

NAME \_\_\_\_\_ DATE \_\_\_\_\_ P# \_\_\_\_\_

FILL IN NOTES FROM INFO ON SIDE

## Covalent Compounds

\_\_\_\_\_ + \_\_\_\_\_  
 NO \_\_\_\_\_ involved  
 electrons are \_\_\_\_\_ to get an octet  
 around all atoms (except \_\_\_\_\_)

### NAMING Covalent Compounds

- Use \_\_\_\_\_ (see chart below)
- Name of first element + name of second element
- \_\_\_\_\_ ending always used for all second elements
- mono is used only on the \_\_\_\_\_ element

examples:  $\text{PCl}_4$  \_\_\_\_\_  
 $\text{SO}$  \_\_\_\_\_

### Properties of Ionic compounds:

- Made of metal plus non-metal (transfer electrons to form cation and anion—opposite charges attract)
- Conducts electricity in molten state (free ions)
- Conducts electricity when dissolved in water (free ions)
- Forms crystals or ionic compounds (formula units)
- High melting and boiling points
- NaCl is a good example of an ionic compound

### Covalent Compounds

nonmetal + nonmetal  
 no charges involved

electrons are shared to get an octet around the central atom

(octet rule exception: Hydrogen – Boron)

## Writing Covalent Formulas

- prefix is used to tell \_\_\_\_\_ of each element to put in the compound
- do NOT \_\_\_\_\_ numbers

_____ 1	_____ 6
_____ 2	_____ 7
_____ 3	_____ 8
_____ 4	_____ 9
_____ 5	_____ 10

examples: \_\_\_\_\_ phosphorus \_\_\_\_\_ bromide  $\text{P}_2\text{Br}_3$   
 carbon \_\_\_\_\_ oxide  $\text{CO}_2$

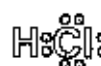
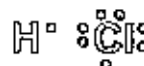
### Properties of Covalent Compounds

- Do not usually dissolve in water
- Do not conduct electricity
- Low boiling point
- Low melting point
- Share electrons between atoms
- Form molecules

### Formation of an HCl Molecule



- The hydrogen atom has one electron it is willing to share. Hydrogen only needs one more electron to be satisfied.
- The chlorine atom has 7 valence electrons to share and only needs one more electron to have an octet.
- Can you see how sharing electrons will help them both?



## Covalent Compounds

Write the name for the following compounds.

- |               |       |                 |       |
|---------------|-------|-----------------|-------|
| 1. $F_2Cl_4$  | _____ | 16. $N_2O_5$    | _____ |
| 2. $C_3F_5$   | _____ | 17. $PCl_3$     | _____ |
| 3. $P_8O_6$   | _____ | 18. $PCl_5$     | _____ |
| 4. $Cl_2Br_5$ | _____ | 19. $NH_3$      | _____ |
| 5. $S_2Cl_3$  | _____ | 20. $SCl_6$     | _____ |
| 6. $I_3N_7$   | _____ | 21. $P_2O_5$    | _____ |
| 7. $CO_2$     | _____ | 22. $CCl_4$     | _____ |
| 8. $CO$       | _____ | 23. $SiO_2$     | _____ |
| 9. $SO_2$     | _____ | 24. $CS_2$      | _____ |
| 10. $SO_3$    | _____ | 25. $OF_2$      | _____ |
| 11. $N_2O$    | _____ | 26. $PBr_3$     | _____ |
| 12. $NO$      | _____ | 27. $P_3O_6$    | _____ |
| 13. $N_2O_3$  | _____ | 28. $I_4O_9$    | _____ |
| 14. $NO_2$    | _____ | 29. $P_4O_{10}$ | _____ |
| 15. $N_2O_4$  | _____ | 30. $Cl_2O_7$   | _____ |

Write the formulas for the compounds whose names are given.

