

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 sodium bromide | Al | Cl | AlCl_3 aluminum chloride |
| Mg | Br | MgBr_2 magnesium bromide | B | O | B_2O_3 boron oxide |
| Al | Br | AlBr_3 aluminum bromide | Ca | N | Ca_3N_2 calcium nitride |
| Li | S | Li_2S lithium sulfide | K | O | K_2O potassium oxide |
| Ca | S | CaS calcium sulfide | Na | P | Na_3P sodium phosphide |
| B | S | B_2S_3 boron sulfide | Al | O | Al_2O_3 aluminum oxide |
| K | N | K_3N potassium nitride | Mg | S | MgS magnesium sulfide |
| Be | N | Be_3N_2 beryllium nitride | B | P | BP boron phosphide |
| Al | N | AlN aluminum nitride | Na | Cl | NaCl sodium chloride |
| Li | O | Li_2O lithium oxide | Ca | F | CaF_2 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-} | Ba_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 ₂ O 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 ₂ O 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 ₂ CO 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 ₃ PO ₄ |
| beryllium hydroxide | Be ²⁺ | OH ⁻ | Be(OH) ₂ |
| gold (I) hydrogen sulfate | Au ⁺ | HSO ₄ ⁻ | AuHSO ₄ |
| ammonium chloride | NH ₄ ⁺ | Cl ⁻ | NH ₄ Cl |
| nickel (II) phosphate | Ni ²⁺ | PO ₄ ³⁻ | Ni ₃ (PO ₄) ₂ |
| mercury (I) sulfate | Hg ⁺ | SO ₄ ²⁻ | Hg ₂ SO ₄ |
| ammonium carbonate | NH ₄ ⁺ | CO ₃ ²⁻ | (NH ₄) ₂ CO ₃ |

Practice Table #8: Naming Compounds with Polyatomic Ions

| FORMULA | NAME OF COMPOUND |
|---|------------------------------|
| Fe(OH) ₂ | iron (II) hydroxide |
| CaCO ₃ | calcium carbonate |
| NH ₄ Cl | 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) ₃ N | ammonium nitride |

Review: Naming Chemical Compounds

| Element #1 (or ion and charge) | Element #2 (or ion and charge) | Type of Compound | Formula | Name |
|---|---|-----------------------------|---------------------------------------|---------------------------------------|
| Be²⁺ | F⁻ | Ionic | BeF₂ | beryllium fluoride |
| Na⁺ | Cl⁻ | Ionic | NaCl | sodium chloride |
| Ni³⁺ | O²⁻ | Ionic | Ni₂O₃ | nickel (III) oxide |
| Cl | O | Covalent | Cl₂O | dichlorine monoxide |
| Na⁺ | CO₃⁻² | Ionic | Na₂CO₃ | sodium carbonate |
| Na⁺ | PO₄³⁻ | Ionic | Na₃PO₄ | sodium phosphate |
| Ca²⁺ | Cl⁻ | Ionic | CaCl₂ | calcium chloride |
| NH₄⁺ | F⁻ | Ionic | NH₄F | ammonium fluoride |
| Ni²⁺ | S²⁻ | Ionic | NiS | nickel (II) sulfide |
| Ca²⁺ | NO₃³⁻ | Ionic | Ca(NO₃)₂ | calcium nitrate |
| N | F | Covalent | NF₃ | nitrogen trifluoride |
| Au³⁺ | I⁻ | Ionic | AuI₃ | gold (III) iodide |
| Co²⁺ | F⁻ | Ionic | CoF₂ | cobalt(II) fluoride |
| K⁺ | HSO₄⁻ | Ionic | KHSO₄ | potassium hydrogen sulfate |
| K⁺ | Cl⁻ | Ionic | KCl | potassium chloride |
| Cu²⁺ | OH⁻ | Ionic | Cu(OH)₂ | copper (II) hydroxide |
| Hg²⁺ | SO₄²⁻ | Ionic | HgSO₄ | mercury (II) sulfate |
| C | O | Covalent | CO | carbon monoxide |
| Fe³⁺ | O²⁻ | Ionic | Fe₂O₃ | iron (III) oxide |
| Pb⁴⁺ | SO₄²⁻ | Ionic | Pb(SO₄)₂ | lead (IV) sulfate |