

Binary Ionic Compounds – Worksheet #1

A. Write the formulas for the compounds formed from these elements. Remember, the cation is always written first.

1. rubidium and iodine _____
2. barium and chlorine _____
3. lithium and selenium _____
4. nitrogen and magnesium _____

5. sulfur and sodium _____
6. aluminum and oxygen _____
7. silver and phosphorus _____
8. fluorine and zinc _____

B. Write the names for these binary ionic compounds.

9. Cs₂S _____
10. BaO _____
11. AlI₃ _____
12. MnO₂ _____
13. Tc₃P₄ _____
14. CdBr₂ _____
15. NaCl _____

16. FeF₃ _____
17. Mg₃N₂ _____
18. Ni₃P₂ _____
19. UO₂ _____
20. HF _____
21. CoN _____
22. K₂S _____

C. Write the formulas for these binary ionic compounds.

23. rubidium sulfide _____
24. mercury(II) oxide _____
25. calcium nitride _____
26. zinc bromide _____
27. uranium(VI) fluoride _____
28. silver phosphide _____
29. platinum(II) selenide _____

30. europium(II) nitride _____
31. cesium phosphide _____
32. lead(II) chloride _____
33. cadmium oxide _____
34. tin(IV) fluoride _____
35. iron(II) oxide _____
36. iron(III) oxide _____

Binary Ionic Compounds – Worksheet #2

If the name of the compound is given, write the formula. If the formula of the compound is given, write the name.

1. KBr _____
2. V₂O₅ _____
3. cobalt(III) oxide _____
4. barium phosphide _____
5. cadmium nitride _____
6. Cu₃P _____
7. Ag₂S _____
8. Sn₃N₄ _____
9. radium iodide _____
10. beryllium selenide _____
11. Fe₂S₃ _____
12. SrO _____
13. CrCl₂ _____
14. mercury(II) fluoride _____
15. lead(IV) bromide _____
16. CuSe _____
17. FeP _____
18. lithium oxide _____
19. cobalt(III) fluoride _____
20. CdI₂ _____

Ternary Ionic Compounds - Worksheet

If the name of the compound is given, write the formula. If the formula of the compound is given, write the name.

1. calcium nitrite _____
2. BaSO_4 _____
3. silver acetate _____
4. SrSO_3 _____
5. nickel(II) phosphate _____
6. Na_2CO_3 _____
7. LiHCO_3 _____
8. ammonium phosphate _____
9. $\text{Be}(\text{ClO})_2$ _____
10. aluminum oxalate _____
11. rubidium dichromate _____
12. KHSO_3 _____
13. calcium hydroxide _____
14. manganese(II) silicate _____
15. HCN _____
16. cesium hydrogen sulfate _____
17. $\text{Ti}(\text{OH})_4$ _____
18. ammonium chloride _____
19. $\text{Ca}(\text{ClO}_3)_2$ _____
20. rubidium cyanate _____
21. copper(II) sulfate _____
22. CuCl _____
23. iron(II) arsenate _____
24. NH_4OH _____

Latin Nomenclature

Some ions have Latin names for them that are commonly used. When there are two possible charges for similar ions, the lower of the two is the “-ous” ion and the higher of the two is the “-ic” ion.

For your information, the Latin roots for the name of the metals are: Cu “cupr”, Fe “ferr”, Cr “chrom”, Sn “stann”, Co “cobalt”, and Pb “plumb”.

Cu^+ - copper(I) ion – cuprous ion

Cu^{2+} - copper(II) ion – cupric ion

Fe^{2+} - iron(II) ion – ferrous ion

Fe^{3+} - iron(III) ion - ferric ion

Cr^{2+} - chromium(II) ion – chromous ion

Cr^{3+} - chromium(III) ion – chromic ion

Sn^{2+} - tin(II) ion – stannous ion

Sn^{4+} - tin(IV) ion – stannic ion

Pb^{2+} - lead(II) ion – plumbous ion

Pb^{4+} - lead(IV) ion – plumbic ion

You must learn all of these Latin names. Remember the lower of the two is “ous” and the higher of the two is “ic”.

Name the following compounds with both methods:

- | | | |
|----------------------------|------------------------|---------------------|
| 1. Fe_2O_3 | <u>iron(III) oxide</u> | <u>ferric oxide</u> |
| 2. Cu_2O | _____ | _____ |
| 3. SnO_2 | _____ | _____ |
| 4. PbO | _____ | _____ |

Molecular Compounds - Worksheet

If the name of the compound is given, write the formula. If the formula is given, write the name.

1. CF₄ _____
2. N₂O₅ _____
3. CS₂ _____
4. SO₃ _____
5. P₄O₈ _____
6. iodine tribromide _____
7. chlorine dioxide _____
8. sulfur hexafluoride _____
9. difluorine octachloride _____
10. tribromine nonatelluride _____
11. H₂O _____
12. P₂S₄ _____
13. N₂O₄ _____
14. XeF₄ _____
15. Si₄ _____
16. carbon dioxide _____
17. trinitrogen hexabromide _____
18. diiodine heptaselenide _____
19. CO _____
20. dicarbon octafluoride _____
21. P₄O₁₀ _____
22. Si₃N₄ _____
23. Cl₂S₇ _____
24. NBr₅ _____
25. phosphorus trichloride _____
26. PI₃ _____
27. disulfur trioxide _____
28. PCl₅ _____
29. diiodine dichloride _____
30. dinitrogen monoxide _____
31. I₄O₉ _____
32. dihydrogen monoxide _____

Acids - Worksheet

If the name of the acid is given, write the formula. If the formula of the acid is given, write the name.

1. hydrocyanic acid _____
2. dichromic acid _____
3. hydrobromic acid _____
4. nitrous acid _____
5. sulfuric acid _____
6. $\text{H}_2\text{SiO}_3(\text{aq})$ _____
7. $\text{HF}(\text{aq})$ _____
8. $\text{H}_3\text{PO}_3(\text{aq})$ _____
9. $\text{H}_2\text{CO}_3(\text{aq})$ _____
10. $\text{H}_2\text{S}(\text{aq})$ _____
11. acetic acid _____
12. sulfurous acid _____
13. perchloric acid _____
14. hydroselenic acid _____
15. carbonic acid _____
16. $\text{HClO}(\text{aq})$ _____
17. $\text{HClO}_2(\text{aq})$ _____
18. $\text{H}_2\text{C}_2\text{O}_4(\text{aq})$ _____
19. $\text{H}_3\text{P}(\text{aq})$ _____
20. $\text{HMnO}_4(\text{aq})$ _____
21. hydrochloric acid _____
22. chromic acid _____
23. phosphoric acid _____
24. $\text{HCl}(\text{g})$ _____

Chapter Review of All Naming

If the name of the substance is given, write the formula. If the formula is given, write the name.

1. cadmium nitrate _____
2. chromate ion _____
3. dinitrogen monoxide _____
4. potassium bromide _____
5. nitrous acid _____
6. HPO_4^{2-} _____
7. PCl_3 _____
8. V_2O_5 _____
9. HClO_4 _____
10. BaSO_4 _____
11. sulfur hexafluoride _____
12. cuprous oxide _____
13. sulfuric acid _____
14. hydrogen peroxide _____
15. carbonate ion _____
16. BaO _____
17. HClO_2 _____
18. SrSO_3 _____
19. Fe _____
20. acetic acid _____
21. CBr_4 _____
22. hypochlorite ion _____
23. $(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ _____
24. calcium hydroxide _____
25. Na_2CO_3 _____
26. Cu_3P _____
27. HI _____
28. lead(II) acetate _____