- |                              |       |                              |       |
|------------------------------|-------|------------------------------|-------|
| 31. nitrogen triiodide       | _____ | 41. dinitrogen tetrachloride | _____ |
| 32. phosphorus pentabromide  | _____ | 42. diarsenic pentoxide      | _____ |
| 33. sulfur dichloride        | _____ | 43. sulfur dioxide           | _____ |
| 34. dichlorine tetroxide     | _____ | 44. diphosphorus pentoxide   | _____ |
| 35. carbon tetrachloride     | _____ | 45. dichlorine octoxide      | _____ |
| 36. sulfur trioxide          | _____ | 46. carbon tetraiodide       | _____ |
| 37. phosphorus pentachloride | _____ | 47. dibromine heptoxide      | _____ |
| 38. nitrogen tribromide      | _____ | 48. nitrogen dioxide         | _____ |
| 39. disulfur dichloride      | _____ | 49. dihydrogen monoxide      | _____ |
| 40. carbon monoxide          | _____ | 50. diiodine trinitride      | _____ |

Name

Date \_\_\_\_\_

P #

**Bond Type is based on how the valence electrons move**

Complete the table by telling what type of bond each of the following elements would form and state what is happening to the valence electrons.

Type of Bond:  $M+N$   $N+N$   $M\&M$   
I=ionic, C=covalent, M = Metallic, NB=no bond

Electron Movement: T=transfer, S=share, SE=sea of electrons, NM=no movement

Compound	Type of Bond	Electrons
carbon and oxygen		
rubidium and bromine		
hydrogen and xenon		
titanium and cobalt		
hydrogen and chlorine		
silver and iodine		
sulfur and fluorine		

**Ionic and Covalent Formula Practice** (Before each name, write I or C to indicate Ionic or Covalent, then write the correct formula for each compound).

33. phosphorus tetrasulfide

34. aluminum carbonate

35. tin IV chloride

\_\_\_36. sodium carbonate \_\_\_

37. silver acetate

\_\_\_38. aluminum nitride\_\_\_

51. nickel III chlorate

\_\_\_52. tetraiodine trisulfide \_\_\_\_\_

53. zinc carbonate \_\_\_\_\_

\_\_\_54. potassium phosphate\_\_\_

55. magnesium acetate

56. phosphorus pentachloride

**Ionic and Covalent Naming Practice** (Before each formula, write I or C to indicate Ionic or Covalent, then write the correct formula for each compound).

\*\*\*7.  $\text{CoCl}_2$

\*\*\*8.  $\text{CuNO}_3$  \_\_\_\_\_

9.  $\text{Fe}_2(\text{CO}_3)_3$

10.  $\text{PCl}_5$

17.  $\text{As}_2\text{O}_4$

18.  $\text{SO}_3$  \_\_\_\_\_

19.  $\text{NH}_4\text{OH}$  \_\_\_\_\_

20.  $\text{SO}_2$

## Properties of Compounds

Place an "X" for the properties that each of the following compounds would possess:

Physical Property	KBr	SI <sub>2</sub>	SeO <sub>2</sub>	P <sub>2</sub> Cl <sub>4</sub>	NaCl	Mg(OH) <sub>2</sub>
High Melting Point						
Low Melting Point						
Soluble in Water						
Insoluble in Water						
Electrolyte						
Nonelectrolyte						
High Boiling Point						
Low Boiling Point						

1. A compound is formed when electrons are transferred from one atom to another. Based on this type of bonding, what properties can you expect this element to have?

2. A compound is formed when electrons are shared. Based on this type of bonding, what properties can you expect this element to have?

3. How would you test for electrolytes and nonelectrolytes?

4. How would you test for solubility?

5. How would you test boiling and melting points?

# ELECTROLYTES

Name \_\_\_\_\_

Electrolytes are substances that break up (dissociate or ionize) in water to produce ions. If ions are capable of conducting an electric current.

Generally, electrolytes consist of acids, bases and salts (ionic compounds). Nonelectrolytes are usually covalent compounds, with the exception of acids.

Classify the following compounds as either an electrolyte or a nonelectrolyte.

