Naming Molecular Compounds

- Recall that a *molecular compound* is formed when two or more non-metals form a covalent bond between atoms by sharing electrons

- Remember that some elements are *diatomic* or *polyatomic*
  - When elements travel in groups of two, they are called **diatomic**
  - When elements travel in groups of more than two, they are called **polyatomic**

* need to memorize!

Diatomic	$H_{2(g)}$	$N_{2(g)}$	$O_{2(g)}$	$F_{2(g)}$	$Cl_{2(g)}$	$Br_{2(l)}$	$I_{2(s)}$
Polyatomic		$P_{4(s)}$	$S_{8(s)}$				

- **STEPS: Name to Formula**

tetrachlorine dioxide

i. Find the symbol of the first element. Write it down.

Cl

ii. Look at the prefix attached to the first element. Write that number as a subscript after the first element symbol.

Cl_4

iii. Find the symbol of the second element. Write it down after the first element.

Cl_4O

iv. Look at the prefix attached to the second element. Write that number as a subscript after the second element symbol.

Cl_4O_2

* • Prefixes that need to be memorized for naming molecular compounds

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

- **STEPS: Formula to Name**

S_3Br_6

i. Find the name of the first symbol. Write it down.

Sulphur

ii. The subscript after the first symbol indicates how many of these atoms are in the molecule. Write the corresponding prefix before the first element's name to indicate the number of these atoms found in the molecule.

trisulphur

iii. Find the name of the second symbol. Write the name down, changing the ending to –ide, after the first element's name with a space between the first and second element.

trisulphur bromide

iv. Find out how many atoms are in the second element by looking at the subscript after the second element symbol and write the corresponding prefix before the second element's name.

trisulphur hexabromide

✳ **Mono is only used on the second element**

✳ • Common names for molecular molecules that need to memorized

$NH_{3(g)}$	=	ammonia
$H_2O_{(l)}$	=	water
$H_2S_{(g)}$	=	hydrogen sulphide → named using ionic rules! b/c H is written first ∴ treated as a metal
$CH_{4(g)}$	=	methane
$CH_3OH_{(l)}$	=	methanol
$C_2H_{6(g)}$	=	ethane
$C_2H_5OH_{(l)}$	=	ethanol
$C_6H_{12}O_{6(s)}$	=	glucose
$C_{12}H_{22}O_{11(s)}$	=	sucrose
$O_{3(g)}$	=	ozone
$H_2O_{2(l)}$	=	hydrogen peroxide

*****Now try Practice Problem #1*****

Practice Problems

1. Complete the chart below for all molecular compounds.

Formula	IUPAC Name
O_2	oxygen
P_2O_5	diphosphorus pentaoxide
HCl	hydrogen chloride
NH_3	ammonia
N_2H_4	dinitrogen tetrahydride
ICl_5	iodine pentachloride
CH_4	methane
NI_3	nitrogen
CH_3OH	methanol
As_2O_3	diarsenic trioxide
S_4N_2	tetrasulphur dinitride
C_2H_5OH	ethanol
CO	carbon monoxide
H_2O_2	hydrogen peroxide
PH_3	phosphorus trihydride
S_8	sulfur
B_2H_6	diboron hexahydride
NO	nitrogen monoxide
SiO_2	silicon dioxide
CCl_4	carbon tetrachloride
PCl_5	phosphorus pentachloride