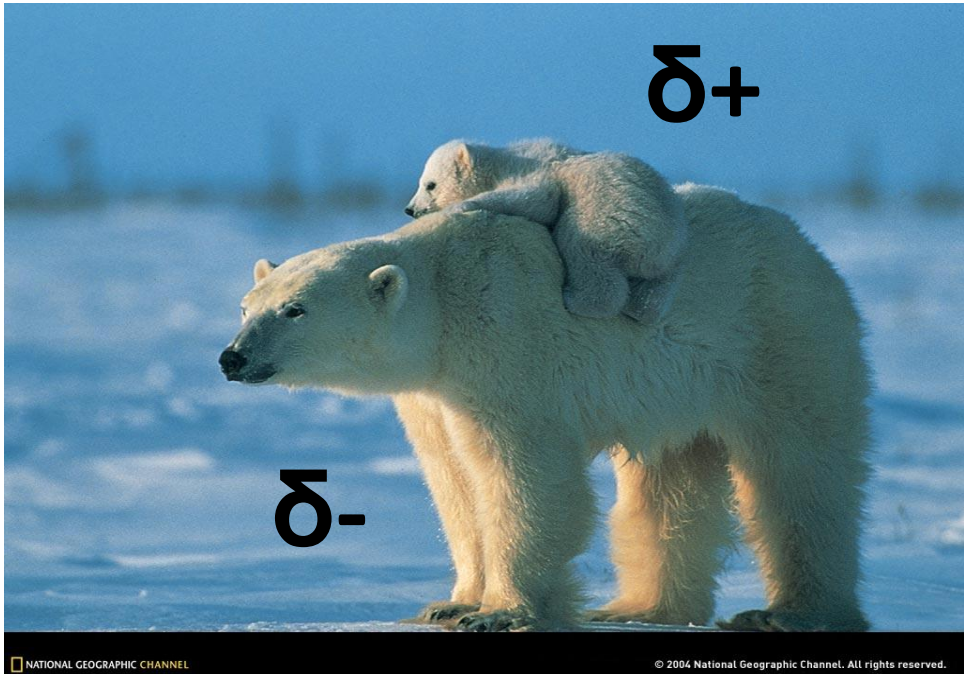
Nonpolar: equal sharing of e-

no distinguishable difference in electronegativity



Polar: unequal sharing of e-

- 1 atom pulls stronger than other atom
- Molecule with slight + and – regions
- Medium difference in electronegativity



Naming Covalent Molecules

<u>Rules:</u>

- 1st word: use name of element (only use prefix when there are more than 1 of this atom)

  **use element with lowest electronegativity*

- 2nd word: ALWAYS use prefix (use the ending –ide)

Naming cont'd

- drop the "a or o" of the prefix if the root word begins with a vowel

EX: penta- → pentoxide

mono- → monoxide

Prefix	Number
mono-	1
di-	2
tri -	3
tetra-	4
penta-	5
hexa-	6
hepta-	7
octa-	8
nona-	9
deca -	10

Writing formulas rules:

1. Write the symbol of the 1st element and the subscript that represents the prefix

2. Write the symbol of the 2nd element and the subscript that represents the prefix