Compound	Electrolyte	Nonelectrolyte
1. NaCl		
2. CH <sub>3</sub> OH (methyl alcohol)		
3. C <sub>3</sub> H <sub>5</sub> (OH) <sub>3</sub> (glycerol)		
4. ICl		
5. C <sub>6</sub> H <sub>12</sub> O <sub>6</sub> (sugar)		
6. NaOH		
7. C <sub>2</sub> H <sub>5</sub> OH (ethyl alcohol)		
8. CH <sub>3</sub> COOH (acetic acid)		
9. NH <sub>4</sub> OH (NH <sub>3</sub> + H <sub>2</sub> O)		
10. H <sub>2</sub> SO <sub>4</sub>		

Period: \_\_\_\_\_

Metal or Non-metal?	Ionic or Covalent?	Name These Ionic Compounds	Use the Polyatomic Ion Chart on the front of the worksheet to name these Polyatomic Ions:
M Iron	N Oxide	MgF <sub>2</sub> Magnesium Fluor-ide	HCO <sub>3</sub> <sup>1-</sup> Hydrogen carbonate
Barium Chloride	Ionic	Li <sub>2</sub> O Lithium Ox-	SO <sub>4</sub> <sup>2-</sup>
Carbon Dioxide		NaCl Sodium Chlor-	O <sub>2</sub> <sup>2-</sup>
Magnesium Oxide		K <sub>2</sub> O Potassium Ox-	SO <sub>3</sub> <sup>2-</sup>
Aluminum Fluoride		CaS Sulf-	NO <sub>3</sub> <sup>1-</sup>
Nitrogen Tribromide		Bcl <sub>2</sub> Iod-	NH <sub>4</sub> <sup>+</sup>
Chromium Fluoride		AlBr <sub>3</sub> Brom-	CrO <sub>4</sub> <sup>2-</sup>
Potassium Oxide		CaF <sub>2</sub>	OH <sup>1-</sup>
		MgO	PO <sub>4</sub> <sup>3-</sup>
		LiCl	CO <sub>3</sub> <sup>2-</sup>

Name these Polyatomic Compounds (Remember — no prefixes!)		Classify and Name These Compounds	
		Ionic, Covalent, or Polyatomic	Name
$\text{CaSO}_4$	Calcium _____	1. $\text{BaCl}_2$	<u>Ionic</u> <u>Barium chloride</u>
$\text{K}_2\text{CO}_3$	_____ carbonate	2. $\text{CO}$	_____
$\text{CuNO}_3$	Copper (I) _____	3. $\text{Ag}_2\text{O}$	_____
$\text{NH}_4\text{Cl}$	_____ -chloride	4. $\text{K}_2\text{SO}_4$	_____
$\text{Mg}(\text{NO}_3)_2$	Magnesium _____	5. $\text{MgBr}_2$	_____
$\text{K}_3\text{PO}_4$	Potassium _____	6. $\text{SO}_3$	_____
$\text{Li}_2(\text{CrO}_4)$	Lithium _____	7. $\text{P}_2\text{O}_4$	_____
$\text{Mg}(\text{OH})_2$	M _____ H _____	8. $\text{Ba}(\text{CrO}_4)$	_____
$\text{Al}(\text{PO}_4)$	A _____ P _____	9. $\text{LiF}$	_____
$\text{K}(\text{NO}_3)$	_____	11. $\text{CO}_2$	_____
$\text{Ca}_2\text{SO}_3$	_____	12. $\text{OF}_2$	_____

Name: \_\_\_\_\_

Ch. 19:4

Period: \_\_\_\_\_

# Naming Compounds

**How to use this chart—**  
Determine what the compound is made of and follow the arrows. The chart will tell you how to name the compound.

**Exception—**  
 $O_2$  is "peroxide" and can make polyatomic compounds with only 2 elements!  $O_2$  with a non-metal is dioxide.  $O_2$  with a metal OR Hydrogen (acting as a metal) is peroxide.

