Identifying Ions in a Salt:
Identify the ions that make up the salts. Ignore solubility. Put correct charges. Balance the "equation."

1. $CuSO_4\ (aq) \rightarrow Cu^{2+}\ (aq) + SO_4^{2-}\ (aq)$
2. $Fe_2O_3\ (aq) \rightarrow 2Fe^{3+}\ (aq) + 3O^{2-}\ (aq)$
3. $Mg_3N_2\ (aq) \rightarrow 3Mg^{2+}\ (aq) + 2N^{3-}\ (aq)$
4. $Al_2O_3\ (aq) \rightarrow 2Al^{3+}\ (aq) + 3O^{2-}\ (aq)$
5. $Co(NO_3)_2\ (aq) \rightarrow Co^{2+}\ (aq) + 2NO_3^{-}\ (aq)$
6. $Na_3PO_4\ (aq) \rightarrow 3Na^{+}\ (aq) + PO_4^{3-}\ (aq)$
7. $(NH_4)_2SO_4\ (aq) \rightarrow 2NH_4^{+}\ (aq) + SO_4^{2-}\ (aq)$
8. $NH_4Cl\ (aq) \rightarrow NH_4^{+}\ (aq) + Cl^{-}\ (aq)$
9. $Al_2(CO_3)_3\ (aq) \rightarrow 2Al^{3+}\ (aq) + 3CO_3^{2-}\ (aq)$
10. $Mg(OH)_2\ (aq) \rightarrow Mg^{2+}\ (aq) + 2OH^{-}\ (aq)$
11. $KOH\ (aq) \rightarrow K^{+}\ (aq) + OH^{-}\ (aq)$
12. $H_2SO_4\ (aq) \rightarrow 2H^{+}\ (aq) + SO_4^{2-}\ (aq)$
13. $HCl\ (aq) \rightarrow H^{+}\ (aq) + Cl^{-}\ (aq)$

Determining Solubility of a Salt:
Use the solubility chart to determine if each salt is soluble or insoluble.

1. KNO_3 : soluble
2. $PbSO_4$: insoluble
3. KOH : soluble
4. $MgSO_4$: soluble
5. $FePO_4$: insoluble
6. Nickel (II) Hydroxide : insoluble
7. Sodium Chloride : soluble
8. Barium Nitrate : soluble
9. Ammonium Bromide : soluble
10. Magnesium Hydroxide : soluble

Mixing Salts: Molecular Equations

Determine the possible products and balance the equations.
Determine if each product is soluble (aq, aqueous) or an insoluble precipitate (s, solid).

1. $1NiCl_2\ (aq) + 1(NH_4)_2SO_4\ (aq) \rightarrow 1NiSO_4\ (aq) + 2NH_4Cl\ (aq)$
2. $1NiCl_2\ (aq) + 1Na_2S\ (aq) \rightarrow 1NiS\ (s) + 2NaCl\ (aq)$
3. $1FeSO_4\ (aq) + 2KOH\ (aq) \rightarrow 1Fe(OH)_2\ (s) + 1K_2SO_4\ (aq)$
4. $1K_2CO_3\ (aq) + 1Ba(NO_3)_2\ (aq) \rightarrow 2KNO_3\ (aq) + 1BaCO_3\ (s)$
5. $1CaBr_2\ (aq) + 1KBr\ (aq) \rightarrow 1CaBr_2\ (aq) + 1KBr\ (aq)$
6. $1CaCl_2\ (aq) + 2AgNO_3\ (aq) \rightarrow 1Ca(NO_3)_2\ (aq) + 2AgCl\ (s)$
7. $1FeCl_3\ (aq) + 1(NH_4)_3PO_4\ (aq) \rightarrow 1FePO_4\ (s) + 3NH_4Cl\ (aq)$
8. $1HgCl_2\ (aq) + 1K_2S\ (aq) \rightarrow 1HgS\ (s) + 2KCl\ (aq)$
9. $2AgNO_3\ (aq) + 1K_2CrO_4\ (aq) \rightarrow 1Ag_2CrO_4\ (s) + 2KNO_3\ (aq)$
10. $1CuSO_4\ (aq) + 1Na_2CO_3\ (aq) \rightarrow 1CuCO_3\ (s) + 1Na_2SO_4\ (aq)$

Mixing Salts: Net Ionic Equations

For each of the molecular equations in the previous section, write the net ionic equation.

1. No net ionic equation
2. $Ni^{2+}\ (aq) + S^{2-}\ (aq) \rightarrow NiS\ (s)$
3. $Fe^{2+}\ (aq) + 2OH^-\ (aq) \rightarrow Fe(OH)_2\ (s)$
4. $Ba^{2+}\ (aq) + CO_3^{2-}\ (aq) \rightarrow BaCO_3\ (s)$
5. No net ionic reaction
6. $Ag^+\ (aq) + Cl^-\ (aq) \rightarrow AgCl\ (s)$
7. $Fe^{3+}\ (aq) + PO_4^{3-}\ (aq) \rightarrow FePO_4\ (s)$
8. $Hg^{2+}\ (aq) + S^{2-}\ (aq) \rightarrow HgS\ (s)$
9. $2Ag^+\ (aq) + CrO_4^{2-}\ (aq) \rightarrow Ag_2CrO_4\ (s)$
10. $Cu^+\ (aq) + CO_3^{2-}\ (aq) \rightarrow CuCO_3\ (s)$