

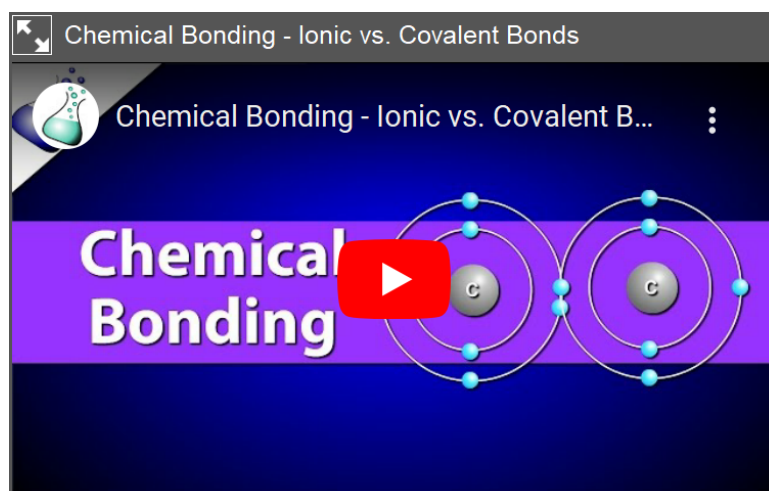
## Ionic vs. Covalent Bonds

Remember - ionic compounds occur between metals and non-metals (or polyatomic ions). This is because one ion easily gives up electrons and the other easily accepts them.

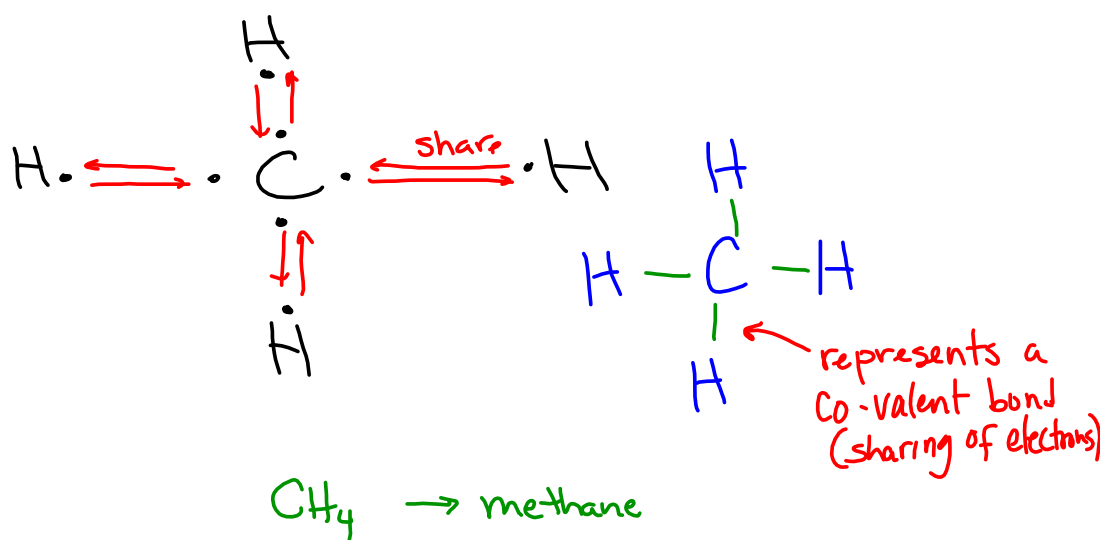
We mentioned carbon, with four valence electrons, doesn't easily form ions, so how does it form compounds?

A **covalent bond** occurs when two atoms *share* valence electrons to fill their shells.