**What's it Made of?**

Metal and non-metal

2 non-metals

3 or more elements

ionic compound

covalent compound

polyatomic compound

**USE "-IDE" ENDING (NO PREFIXES)**

Name the metal and non-metal and change the ending to "ide".

$Li_2S$

Metal and non-metal— ionic

Lithium Sulfide

(not dilithium sulfide—  
no prefixes for ionic compounds)

Why are ionic compounds so easy to name? Because most ionic compounds can only form one way, using the oxidation numbers. In covalent compounds, though, non-metals can sometimes combine in multiple ways (carbon monoxide; carbon dioxide). So, covalent compounds use prefixes.

**USE GREEK PREFIXES**

Put prefixes in front of element names to tell how many atoms are there.

Don't use "mono" for first name, but always for second name.

$N_2O_4$

2 non-metals—covalent

(di = 2 and tetra = 4)

"Dinitrogen tetroxide"

**Greek Prefixes**

Mono - 1	Hexa - 6
Di - 2	Hepta - 7
Tri - 3	Octa - 8
Tetra - 4	Nona - 9
Penta - 5	Deca - 10

**How to remember prefixes:**

Monorail - one rail train  
Monocle - glasses for one eye;  
single lens (Colonel Klink).

Dilemma - struggle  
between 2 choices.

Tricycle - 3 wheels

Pentagon - 5 five sided military  
building in Washington, D.C.

Octopus - 8 legs

Decade - 10 years

**CHECK THE CHART BELOW (NO PREFIXES)**

Use the names on the chart.  
If the polyatomic ion is the cation  
and the second name with "-ide".

$NaNO_3$

3 elements — polyatomic

Check chart (see below)

Na - sodium

$NO_3$  - nitrate (on chart)

Sodium nitrate

**Polyatomic Ions**

Oxidation #	Name	Formula
1+	ammonium	$NH_4^+$
1-	acetate	$C_2H_3O_2^-$
2-	carbonate	$CO_3^{2-}$
2-	chromate	$CrO_4^{2-}$
1-	hydrogen carbonate	$HCO_3^-$
1+	hydronium	$H_3O^+$
1-	hydroxide	$OH^-$
1-	nitrate	$NO_3^-$
2-	peroxide	$O_2^{2-}$
3-	phosphate	$PO_4^{3-}$
2-	sulfate	$SO_4^{2-}$
2-	sulfite	$SO_3^{2-}$

**Transition Metals Can Have More Than One Oxidation Number**

Iron (II) has an oxidation number of 2+  
Iron (III) has an oxidation number of 3+.  
When naming them you must specify  
WHICH ONE.

$FeO$ —Iron (II) oxide  
 $Fe_2O_3$ —Iron (III) oxide

1. Indicate type of bond (Ionic or Covalent)
2. Write name or formula as needed.

Name \_\_\_\_\_  
Date \_\_\_\_\_ P# \_\_\_\_\_

Chemical Name	Formula	Type of Bond	Chemical Name	Formula	Type of Bond
	$\text{Fe}_2(\text{SO}_4)_3$		Ammonium hydroxide		
	$\text{NaNH}_3$		Ammonium oxide		
	$\text{Al}_2(\text{SO}_4)_3$		Boron sulfate		
	$\text{H}_3\text{PO}_4$		Calcium carbonate		
	$\text{NaCl}$		Calcium oxide		
	$\text{CaCl}_2$		Cesium Iodide		
	$\text{CrBr}_3$		Chromium(III) sulfate		
	$\text{CuO}$		Chromium(VI) sulfide		
	$\text{P}_4\text{O}_{10}$		Dicarbon hexafluoride		
	$\text{PCl}_5$		Dihydrogen monoxide		
	$\text{Ag}_2\text{S}$		Iron(III) oxide		
	$\text{Sn}_3\text{O}_2$		Lead (IV) fluoride		
	$\text{Ba}_3\text{P}_2$		Lithium sulfide		
	$\text{NH}_4\text{O}_2$		Magnesium cyanide		
	$\text{Na}_3\text{N}$		Magnesium Iodide		
	$\text{H}_2\text{O}_2$		Nonaoxygen dichloride		
	$\text{SiF}_4$		Octanitrogen decabromide		
	$\text{H}_2\text{S}$		Pentacarbon tetrachloride		
	$\text{Al}(\text{OH})_3$		Potassium hydroxide		
	$\text{KBr}$		Potassium Sulfide		
	$\text{N}_2(\text{SO}_3)_3$		Sodium bicarbonate		
	$\text{Rb}_3\text{O}$		Sodium nitride		
	$\text{N}_2\text{O}_5$		Tetrasulfide		
	$\text{PbCl}_2$		Tin(II) chloride		
	$\text{MnO}_2$		Zinc(II) bromide		

