**Practice Table #1: Finding Charges on Ions**

| Element | Group # | Ion | Element | Group # | Ion |
|---|---|---|---|---|---|
| Li | 1 | $Li^{+}$ | F | 17 | $F^{-}$ |
| Mg | 2 | $Mg^{2+}$ | S | 16 | $S^{2-}$ |
| Al | 3 | $Al^{3+}$ | N | 15 | $N^{3-}$ |
| Be | 2 | $Be^{2+}$ | Br | 17 | $Br^{-}$ |
| Na | 1 | $Na^{+}$ | P | 15 | $P^{3-}$ |

**Practice Table #2: Writing Formulas of Regular Ionic Compounds**

| Metal | Non-metal | Compound | Metal | Non-metal | Compound |
|---|---|---|---|---|---|
| Na | Br | NaBr<br>sodium bromide | Al | Cl | $AlCl_3$<br>aluminum chloride |
| Mg | Br | $MgBr_2$<br>magnesium bromide | B | O | $B_2O_3$<br>boron oxide |
| Al | Br | $AlBr_3$<br>aluminum bromide | Ca | N | $Ca_3N_2$<br>calcium nitride |
| Li | S | $Li_2S$<br>lithium sulfide | K | O | $K_2O$<br>potassium oxide |
| Ca | S | CaS<br>calcium sulfide | Na | P | $Na_3P$<br>sodium phosphide |
| B | S | $B_2S_3$<br>boron sufide | Al | O | $Al_2O_3$<br>aluminum oxide |
| K | N | $K_3N$<br>potassium nitride | Mg | S | MgS<br>magnesium sulfide |
| Be | N | $Be_3N_2$<br>beryllium nitride | B | P | BP<br>boron phosphide |
| Al | N | AlN<br>aluminum nitride | Na | Cl | NaCl<br>sodium chloride |
| Li | O | $Li_2O$<br>lithium oxide | Ca | F | $CaF_2$<br>calcium fluoride |

**Practice Table #3: Chemical Names and Formulas of Regular Ionic Compounds**

| Chemical Name | Metal Ion | Non-metal Ion | Chemical Formula |
|---|---|---|---|
| sodium fluoride | $Na^{+}$ | $F^{-}$ | NaF |
| boron iodide | $B^{3+}$ | $I^{-}$ | $BI_3$ |
| calcium phosphide | $Ca^{2+}$ | $P^{3-}$ | $Ca_3P_2$ |
| magnesium oxide | $Mg^{2+}$ | $O^{2-}$ | MgO |
| potassium chloride | $K^{+}$ | $Cl^{-}$ | KCl |
| beryllium sulfide | $Be^{2+}$ | $S^{2-}$ | BeS |
| barium nitride | $Ba^{2+}$ | $N^{3-}$ | $Be_3N_2$ |
| aluminum sulfide | $Al^{3+}$ | $S^{2-}$ | $Al_2S_3$ |
| lithium phosphide | $Li^{+}$ | $P^{3-}$ | $Li_3P$ |
| potassium sulfide | $K^{+}$ | $S^{2-}$ | $K_2S$ |
| boron oxide | $B^{3+}$ | $O^{2-}$ | $B_2O_3$ |
| calcium fluoride | $Ca^{2+}$ | $F^{-}$ | $CaF_2$ |

**Practice Table #4: Names and Formulas of Covalent Compounds**

| Chemical Name | Formula | Chemical Name | Formula |
|---|---|---|---|
| nitrogen monoxide | NO | sulfur dichloride | $SCl_2$ |
| silicon dioxide | $SiO_2$ | sulfur dioxide | $SO_2$ |
| sulfur trioxide | $SO_3$ | nitrogen monoxide | NO |
| carbon tetrachloride | $CCl_4$ | silicon disulfide | $SiS_2$ |
| diarsenic trioxide | $As_2O_3$ | phosphorus trioxide | $PO_3$ |
| phosphorus pentabromide | $PBr_5$ | phosphorus trifluoride | $PF_3$ |
| nitrogen dioxide | $NO_2$ | carbon tetrabromide | $CBr_4$ |
| sulfur hexafluoride | $SF_6$ | nitrogen trichloride | $NCl_3$ |
| selenium dioxide | $SeO_2$ | silicon trioxide | $SiO_3$ |
| dinitrogen tetroxide | $N_2O_4$ | phosphorus trichloride | $PCl_3$ |
| sulfur dioxide | $SO_2$ | carbon disulfide | $CS_2$ |

**Practice Table #5: Writing Formulas with Transition Metals**

| Compound Name | Metal Ion | Non-metal Ion | Formula |
|---|---|---|---|
| gold (I) chloride | $Au^{+}$ | $Cl^{-}$ | AuCl |
| nickel (III) sulfide | $Ni^{3+}$ | $S^{2-}$ | $Ni_2S_3$ |
| cobalt (II) oxide | Co | O | CoO |
| iron (III) phosphide | Fe | P | FeP |
| mercury (IV) fluoride | $Hg^{4+}$ | $F^{-}$ | $HgF_4$ |
| nickel (II) nitride | $Ni^{2+}$ | $N^{3-}$ | $Ni_3N_2$ |
| gold (III) sulfide | $Au^{3+}$ | $S^{2-}$ | $Au_2S_3$ |
| copper (I) oxide | $Cu^{+}$ | $O^{2-}$ | $Cu_2O$ |

