

Nomenclature Review Worksheet
Honors Chemistry

Name: _____

I. Binary Compounds

A. Metal-Nonmetal

- 1) name of 1st element
- 2) root of name of 2nd element with -ide ending

Ex. CaO calcium oxide
K₂S potassium sulfide

Name the following:

Write formulas for the following
(Write the ions and crisscross!)

1. NaF sodium fluoride

11. Aluminum chloride AlCl₃

2. K₂O potassium oxide

12. Lithium sulfide Li₂S

3. LiBr lithium bromide

13. Calcium phosphide Ca₃P₂

4. CaCl₂ calcium chloride

14. Barium fluoride BaF₂

5. BaS barium sulfide

15. Potassium oxide K₂O

6. BaF₂ barium fluoride

16. Sodium bromide NaBr

7. Na₂S sodium sulfide

17. Barium nitride Ba₃N₂

8. MgI₂ magnesium iodide

18. Lithium oxide Li₂O

9. K₃N potassium nitride

19. Aluminum oxide Al₂O₃

10. BeSe beryllium selenide

20. Rubidium iodide RbI

B. Transition Metal-Nonmetal

- 1) name of Transition metal with Roman numeral
- 2) root of nonmetal with -ide ending

Ex. CuO copper (II) oxide
Fe₂O₃ Iron (III) oxide

Name the following:

1. CuCl copper (I) chloride

2. CuCl₂ copper (II) chloride

3. FeO Iron (II) oxide

4. MnS manganese (II) sulfide

5. Cr₂O₃ chromium (III) oxide

6. NiF₂ Nickel (II) fluoride

7. SnCl₄ Tin (IV) chloride

8. Ag₃P silver phosphide

9. ZnS zinc sulfide

10. Hg₂Cl₂ mercury (II) chloride

Write formulas for the following:

11. Mercury (II) sulfide HgS

12. Copper(II) nitride Cu₃N₂

13. Iron(III) bromide FeBr₃

14. Mercury(I) oxide Hg₂O

15. Silver fluoride AgF

16. Copper(II) oxide CuO

17. Chromium(III) oxide Cr₂O₃

18. Nickel(II) bromide NiBr₂

19. Tin (IV) sulfide SnS₂

20. Zinc oxide ZnO

C. Nonmetal-Nonmetal

- 1) Name of 1st element (with prefix if more than one atom)
- 2) prefix for number of atoms- root of nonmetal name -ide ending

mon(o)- 1	tri- 3	penta-5	hept(a)- 7	non(a)- 9
di- 2	tetra- 4	hex(a)- 6	oct(a)- 8	dec(a)- 10

ex. N_2O dinitrogen monoxide; NO_2 nitrogen dioxide

Name the following:

1. SO_3 sulfur trioxide
2. $AsCl_3$ arsenic trichloride
3. N_2O_3 dinitrogen trioxide
4. P_2O_5 diphosphorus pentoxide
5. $GeCl_4$ germanium tetrachloride
6. XeF_6 xenon hexafluoride
7. SF_4 sulfur tetrafluoride
8. NO_3 nitrogen trioxide
9. SiO_2 silicon dioxide
10. CO carbon monoxide

Write formulas for the following:

11. Sulfur dioxide SO_2
12. Phosphorous trichloride PCl_3
13. Nitrogen monoxide NO
14. Carbon tetrafluoride CF_4
15. Dinitrogen pentoxide N_2O_5
16. Sulfur trioxide SO_3
17. Carbon monoxide CO
18. Phosphorous pentachloride PCl_5
19. Arsenic tribromide $AsBr_3$
20. Nitrogen triiodide NI_3

II. Compounds with Polyatomic Ions (ternary)
 - name the 2 parts (ion names)

Ex. NH_4Cl ammonium chloride
 $\text{Ca}(\text{NO}_3)_2$ calcium nitrate

Name the following:

Write the formulas for the following:

1. $(\text{NH}_4)_2\text{CO}_3$ ammonium carbonate

11. Aluminum sulfate $\text{Al}_2(\text{SO}_4)_3$

2. BaSO_4 barium sulfate

12. zinc nitrite $\text{Zn}(\text{NO}_2)_2$

3. Li_2SO_3 lithium sulfite

13. Magnesium chlorate $\text{Mg}(\text{ClO}_3)_2$

4. CrPO_4 chromium (III) phosphate

14. Sodium bicarbonate NaHCO_3

5. $\text{NaC}_2\text{H}_3\text{O}_2$ sodium acetate

15. Calcium hydroxide $\text{Ca}(\text{OH})_2$

6. $\text{Ba}(\text{OH})_2$ barium hydroxide

16. Copper (II) carbonate CuCO_3

7. $\text{Fe}(\text{NO}_3)_3$ Iron (III) nitrate

17. Ammonium sulfide $(\text{NH}_4)_2\text{S}$

8. KCN potassium cyanide

18. Iron (III) acetate $\text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_3$

9. SrCrO_4 strontium chromate

19. lithium sulfate Li_2SO_4

10. CaCr_2O_7 calcium dichromate

2. Strontium phosphate $\text{Sr}_3(\text{PO}_4)_2$

III. Acids

-ate \rightarrow ic

ite \rightarrow ous

-ide \rightarrow hydro ___ ic

1. H_2CO_3 carbonic acid

6. Hydrosulfuric acid H_2S

2. H_2SO_4 sulfuric acid

7. Hypochlorous acid HClO

3. H_2SO_3 sulfurous acid

8. Perchloric acid HClO_4

4. H_3PO_4 phosphoric acid

14. Nitric acid HNO_3

5. $\text{HC}_2\text{H}_3\text{O}_2$ acetic acid

15. Iodic acid HIO_3

Review- Naming Chemical Compounds

The following are a good mix of naming and formula writing problems to help you get some practice. I will expect that you know how to name both ionic and covalent compounds in your work.

Name the following chemical compounds:

- 1) NaBr sodium bromide
- 2) $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$ calcium acetate
- 3) P_2O_5 diphosphorus pentoxide
- 4) $\text{Ti}(\text{SO}_4)_2$ titanium (IV) sulfate
- 5) FePO_4 Iron (III) phosphate
- 6) K_3N potassium nitride
- 7) SO_2 sulfur dioxide
- 8) CuOH copper (I) hydroxide
- 9) $\text{Zn}(\text{NO}_2)_2$ zinc nitrite
- 10) V_2S_3 Vanadium (III) sulfide

Write the formulas for the following chemical compounds:

- 11) silicon dioxide SiO_2
- 12) nickel (III) sulfide Ni_2S_3
- 13) manganese (II) phosphate $\text{Mn}_3(\text{PO}_4)_2$
- 14) silver acetate $\text{AgC}_2\text{H}_3\text{O}_2$
- 15) diboron tetrabromide B_2Br_4
- 16) potassium carbonate K_2CO_3
- 17) ammonium oxide $(\text{NH}_4)_2\text{O}$
- 18) tin (IV) selenide SnSe_2
- 19) carbon tetrachloride CCl_4

Mixed Ionic & Covalent Compounds

First identify if the compound is ionic (I) or covalent (C), then either name it OR write the compound.

1. I aluminum nitrate $Al(NO_3)_3$
2. I $Sr_3(PO_3)_2$ strontium phosphite
3. C Carbon dioxide CO_2
4. C P_4O_{10} tetraphosphorus decoxide
5. I sodium permanganate $NaMnO_4$
6. I Na_2O sodium oxide * should have a subscript of "1"
7. C Dinitrogen pentoxide N_2O_5
8. C S_2O_3 disulfur trioxide
9. I chromium(II) sulfate $CrSO_4$
10. I Mg_3N_2 magnesium nitride
11. C Diphosphorus pentoxide P_2O_5
12. C CS_2 carbon disulfide
13. I sodium bromide $NaBr$
14. I $Al_2(SO_3)_3$ aluminum sulfite
15. C Dinitrogen monoxide N_2O
16. C SO_2 sulfur dioxide
17. I potassium nitrite KNO_2
18. I Fe_2S_3 Iron(III) sulfide
19. C Dinitrogen tetroxide N_2O_4
20. C PCl_5 phosphorus pentachloride
21. I barium hydrogen sulfate $Ba(HSO_4)_2$
22. I Al_2O_3 aluminum oxide * 3 is a subscript
23. C Trinitrogen monosulfide N_3S
24. acid H_2S hydrosulfuric acid
25. I nickel(III) chlorite $Ni(ClO_2)_3$
26. I $Pb(NO_3)$ lead(I) nitrite
27. C Carbon tetrafluoride CF_4

Name: _____

Date: _____

Ionic, Covalent, Metallic #2 – Bond Type and Name

Directions:

First identify the substance as ionic, covalent, or metallic. If the compound is ionic (contains a metal or a polyatomic ion) then name it according to the ionic naming rules, if it is covalent then use prefixes, if it is metallic then name the element.

IONIC – No prefixes; Roman Numeral if transition metal

COVALENT – Prefixes

METALLIC – Name the element

Compound	Ionic, Covalent or Metallic?	Name
CrCl_3	ionic covalent metallic	Chromium(III) chloride
CO_2	ionic covalent metallic	Carbon dioxide
Al(OH)_3	ionic covalent metallic	aluminum hydroxide
Co	ionic covalent metallic	cobalt
NI_3	ionic covalent metallic	nitrogen triiodide
Cu_2S	ionic covalent metallic	copper(I) sulfide
Na_2CO_3	ionic covalent metallic	sodium carbonate
BF_3	ionic covalent metallic	Boron trifluoride
P_2O_5	ionic covalent metallic	diphosphorus pentoxide
Ca_3P_2	ionic covalent metallic	calcium phosphide
$\text{Sr(NO}_2)_2$	ionic covalent metallic	strontium nitrite
F_2	ionic covalent metallic	fluorine
PbSO_4	ionic covalent metallic	lead(II) sulfate