# BONDING UNIT WORD MATCH

Name \_\_\_\_\_ Date \_\_\_\_\_ P# \_\_\_\_\_

So far in this unit, we have focused on \_\_\_\_\_. This is the formation of \_\_\_\_\_ from \_\_\_\_\_ which \_\_\_\_\_ (lose or gain) electrons to form positively and negatively charged \_\_\_\_\_. These \_\_\_\_\_ (positive vs. negative) attract each other to make formula units of a compound.

To show the formation of \_\_\_\_\_ first, we had to draw \_\_\_\_\_. You must find the number of \_\_\_\_\_, which are the same as the Roman numerals of the "A" groups. Then you draw the \_\_\_\_\_ around the symbol of the element in a special pattern. The first two are paired, and then the last six fill in singly, until you have to start pairing. This is because all electrons are \_\_\_\_\_ and \_\_\_\_\_ each other.

Once you have the Lewis Valence Dot Structure, you can show the transfer of ions. If the element has 1-3 valence electrons, it will lose them all and become positive or a \_\_\_\_\_. If the element has 5-7 valence electrons, it will gain to reach a set of \_\_\_\_\_. This demonstrates the \_\_\_\_\_. This is the way you find the charges or \_\_\_\_\_ for each "A" group element. ("B" groups and column IVA need special Roman numerals different from their column numbers to show charges).

We have also begun to write the \_\_\_\_\_ for \_\_\_\_\_ compounds and to name them. The long term for naming is \_\_\_\_\_.

To WRITE a \_\_\_\_\_

1. You must always put the positively charged ion or \_\_\_\_\_, first, and the negatively charged ion, or \_\_\_\_\_, last.
2. Write the charges above the ions.
3. \_\_\_\_\_ the numbers to the opposite ions. (Drop the charge symbols when you write the \_\_\_\_\_).

NAME a compound.

1. Look at the \_\_\_\_\_. Name the cation.
2. Then name the anion and change the ending of the \_\_\_\_\_ to -ide, unless it is a \_\_\_\_\_. You should never change the name for one of those!

\_\_\_\_\_ or the "B" groups are another special case. You have to look for the charge in the name or formula. In the name it is indicated by Roman Numerals, such as Iron III Nitride: the III means that the charge for Iron is +3.

In the formula for transition metals, you have to undo the \_\_\_\_\_. So if the formula is FeN, you have to look up the \_\_\_\_\_ and find the charge, (N is -3) and then REMEMBER that \_\_\_\_\_ are \_\_\_\_\_, so Fe would have to have a charge of +3 to balance the -3 of N. If the numbers are not the same, you just have to uncross the criss-cross:  $\text{Hg}_3(\text{PO}_4)_2$  = Mercury II Phosphate. The R \_\_\_\_\_ N \_\_\_\_\_ indicates the charge for the transition metals, since they can have different charges in different compounds.

