Chemical Reactions
Lesson 4: **Covalent Compounds** **Date:** Monday Sept 24

Review:
Ionic Compounds are formed between metallic IONS and nonmetallic IONS.

The metal ion is Positively charged, and called a cation Eg. aluminum ion $Al^{3+}$
The nonmetal ion is negatively charged, and called an anion Eg. Fluorine ion $F^{1-}$

The oppositely charged ions are ATTRACTED to each other, and this force of attraction is what holds them tightly together = IONIC BOND

New:

**Covalent Bonding** **text p. 121**

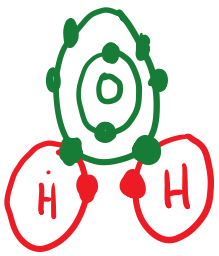
Covalent compounds are made up of atoms of two or more non-metal elements joined together by covalent bonds.

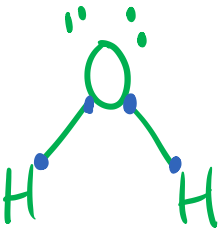
UNLIKE in Ionic Bonding, electrons are neither lost nor gained, but instead are SHARED.

A covalent bond is a strong connection between atoms when they share electrons.
The sharing of electrons results in electrostatic attraction between the positive nucleus of each atom, and the negative electrons of the atoms.

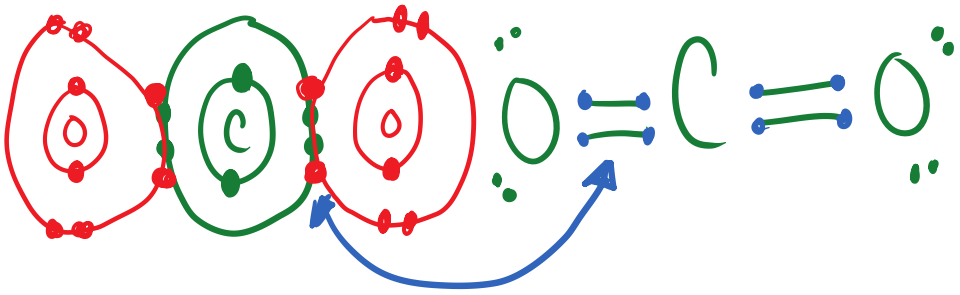
Examples of Covalent Bonding:

a) WATER $H_2O$ Bohr model Common Model

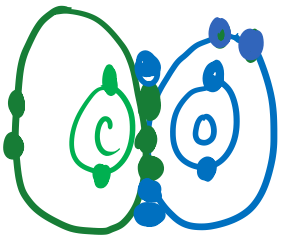



b) Carbon Dioxide $CO_2$



c) Carbon Monoxide CO

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Most Covalent compounds exist as molecules. A molecule is the smallest independent unit of a covalent compound.

Two or more atoms of the same element that are joined covalently are also molecules. These elements include $N_2$ $O_2$ $F_2$ $Cl_2$ $Br_2$ $I_2$ $At_2$. You will see that these elements make up an "upside down hockey stick" plus a 'puck' on the periodic table!

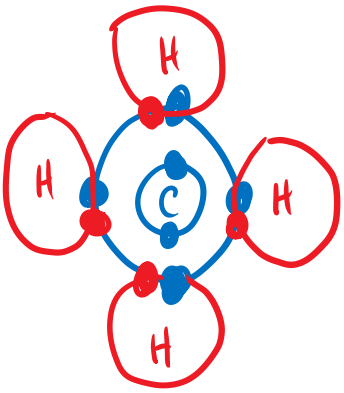
↳ $H_2$

**Video: Covalent Bonding**

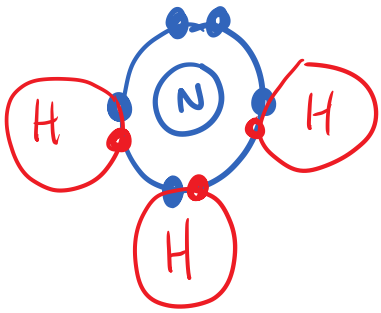
**Activity:**

Draw *Bohr Diagrams showing each of the following Covalent Molecules. Use the internet to help you if needed.*

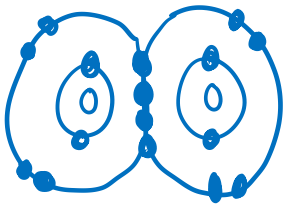
a) $CH_4$ Methane Gas




b) $NH_3$ Ammonia

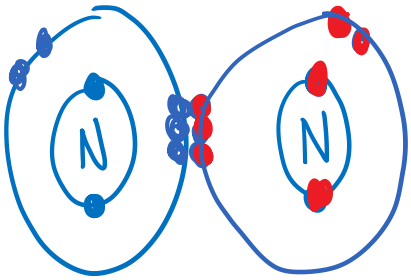



c) $O_2$ Oxygen Gas hint: double bonding




4e⁻ is a double bond

d) $N_2$ Nitrogen Gas hint: triple bonding




6 shared e⁻ is a Triple Bond