

Do Now: CO<sub>2</sub> = carbon dioxide, a binary molecular (covalent) compound.

**Aim: How do we name binary molecular (covalent) compounds?**

I. Using Prefixes

number atoms	prefix
1	mono
2	di
3	tri
4	tetra
5	penta
6	hexa
7	hepta
8	octa
9	nona
10	deca

Given formula, write name

CO                      ~~mon~~carbon monoxide

- a) Write a prefix for each element, but don't use mono for the 1<sup>st</sup> element.  
b) Change the ending of the 2<sup>nd</sup> element to **ide**.

CCl<sub>4</sub>                      carbon tetrachloride

P<sub>2</sub>O<sub>5</sub>                      diphosphorus pentaoxide

- c) Usually, vowels in the prefixes are dropped when they precede another vowel.

H<sub>2</sub>O                      dihydrogen monoxide (DHMO aka water)

N<sub>2</sub>O<sub>4</sub>                      dinitrogen tetraoxide

**Note:** for molecular compounds, **don't reduce** the subscripts unless told to do so. When reduced, the molecular formula becomes an **empirical formula**.

<u>Molecular Formula</u>	<u>Empirical Formula</u>
the actual # atoms	the simplest ratio of atoms
N <sub>2</sub> O <sub>4</sub>	NO <sub>2</sub>

**Go to Handout: Naming Molecular Compounds**

# Naming Molecular Compounds

Name the following covalent compounds.

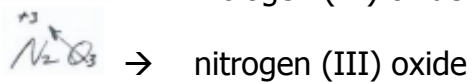
1.  $\text{CO}_2$  Carbon dioxide
2.  $\text{CO}$  Carbon monoxide
3.  $\text{SO}_2$  Sulfur dioxide
4.  $\text{SO}_3$  Sulfur trioxide
5.  $\text{N}_2\text{O}$  dinitrogen monoxide
6.  $\text{NO}$  nitrogen monoxide
7.  $\text{N}_2\text{O}_3$  dinitrogen trioxide
8.  $\text{NO}_2$  nitrogen dioxide
9.  $\text{N}_2\text{O}_4$  dinitrogen tetraoxide
10.  $\text{N}_2\text{O}_5$  dinitrogen pentoxide
11.  $\text{PCl}_3$  phosphorus trichloride
12.  $\text{PCl}_5$  phosphorus pentachloride
13.  $\text{NH}_3$  nitrogen trihydride aka ammonia
14.  $\text{SCl}_6$  sulfur hexachloride
15.  $\text{P}_2\text{O}_5$  diphosphorus pentoxide
16.  $\text{CCl}_4$  Carbon tetrachloride
17.  $\text{SiO}_2$  silicon dioxide
18.  $\text{CS}_2$  Carbon disulfide
19.  $\text{OF}_2$  oxygen difluoride
20.  $\text{PBr}_3$  phosphorus tribromide

## EXTRA CREDIT

### II. Using Roman Numerals (Stock System)

The Roman numeral indicates the oxidation state of the first element (+).

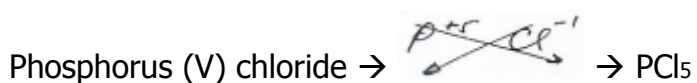
Given formula, write name:



a harder problem; can't "cross-criss:"



Given name, write formula:



III. Other systems of nomenclature exist; just know the Stock System for ionic compounds and prefixes for molecular compounds.