

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Lab Partner: \_\_\_\_\_

Lab Section: \_\_\_\_\_

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## Lab Report: Types of Reactions

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Record your observations on these data pages as you perform each reaction. Write a balanced formula equation with state labels for each reaction. If no reaction occurs, follow the instructions in the Procedure.

### A. Combination Reactions

1. *Calcium oxide and carbon dioxide (demonstration)*

Observations
Reaction Equation

2. *Magnesium and oxygen*

Observations
Reaction Equation

### B. Decomposition Reactions

1. *Sucrose and sulfuric acid catalyst (demonstration)*

Observations
Reaction Equation

2. Thermal decomposition of copper(II) sulfate pentahydrate,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ 

Observations
Reaction Equation

**C. Displacement Reactions**

In addition to providing observations and an equation for each reaction, use your results to determine the relative activities of the two elements involved in each reaction.

## 1. Sodium and water (demonstration)

Observations
Reaction Equation
Relative activities: _____ > _____

## 2. Calcium and water

Observations
Reaction Equation
Relative activities: _____ > _____

## 3. Zinc and water

Observations
Reaction Equation
Relative activities: _____ > _____

4. *Copper and hydrochloric acid*

Observations
Reaction Equation
Relative activities: _____ > _____

5. *Zinc and hydrochloric acid*

Observations
Reaction Equation
Relative activities: _____ > _____

6. *Zinc and copper(II) sulfate*

Observations
Reaction Equation
Relative activities: _____ > _____

7. *Copper and zinc sulfate*

Observations
Reaction Equation
Relative activities: _____ > _____

8. *Copper and silver nitrate*

Observations
Reaction Equation
Relative activities: _____ > _____

Arrange copper, silver, calcium, zinc, and hydrogen in an activity series from most active to least active on the basis of the results from the displacement reactions that you performed. Recall that a more active metal displaces a less active metal, a more active metal is needed to displace hydrogen from water than to displace it from an acid, and that a metal that displaces hydrogen from acid is ranked as more active than hydrogen.

\_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_  
*most active* (most easily oxidized) *least active*

**D. Exchange Reactions**1. *Silver nitrate and sodium chloride*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation

2. *Nickel(II) nitrate and sodium hydroxide*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation

3. *Lead(II) nitrate and potassium chromate*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation

4. *Ammonium nitrate and sodium hydroxide*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation

5. *Hydrochloric acid and sodium bicarbonate*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation

6. *Sulfuric acid and sodium hydroxide*

Observations
Reaction Equation (balanced Molecular)
Net Ionic Equation