

Science 10 5.11 – Molecular Compounds (pg. 201 – 204)

- Ionic compounds are composed of a cation metal and a anion non-metal but molecular compounds are made of only non-metals.
- Instead of transferring electrons, like ionic compounds do, molecular compounds share electrons.
- This forms what we call a covalent.

Ex. H<sub>2</sub>

- For chlorine to form a molecule, it must share 2 electrons to form a covalent bond.
- Molecules made of two atoms are called diatomic molecules.

Complete the following table:

Elements that form diatomic molecules		
Name of element	Chemical Symbol	Formula
Hydrogen	H	H <sub>2</sub>
Oxygen	O	O <sub>2</sub>
Nitrogen	N	N <sub>2</sub>
Fluorine	F	F <sub>2</sub>
Chlorine	Cl	Cl <sub>2</sub>
Bromine	Br	Br <sub>2</sub>
Iodine	I	I <sub>2</sub>

- Some common names for molecular compounds are Water (H<sub>2</sub>O), ammonia (NH<sub>3</sub>), hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), and methane (CH<sub>4</sub>).
- Ionic compounds are good electrolytes, which means they conduct electricity well, but molecular compounds are not.

Apr 14-8:53 PM

**Naming Molecular Compounds**

We use a prefix system to determine the # of each atom.

- 1- mono
- 2- di
- 3- tri
- 4- tetra
- 5- penta
- 6- hexa

- Don't put "mono", if applicable, on the first element.
- The second element ending changes to "ide".
- Don't put two o's together or a and o. (Examples in table.)

Formula	Name
CO <sub>2</sub>	<u>carbon dioxide</u>
<u>CO</u>	Carbon monoxide
SO <sub>3</sub>	<u>sulfur trioxide</u>
<u>CF<sub>4</sub></u>	Carbon tetrafluoride
PBr <sub>5</sub>	<u>Phosphorus pentabromide</u>
<u>N<sub>2</sub>O<sub>4</sub></u>	Dinitrogen tetroxide
CBr <sub>4</sub>	<u>Carbon tetrabromide</u>
<u>NI<sub>3</sub></u>	Nitrogen triiodide
OF <sub>2</sub>	<u>Oxygen difluoride</u>
<u>SiCl<sub>4</sub></u>	Silicon tetrachloride

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Give it a try!

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Q. 1,3,5

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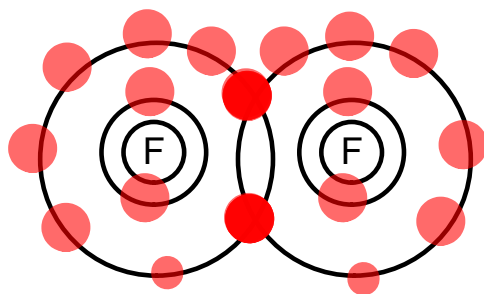
p.204

1) Molecular compounds have two non-metals but ionic have a metal and a non-metal (or a polyatomic ion in place of one or both).

3) a) 7 valence e<sup>-</sup>

b) 1 electron from each atom of fluorine (2 in total, or 1 pair)

c)



5) a) carbon tetrabromide b) nitrogen triiodide

c) oxygen difluoride d) silicon tetrachloride

Apr 15-7:43 AM



For each of the following questions write the appropriate name for the compound.

P	1)	$\text{Na}_2\text{CO}_3$	sodium carbonate	Mixed Naming P = polyatomic M = molecular mv = multivalent s = simple ionic
M	2)	$\text{P}_2\text{O}_5$	diphosphorus pentoxide	
M	3)	$\text{NH}_3$	ammonia	
P <sup>MV</sup>	4)	$\text{FeSO}_4$	iron(II) sulfate	
M	5)	$\text{SiO}_2$	silicon dioxide	
s	6)	$\text{GaCl}_3$	gallium chloride	
MV	7)	$\text{CoBr}_2$	cobalt(II) bromide	
M	8)	$\text{B}_2\text{H}_4$	diboron tetrahydride	
M	9)	$\text{CO}$	carbon monoxide	
M	10)	$\text{P}_4$	phosphorus	

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For each of the following questions write the appropriate formula for the compound.