**Word Bank -- \* indicates the term is used multiple times. (Not all words are used)**

anion *	ions	Roman Numeral
cation *	Lewis valence dot structures	subscript
compounds	name compounds	transfer
criss-cross *	negative	transition metals
eight	neutral	valence electrons *
elements	nomenclature	write formulas
formulas *	Octet rule	
ionic bonding	opposite charges	
ionic compounds *	oxidation number	
	polyatomic ion	

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**CHEMISTRY**  
**COMPOUNDS WORKSHEET homework**

	COMPOUND	IONS USED	FORMULA
1.	lithium oxide		
2.	potassium iodide		
3.	aluminum bromide		
4.	cesium nitride		
5.	barium sulfide		
6.	sodium chloride		
7.	zinc sulfate		
8.	chromium III acetate		
9.	copper I sulfate		
10.	potassium hydroxide		
11.	gold III sulfide		
12.	ammonium hydroxide		
13.	potassium phosphide		
14.	chromium VI fluoride		
15.	calcium chloride		
16.	silver carbonate		
17.	potassium iodide		
18.	calcium iodide		
19.	potassium hydroxide		
20.	strontium acetate		
21.	beryllium bromide		
22.	sodium sulfide		
23.	barium phosphate		
24.	iron (III) chloride		
25.	mercury I chloride		
26.	lithium nitrate		
27.	manganese IV nitrite		
28.	lead IV iodide		
29.	mercury II chloride		
30.	barium fluoride		
31.	zinc nitrate		
32.	calcium phosphate		
33.	iron III oxide		
34.	sodium sulfate		
35.	cobalt III carbonate		

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

**CHEMISTRY**  
**COMPOUNDS WORKSHEET 3**

**I. Guided Practice: Nomenclature of Binary Compounds.**

- |                            |                           |
|----------------------------|---------------------------|
| 1. $\text{LiCl}$           | 6. $\text{HgBr}_2$        |
| 2. $\text{Fe}_2\text{O}_3$ | 7. $\text{KI}$            |
| 3. $\text{MgS}$            | 8. $\text{CrCl}_6$        |
| 4. $\text{AlBr}_3$         | 9. $\text{NaCl}$          |
| 5. $\text{Co}_2\text{S}_3$ | 10. $\text{Cu}_2\text{O}$ |

**II. Guided Practice: Nomenclature of Polyatomic Compounds.**

- |   |  |
|---|--|
| 11. $\text{Al}_2(\text{SO}_4)_3$                  | 16. $\text{Ca}(\text{NO}_2)_2$         |
| 12. $\text{BeCO}_3$                               | 17. $\text{Mn}(\text{NO}_2)_4$         |
| 13. $\text{NH}_4\text{Cl}$                        | 18. $\text{LiC}_2\text{H}_3\text{O}_2$ |
| 14. $\text{NaOH}$                                 | 19. $\text{Ag}_2\text{CO}_3$           |
| 15. $\text{Ni}(\text{C}_2\text{H}_3\text{O}_2)_2$ | 20. $\text{Fe}(\text{ClO}_3)_3$        |

**III. Homework: Name the following compounds.**

- |                                  |                              |
|----------------------------------|------------------------------|
| 21. $\text{Mn}_3\text{P}_4$      | 29. $\text{BeBr}_2$          |
| 22. $\text{LiI}$                 | 30. $\text{CuSO}_4$          |
| 23. $(\text{NH}_4)_2\text{CO}_3$ | 31. $\text{FeSO}_3$          |
| 24. $\text{FeF}_2$               | 32. $\text{Sn}_3\text{P}_4$  |
| 25. $\text{Cr}(\text{PO}_4)_2$   | 33. $\text{Ag}_2\text{CO}_3$ |
| 26. $\text{Al}_2\text{O}_3$      | 34. $\text{BeI}_2$           |
| 27. $\text{CaSO}_3$              | 35. $\text{LiNO}_3$          |
| 28. $\text{Hg}_3\text{N}_2$      |                              |

## IONIC Practice

(metal with nonmetal)

