# Writing Chemical Equations

1. Complete the following table:

| Chemical name | Chemical Formula |
|---|---|
| Hydrochloric Acid | |
| Nitric Acid | |
| | $H_2SO_4$ |
| | $H_2$ |
| Calcium chloride | $CaCl_2$ |
| Sodium Hydroxide | NaOH |
| | NaCl |
| Copper carbonate | $CuCO_3$ |
| Copper sulfate | $CuSO_4$ |
| | CuO |
| Potassium carbonate | $K_2CO_3$ |
| Potassium nitrate | $KNO_3$ |

2. Complete the general equations to show the products formed in each of the reactions with acids:

    a. Metal + acid →

    b. Metal oxide + acid →

    c. Metal hydroxide + acid →

    d. Metal carbonate + acid →

3. Use the general equations from question 2 to predict the products of these reactions and complete the word equations:

    a. Calcium + hydrochloric acid →

    b. Hydrochloric acid + sodium hydroxide →

    c. Sulfuric acid + copper carbonate →

d. Hydrochloric acid + copper oxide →

e. Nitric acid + potassium carbonate →

4. Use the table in Q1 to help you write **balanced** symbol equations for each of the reactions in Q3.

a.

b.

c.

d.

e.

5. Use Q3/Q4 to help you answer these questions.

a. Which reactions would cause a positive result for the squeaky pop test?

b. Which reactions would cause a positive result for the limewater test?

6. Alkali metals react with oxygen to form metal oxides. Write a word equation and a **balanced** symbol equation to show the reaction of lithium, sodium and potassium with oxygen.

7. Alkali metals react with water to form metal hydroxides and hydrogen gas. Write a word equation and a **balanced** symbol equation to show the reaction of lithium, sodium and potassium with water.

**Stretch:**

8. A more reactive halogen can displace a less reactive halogen from an aqueous solution of its salts.
   e.g. Potassium chloride + fluorine → Potassium fluoride + chlorine
   $2\ KCl + F_2 \rightarrow 2\ KF + Cl_2$

   A displacement reaction occurs in this case because fluorine is more reactive than chlorine, so fluorine displaces the chlorine from the salt.

   Determine if a reaction would occur in each case. If a reaction would occur write a word and balanced symbol equation for each one:

   a. Potassium iodide + chlorine

   b. Sodium chloride + bromine

   c. Lithium iodide + fluorine

   d. Sodium bromide + chlorine