Neutralization

Neutralization:

Acid + Base → Salt + water

Neutralization is a form of double replacement

For the following reactions predict the products of these neutralization reactions. Make sure to drop and cross to produce the correct formula.

1. $H_2SO_4(aq)$ + $KOH(aq)$ → _____ + _____

2. $H_3PO_4(aq)$ + $LiOH(aq)$ → _____ + _____

3. $H_2CO_3(aq)$ + $Mg(OH)_2$ (aq) → _____ + _____

4. $H(C_2H_3O_2)$ (aq) + $NaOH(aq)$ → _____ + _____

5. HNO_3 (aq) + $Ca(OH)_2$ (aq) → _____ + _____

6. $HBr(aq)$ + $KOH(aq)$ → _____ + _____

Name: _____ Date: _____

Reactions of Acids and Bases

Reactions of Acids with Metals

Complete each of the following reactions between an acid and metal by filling any missing reactants and products and balancing the complete equation. Be sure to check table J to ensure that a reaction does occur.

1. _____ Zn + _____ HCl → _____ H_2 + _____ _____

   Name the salt formed as a result of this reaction: _____

2. _____ _____ + H_2SO_4 → _____ H_2 + _____ $FeSO_4$

   Name the salt formed as a result of this reaction: _____

3. _____ H_3PO_4 + _____ Na → _____ H_2 + _____ _____

   Name the acid that reacted with sodium in this reaction: _____

4. _____ _____ + _____ Co → _____ H_2 + _____ $Co(NO_3)_3$

   Name the salt formed as a result of this reaction: _____

   Name the acid that reacted with cobalt in this reaction: _____

5. _____ Ag + _____ HF → _____

6. _____ Ca + _____ H_2CO_3 → _____

7. _____ HCl + _____ Sr → _____

8. _____ H_2SO_4 + _____ Al → _____

Neutralization Reactions

Complete each of the following neutralization reactions by filling any missing reactants and products and balancing the complete equation.

1. _____ HNO_3 + _____ KOH → _____ H_2O + _____ _____

2. _____ H_2SO_4 + _____ LiOH → _____ H_2O + _____ _____

3. _____ NaOH + _____ H_3PO_4 → _____ H_2O + _____ _____

4. _____ $Ca(OH)_2$ + _____ H_2CO_3 → _____ _____ + _____ _____

5. Write the complete balanced equation for the reaction between hydrochloric acid and magnesium hydroxide.

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1. Which salt is formed when hydrochloric acid is neutralized by a potassium hydroxide solution?

   1. potassium chloride
   2. potassium chlorate
   3. potassium chlorite
   4. potassium perchlorate

2. Which type of reaction will occur when equal volumes of 0.1 M HCl and 0.1 M NaOH are mixed?

   1. neutralization
   2. ionization
   3. electrolysis
   4. hydrolysis

3. Which balanced equation represents a neutralization reaction?

   1. $H_2SO_4 + 2LiOH \rightarrow Li_2SO_4 + 2H_2O$
   2. $BaCl_2 + Cu(NO_3)_2 \rightarrow Ba(NO_3)_2 + CuCl_2$
   3. $2KClO_3 \rightarrow 2KCl + 3O_2$
   4. $Mg + NiCl_2 \rightarrow MgCl_2 + Ni$

4. When NaOH(*aq*) reacts completely with HCl(*aq*) and the resulting solution is evaporated to dryness, the solid remaining is

   1. an ester
   2. an alcohol
   3. a salt
   4. a metal

5. Which substance is always produced in the reaction between hydrochloric acid and sodium hydroxide?

   1. water
   2. hydrogen gas
   3. oxygen gas
   4. a precipitate