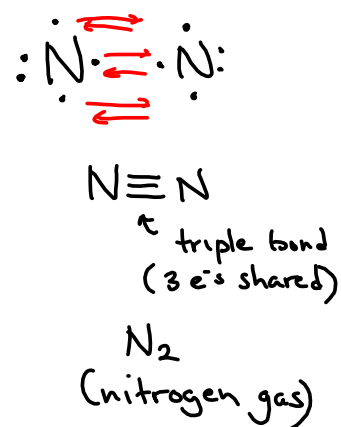
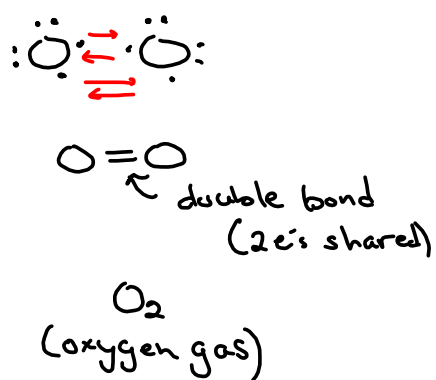
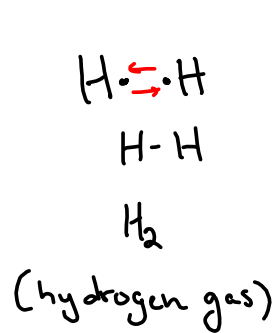
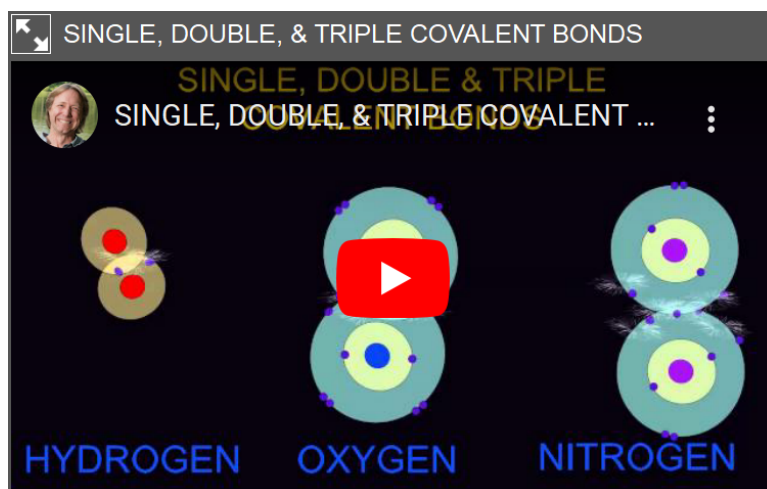
shared valent  
electrons



So, if we consider carbon and hydrogen



## Single, Double and Triple Covalent Bonds



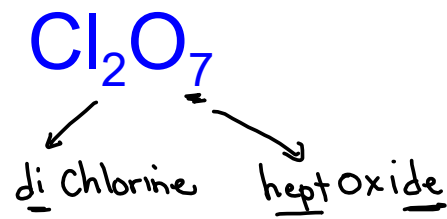
## Naming Binary Molecular Compounds

*2 different elements*

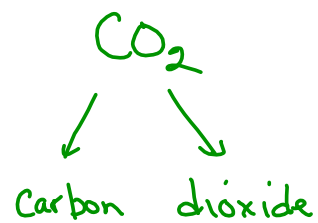
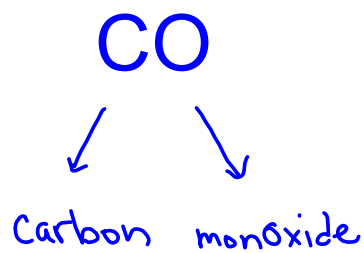
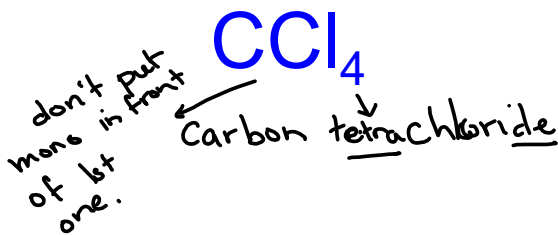
- A binary molecular compound is usually made of two non-metals.
- The naming is similar to ionic compounds
  - > We name the first element and then the second element, changing the ending to -ide.
  - > It's different in that we use prefixes to indicate the numbers of each atom in the molecular formula:

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

## Examples



↑ drop a because oxide begins with a vowel



## Some special compounds

Some compounds are so common that rather than using systemic names, we use their common names:

water -  $H_2O$  - dihydrogen monoxide

ammonia -  $NH_3$  - nitrogen trihydride

methane -  $CH_4$  - carbon tetrahydride

hydrogen peroxide -  $H_2O_2$  - dihydrogen dioxide



**Practice:**

Write the formulas of the following compounds:

- a) Dihydrogen monosulfide  $H_2S$
- b) Chlorine dioxide  $ClO_2$
- c) Phosphorus pentiodide  $PI_5$

Write the names for the following compounds:

- a)  $S_2Cl_2$
- b)  $NO_2$
- c)  $CBr_4$