M	11)	dinitrogen trioxide	$\text{N}_2\text{O}_3$
M	12)	nitrogen	$\text{N}_2$
M	13)	methane	$\text{CH}_4$
P	14)	lithium acetate	$\text{LiCH}_3\text{COO}$
M	15)	phosphorus trifluoride	$\text{PF}_3$
MV	16)	vanadium(V) oxide	$\text{V}_2\text{O}_5$
P	17)	aluminum hydroxide	$\text{Al}(\text{OH})_3$
s	18)	zinc sulfide	$\text{ZnS}$
M	19)	silicon tetrafluoride	$\text{SiF}_4$
P	20)	silver phosphate	$\text{Ag}_3\text{PO}_4$

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(Still) More Naming Practice

Write the names of the following chemical compounds:

- M 1)  $\text{BBr}_3$  Boron tribromide
- P 2)  $\text{CaSO}_4$  Calcium sulfate
- M 3)  $\text{C}_2\text{Br}_6$  dicarbon hexabromide
- MV P 4)  $\text{CrCO}_3$  chromium(II) carbonate
- S 5)  $\text{Ag}_3\text{P}$  silver phosphide
- M 6)  $\text{IO}_2$  iodine dioxide
- MV 7)  $\text{VO}_2$  vanadium(IV) oxide
- MV 8)  $\text{PbS}$  lead(II) sulfide
- M 9)  $\text{CH}_4$  methane
- M 10)  $\text{N}_2\text{O}_3$  dinitrogen trioxide

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Write the formulas of the following chemical compounds:

- M 11) tetraphosphorus triselenide  $\text{P}_4\text{Se}_3$
- P 12) potassium acetate  $\text{KCH}_3\text{COO}$
- MV 13) iron (II) phosphide  $\text{Fe}_3\text{P}_2$
- M 14) disilicon hexabromide  $\text{Si}_2\text{Br}_6$
- P MV 15) titanium (IV) nitrate  $\text{Ti}(\text{NO}_3)_4$
- M 16) diselenium diiodide  $\text{Se}_2\text{I}_2$
- P MV 17) copper (I) phosphate  $\text{Cu}_3\text{PO}_4$
- S 18) gallium oxide  $\text{Ga}_2\text{O}_3$
- M 19) tetrasulfur dinitride  $\text{S}_4\text{N}_2$
- M 20) phosphorus  $\text{P}_4$

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## Mixed Formula Writing

Write formulas for these compounds.

- <sup>S</sup>1) potassium oxide  $K_2O$       <sup>M</sup>6) diboron tetrahydride  $B_2H_4$   
<sup>M</sup>2) phosphorus tribromide  $PBr_3$       <sup>M</sup>7) phosphorus pentaiodide  $PI_5$   
<sup>P</sup>3) calcium hydroxide  $Ca(OH)_2$       <sup>M</sup>8) sulfur dichloride  $SCl_2$   
<sup>M</sup>4) dinitrogen sulfide  $N_2S$       <sup>P</sup>9) sodium carbonate  $Na_2CO_3$   
<sup>M</sup>5) palladium (IV) oxide  $PdO_2$       <sup>P</sup>10) aluminum acetate  $Al(CH_3COO)_3$