1.  $\text{Na}_2\text{S}$  \_\_\_\_\_
2.  $\text{Li}_2\text{O}$  \_\_\_\_\_
3.  $\text{NaBr}$  \_\_\_\_\_
4.  $\text{MgS}$  \_\_\_\_\_
5.  $\text{AlP}$  \_\_\_\_\_
6.  $\text{BeS}$  \_\_\_\_\_
7.  $\text{CaCl}_2$  \_\_\_\_\_
8.  $\text{BeI}_2$  \_\_\_\_\_
9.  $\text{KI}$  \_\_\_\_\_
10.  $\text{KBr}$  \_\_\_\_\_
11.  $\text{Al}_2\text{S}_3$  \_\_\_\_\_
12.  $\text{Be}_3\text{N}_2$  \_\_\_\_\_
13.  $\text{SrO}$  \_\_\_\_\_
14.  $\text{BaF}_2$  \_\_\_\_\_
15.  $\text{NaCl}$  \_\_\_\_\_
16.  $\text{K}_2\text{S}$  \_\_\_\_\_
17.  $\text{CaO}$  \_\_\_\_\_
18.  $\text{LiI}$  \_\_\_\_\_
19.  $\text{MgO}$  \_\_\_\_\_
20.  $\text{CaF}_2$  \_\_\_\_\_
21.  $\text{SrBr}_2$  \_\_\_\_\_
22.  $\text{BeO}$  \_\_\_\_\_
23.  $\text{BaCl}_2$  \_\_\_\_\_
24.  $\text{Al}_2\text{O}_3$  \_\_\_\_\_
25.  $\text{Sr}_3\text{P}_2$  \_\_\_\_\_
26.  $\text{MgS}$  \_\_\_\_\_
27.  $\text{Cs}_3\text{P}$  \_\_\_\_\_
28.  $\text{BeBr}_2$  \_\_\_\_\_
29.  $\text{AlCl}_3$  \_\_\_\_\_
30.  $\text{KCl}$  \_\_\_\_\_

## Covalent Practice

(nonmetal with nonmetals)

1.  $\text{CO}$  \_\_\_\_\_
2.  $\text{CO}_2$  \_\_\_\_\_
3.  $\text{H}_2\text{O}$  \_\_\_\_\_
4.  $\text{NH}_3$  \_\_\_\_\_
5.  $\text{CH}_4$  \_\_\_\_\_
6.  $\text{NO}$  \_\_\_\_\_
7.  $\text{N}_2\text{O}$  \_\_\_\_\_
8.  $\text{N}_2\text{O}_5$  \_\_\_\_\_
9.  $\text{N}_2\text{O}_3$  \_\_\_\_\_
10.  $\text{PCl}_3$  \_\_\_\_\_
11.  $\text{PF}_5$  \_\_\_\_\_
12.  $\text{P}_2\text{O}_5$  \_\_\_\_\_
13.  $\text{SO}_2$  \_\_\_\_\_
14.  $\text{S}_2\text{O}_7$  \_\_\_\_\_
15.  $\text{SiCl}_4$  \_\_\_\_\_
16.  $\text{B}_4\text{C}$  \_\_\_\_\_
17.  $\text{BN}$  \_\_\_\_\_
18.  $\text{CS}_2$  \_\_\_\_\_
19.  $\text{SeF}_6$  \_\_\_\_\_
20.  $\text{H}_2\text{O}_2$  \_\_\_\_\_
21.  $\text{Cl}_2\text{O}$  \_\_\_\_\_
22.  $\text{N}_2\text{O}_4$  \_\_\_\_\_
23.  $\text{NI}_3$  \_\_\_\_\_
24.  $\text{AsCl}_3$  \_\_\_\_\_
25.  $\text{CCl}_4$  \_\_\_\_\_
26.  $\text{SeF}_2$  \_\_\_\_\_
27.  $\text{SiO}_2$  \_\_\_\_\_
28.  $\text{H}_2\text{S}$  \_\_\_\_\_
29.  $\text{SF}_4$  \_\_\_\_\_
30.  $\text{SO}_3$  \_\_\_\_\_