Nomenclature: Ionic Compounds /28

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

Ionic Compounds—Univalent Metal Ions

1. If the following pairs of elements were mixed and heated, they would combine into solid ionic compounds. Write the name and formula of each compound formed.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name** |  | **Formula** |
| a) silver and iodine | silver iodide |  | AgI*(s)* |
| b) magnesium and oxygen |  |  |  |
| c) magnesium and bromine |  |  |  |
| d) calcium and nitrogen |  |  |  |
| e) zinc and selenium |  |  |  |
| f) sodium and sulfur |  |  |  |
| g) barium and phosphorus |  |  |  |
| h) aluminium and fluorine |  |  |  |
| i) potassium and chlorine |  |  |  |
| j) silver and oxygen |  |  |  |

2. Write the correct names for each of the following compounds.

|  |  |  |
| --- | --- | --- |
| a) MgCI2 |  |  |
| b) Ag3N |  |  |
| c) CsF |  |  |
| d) CdO |  |  |
| e) MgBr2 |  |  |
| f) Al2O3 |  |  |
| g) NaI |  |  |
| h) K2S |  |  |
| i) BaS |  |  |
| j) Li3P |  |  |

Nomenclature: Ionic Compounds 2 /27

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

Ionic Compounds—Multivalent Metal Ions

1. If the following pairs of elements were mixed and heated, they would combine into solid ionic compounds. In this worksheet, use the most common ionic form of the multivalent metal ion. The most common form is listed first in the periodic table. For example, iron exists as both 2+ and 3+ ions, with iron(III) being the most common.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name** |  | **Formula** |
| a) iron and sulfur | iron(III) sulfide |  | Fe2S3*(s)* |
| b) copper and oxygen |  |  |  |
| c) manganese and fluorine |  |  |  |
| d) gold and nitrogen |  |  |  |
| e) chromium and chlorine |  |  |  |
| f) platinum and phosphorus |  |  |  |
| g) nickel and oxygen |  |  |  |
| h) cobalt and bromine |  |  |  |
| i) tungsten and iodine |  |  |  |
| j) manganese and sulfur |  |  |  |

2. Write the correct name for each of the following compounds. The charge on the multivalent ion is not given by the periodic table. It is determined by the charge of the non-metal and the subscripts that appear in the formula.

|  |  |  |
| --- | --- | --- |
| a) FeCl2*(s)* |  | iron(II) chloride |
| b) FeBr3*(s)* |  |  |
| c) CrS*(s)* |  |  |
| d) SnO2*(s)* |  |  |
| e) Pb3N2*(s)* |  |  |
| f) HgI2*(s)* |  |  |
| g) CrO3*(s)* |  |  |
| h) MnF4*(s)* |  |  |
| i) Cu2O*(s)* |  |  |
| j) AuI3*(s)* |  |  |

Nomenclature: Ionic Compounds 3 /36

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

Ionic Compounds—Polyatomic Ions

The names and charges of polyatomic ions can be found in lists and need not be memorized. It is a good idea, however, to get to know the more common ones introduced in the practice below. Remember to form the name by combining the positive and negative ion:

name = positive ion + negative ion

|  |  |  |  |
| --- | --- | --- | --- |
| **COMBINE** | **IONS (optional)** | **FORMULA** | **NAME** |
| iron(II) & nitrate | Fe2+ NO3− | Fe(NO3)2*(s)* | iron(II) nitrate |
| aluminium & nitrate | Al3+ NO3− | Al(NO3)3*(s)* | aluminium nitrate |
| sodium & sulfate |  |  |  |
| lead(IV) & sulfate |  |  |  |
| magnesium & carbonate |  |  |  |
| gold(III) & sulfite |  |  |  |
| zinc & hydrogencarbonate |  |  |  |
| ammonium & nitrate |  |  |  |
| copper(I) & phosphate |  |  |  |
| silver & hydroxide |  |  |  |
| aluminium & hydroxide |  |  |  |
| lead(II) & phosphate |  |  |  |
| potassium & acetate |  |  |  |
| manganese(V) & sulfate |  |  |  |

Nomenclature: Ionic Compounds /25

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

All Ionic Compounds

I. Write the formula for each compound.

|  |  |  |
| --- | --- | --- |
| 1) calcium acetate |  |  |
| 2) potassium chloride |  |  |
| 3) ammonium carbonate |  |  |
| 4) sodium nitride |  |  |
| 5) titanium(IV) hypochlorite |  |  |
| 6) iron(III) sulfide |  |  |
| 7) zinc dichromate |  |  |
| 8) platinum(IV) oxide |  |  |
| 9) aluminium hydroxide |  |  |
| 10) mercury(II) nitrate |  |  |
| 11) strontium fluoride |  |  |
| 12) tin(IV) hydrogenoxalate |  |  |
| 13) calcium peroxide |  |  |
| 14) gold(I) sulfate |  |  |
| 15) lead(IV) thiocyanate |  |  |
| 16) nickel(III) sulfide |  |  |

II. Write the name of each compound.

|  |  |  |
| --- | --- | --- |
| 17) CsI*(s)* |  |  |
| 18) SnCl4*(s)* |  |  |
| 19) Cr(NO3)3*(s)* |  |  |
| 20) (NH4)3PO4*(s)* |  |  |
| 21) Cu2SO4*(s)* |  |  |
| 22) Mg(H2PO4)2*(s)* |  |  |
| 23) Na2S2O3*(s)* |  |  |
| 24) AgClO3(s) |  |  |
| 25) Zn(OH)2*(s)* |  |  |