**Practice Table #6: Naming Ionic Compounds with Transition Metals**

| Formula | Reverse Crossover Predicted Charges | | Name |
|---|---|---|---|
| | Metal Ion | Non-Metal Ion | |
| CoS | 1+ (X2) | 1- (X2) | cobalt (II) sulfide |
| NiO | 1+ (X2) | 1- (X2) | nickel (II) oxide |
| $HgI_4$ | 4+ | 1- | mercury (IV) iodide |
| $FeF_2$ | 2+ | 1- | iron (II) fluoride |
| $Fe_2O_3$ | 3+ | 2- | iron (III) oxide |
| $CuCl_2$ | 2+ | 1- | copper (II) chloride |
| $HgF_2$ | 2+ | 1- | mercury (II) fluoride |
| CoN | 1+ (X3) | 1- (X3) | cobalt (III) nitride |
| NiP | 1+ (X3) | 1- (X3) | nickel (III) phosphide |
| FeS | 1+ (X2) | 1- (X2) | iron (II) sulfide |
| $Cu_2O_3$ | 3+ | 2- | copper (III) oxide |

**Practice Table #7: Writing Formulas with Polyatomic Ions**

| Compound Name | Positive Ion | Negative Ion | Formula |
|---|---|---|---|
| sodium carbonate | $Na^{+}$ | $CO_3^{2-}$ | $Na_2CO_3$ |
| calcium nitrate | $Ca^{2+}$ | $NO_3^{-}$ | $Ca(NO_3)_2$ |
| manganese (V) sulfate | $Mn^{5+}$ | $SO_4^{2-}$ | $Mn_2(SO_4)_5$ |
| aluminum hydrogen carbonate | $Al^{3+}$ | $HCO_3$- | $Al(HCO_3)_3$ |
| potassium phosphate | $K^{+}$ | $PO_4^{3-}$ | $K_3PO_4$ |
| beryllium hydroxide | $Be^{2+}$ | $OH^{-}$ | $Be(OH)_2$ |
| gold (I) hydrogen sulfate | $Au^{+}$ | $HSO_4^{-}$ | $AuHSO_4$ |
| ammonium chloride | $NH_4^{+}$ | $Cl^{-}$ | $NH_4Cl$ |
| nickel (II) phosphate | $Ni^{2+}$ | $PO_4^{3-}$ | $Ni_3(PO_4)_2$ |
| mercury (I) sulfate | $Hg^{+}$ | $SO_4^{2-}$ | $Hg_2SO_4$ |
| ammonium carbonate | $NH_4^{+}$ | $CO_3^{2-}$ | $(NH_4)_2CO_3$ |

**Practice Table #8: Naming Compounds with Polyatomic Ions**

| FORMULA | NAME OF COMPOUND |
|---|---|
| $Fe(OH)_2$ | iron (II) hydroxide |
| $CaCO_3$ | calcium carbonate |
| $NH_4Cl$ | ammonium chloride |
| $LiHCO_3$ | lithium hydrogen carbonate |
| $Al(NO_3)_3$ | aluminum nitrate |
| $Be_3(PO_4)_2$ | beryllium phosphate |
| $Cu(HSO_4)_2$ | copper (II) hydrogen sulfate |
| $(NH_4)_3N$ | ammonium nitride |

**Review: Naming Chemical Compounds**

| Element #1 (or ion and charge) | Element #2 (or ion and charge) | Type of Compound | Formula | Name |
|---|---|---|---|---|
| $Be^{2+}$ | $F^{-}$ | Ionic | $BeF_2$ | beryllium fluoride |
| $Na^{+}$ | $Cl^{-}$ | Ionic | NaCl | sodium chloride |
| $Ni^{3+}$ | $O^{2-}$ | Ionic | $Ni_2O_3$ | nickel (III) oxide |
| Cl | O | Covalent | $Cl_2O$ | dichlorine monoxide |
| $Na^{+}$ | $CO_3^{-2}$ | Ionic | $Na_2CO_3$ | sodium carbonate |
| $Na^{+}$ | $PO_4^{3-}$ | Ionic | $Na_3PO_4$ | sodium phosphate |
| $Ca^{2+}$ | $Cl^{-}$ | Ionic | $CaCl_2$ | calcium chloride |
| $NH_4^{+}$ | $F^{-}$ | Ionic | $NH_4F$ | ammonium fluoride |
| $Ni^{2+}$ | $S^{2-}$ | Ionic | NiS | nickel (II) sulfide |
| $Ca^{2+}$ | $NO^{3-}$ | Ionic | $Ca(NO_3)_2$ | calcium nitrate |
| N | F | Covalent | $NF_3$ | nitrogen trifluoride |
| $Au^{3+}$ | $I^{-}$ | Ionic | $AuI_3$ | gold (III) iodide |
| $Co^{2+}$ | $F^{-}$ | Ionic | $CoF_2$ | cobalt(II) fluoride |
| $K^{+}$ | $HSO_4^{-}$ | Ionic | $KHSO_4$ | potassium hydrogen sulfate |
| $K^{+}$ | $Cl^{-}$ | Ionic | KCl | potassium chloride |
| $Cu^{2+}$ | $OH^{-}$ | Ionic | $Cu(OH)_2$ | copper (II) hydroxide |
| $Hg^{2+}$ | $SO_4^{2-}$ | Ionic | $HgSO_4$ | mercury (II) sulfate |
| C | O | Covalent | CO | carbon monoxide |
| $Fe^{3+}$ | $O^{2-}$ | Ionic | $Fe_2O_3$ | iron (III) oxide |
| $Pb^{4+}$ | $SO_4^{2-}$ | Ionic | $Pb(SO_4)_2$ | lead (IV) sulfate |