

## Title: Double Replacement Reaction

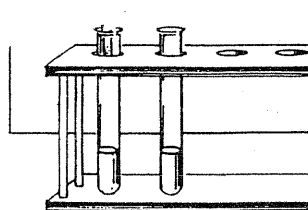


**Background Information:** A double replacement reaction is a reaction in which compounds switch ions to form two new compounds. In this lab you will observe two examples of a double replacement reaction.

**Purpose:** To observe double replacement reactions.

### Materials:

Copper sulfate  
Sodium hydroxide  
Aluminum chloride  
Ammonium hydroxide  
Two test tubes  
Goggles  
Graduated cylinder  
Two watch glasses



**Caution:** Copper sulfate and aluminum chloride are irritants and poisons. Avoid contact with the hands, eyes and mouth. Sodium hydroxide and ammonium hydroxide are caustic liquids that can burn the hands, skin, or eyes.

**Procedure:** Wear goggles for part A and part B.

### Day 1

#### Part A:

1. Measure out 5ml of aluminum chloride solution. Pour this into a test tube. Record the physical properties of the aluminum chloride solution in your data chart.
2. Measure out 5ml of ammonium hydroxide solution. Pour this into a different test tube. Record the physical properties of the ammonium hydroxide solution in your data chart.
3. Pour the aluminum chloride solution into the ammonium hydroxide solution. Notice what takes place. Let the solution stand undisturbed until some of the precipitate settles to the bottom of the test tube.
4. A white solid should be formed. This new substance is aluminum hydroxide. Record its physical properties in your data chart.
5. The other new substance that has been formed is still dissolved in solution. Pour 1 ml. of this solution into a watch glass. Put the watch glass in an appropriate place to sit overnight.
6. Discard your solutions in an appropriate container.
7. Wash and dry your glassware.

**Part B:**

1. Measure out 5ml of copper sulfate solution. Pour this into a test tube. Record the physical properties of the copper sulfate solution in your data chart.
2. Measure out 5ml of sodium hydroxide solution. Pour this into a different test tube. Record the physical properties of the sodium hydroxide solution in your data chart.
3. Pour the copper sulfate solution into the sodium hydroxide solution. Observe what takes place. Let the solution stand undisturbed until some of the precipitate settles to the bottom of the test tube.
4. A blue precipitate has been formed. This new substance is copper hydroxide. Record its physical properties in your data chart.
5. Another new substance has been formed that is still dissolved in solution. Pour 1ml of this solution into a watch glass. Place the watch glass in an appropriate place to sit overnight.
6. Discard the remaining solutions in an appropriate container.
7. Wash and dry your glassware.

**Day 2**

**Part A:**

8. Observe the new substance formed on the watch glass. This new substance is ammonium chloride. Record its physical properties in your data chart.
9. Wash and dry your watch glass.

**Part B:**

10. Observe the new substance formed on the watch glass. This new substance is sodium sulfate. Record its physical properties in your data chart.
11. Wash and dry your watch glass.

**Data Chart:**

**Substance Physical Properties**

**Part A:**

Aluminum chloride solution \_\_\_\_\_

Ammonium hydroxide solution \_\_\_\_\_

Aluminum hydroxide \_\_\_\_\_

Ammonium chloride \_\_\_\_\_

**PART B:**

Copper sulfate solution \_\_\_\_\_

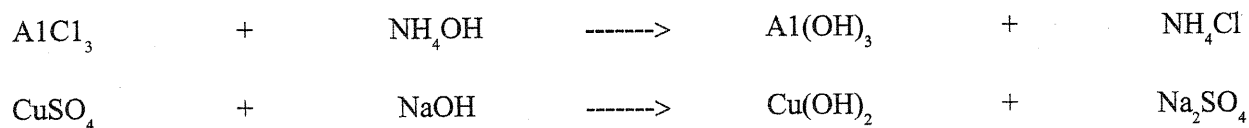
Sodium hydroxide solution \_\_\_\_\_

Copper hydroxide \_\_\_\_\_

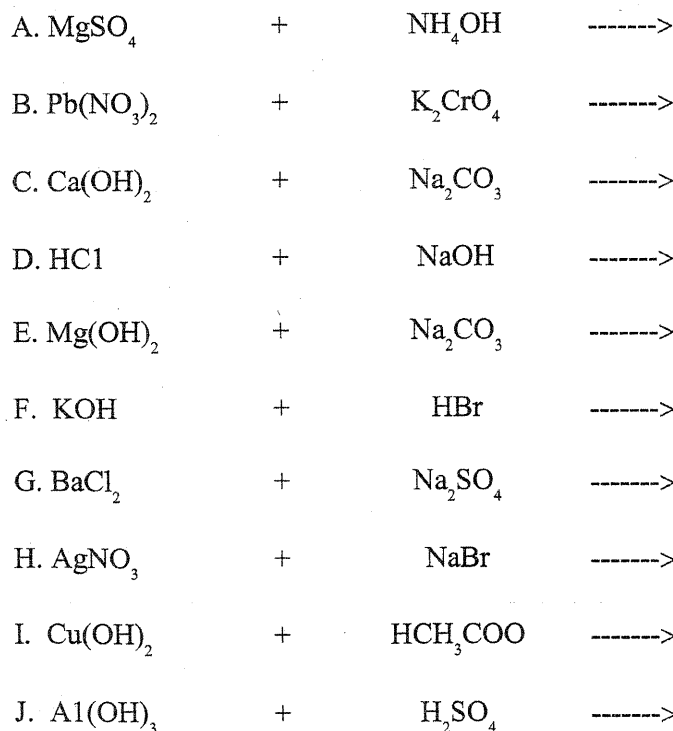
Sodium sulfate \_\_\_\_\_

**Questions:**

1. Name the reactants in Part A: \_\_\_\_\_ in Part B: \_\_\_\_\_
2. Name the products in Part A: \_\_\_\_\_ in Part B: \_\_\_\_\_
3. What type of chemical reaction do both of these chemical reactions represent?
4. What is a double replacement reaction?
5. List two observations that you made in part A that indicated a chemical change took place:
6. List two observations that you made in Part B that indicated a chemical change took place:
7. Balance the chemical equations below that show what took place in each reaction:



8. Complete and balance the following double replacement reactions:



9. Write the names of the reactants and products for the equations listed in question number 8:

**Reactants**

**Products**

A.	_____	_____	_____	_____
B.	_____	_____	_____	_____
C.	_____	_____	_____	_____
D.	_____	_____	_____	_____
E.	_____	_____	_____	_____
F.	_____	_____	_____	_____
G.	_____	_____	_____	_____
H.	_____	_____	_____	_____
I.	_____	_____	_____	_____
J.	_____	_____	_____	_____

**Conclusion:**