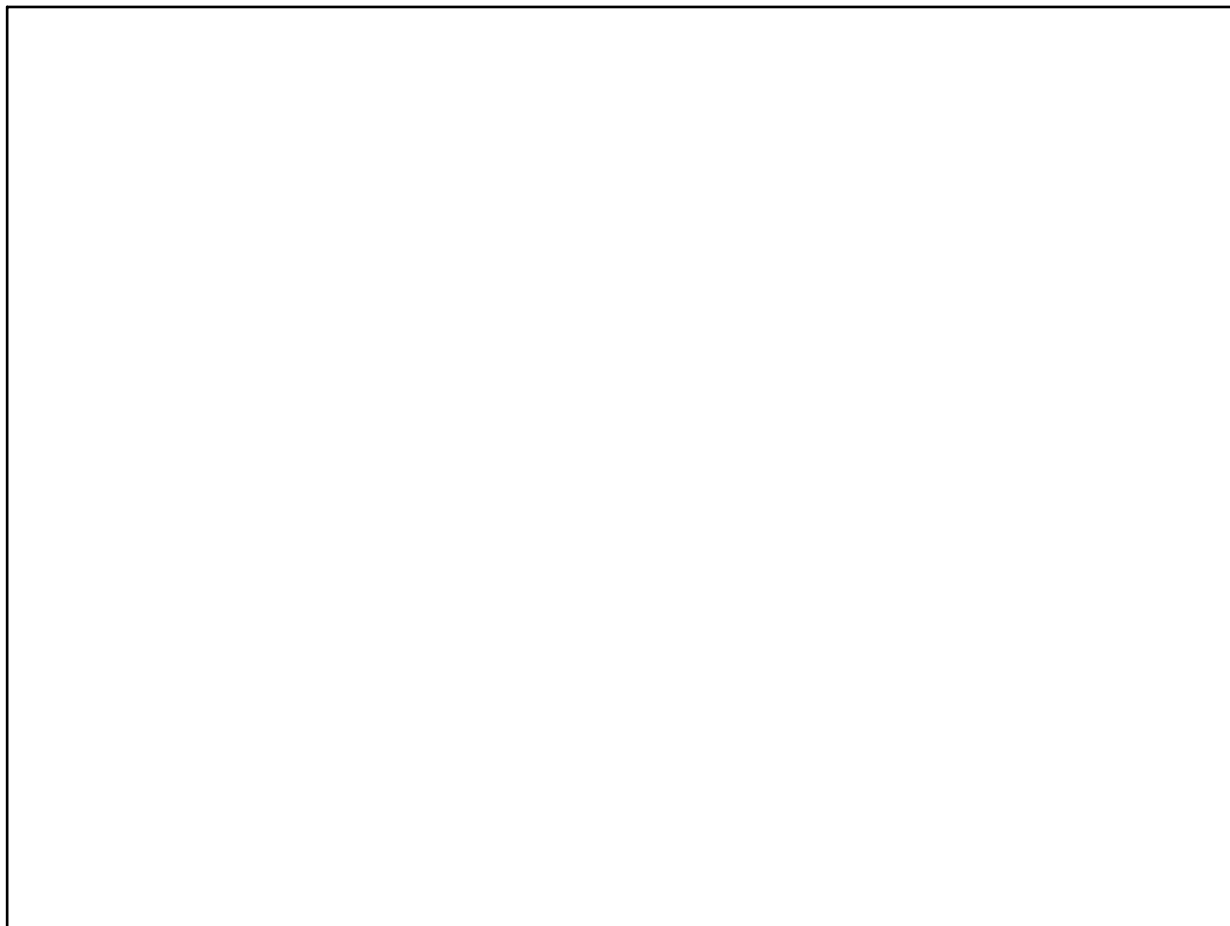
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## Mixed Naming Practice

Name these compounds

- <sup>P</sup>1) LiOH lithium hydroxide      <sup>M</sup>6)  $CF_4$  carbon tetrafluoride  
<sup>M</sup>2)  $PBr_3$  phosphorus tribromide      <sup>S</sup>7)  $SrCl_2$  strontium chloride  
<sup>P</sup>3)  $Na_2SO_4$  sodium sulfate      <sup>M</sup>8)  $P_2S_3$  diphosphorus trisulfide  
<sup>P</sup>4)  $(NH_4)_2S$  ammonium sulfide      <sup>M</sup>9)  $Sn_3N_2$  tin(II) nitride  
<sup>P</sup>5) CaCO<sub>3</sub> calcium carbonate      <sup>P</sup>10) Mg(OH)<sub>2</sub> magnesium hydroxide

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## Attachments

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Carbon Tetrafluoride.jfif