**Types of Chemical Reactions Lab**

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

**Purpose:** In this lab you will observe reactions that demonstrate the six different types of reactions you have learned about.

**Materials:**  CuSO4 solution 3 small test tubes

 0.1M Fe(NO3) solution Test tube rack

 0.1M KI solution Iron nails

 Sulfuric acid solution Plastic cups

 Lead (II) Nitrate solution Test tube holder

 3% H2O2 solution Disposable pipets

 NaOH solution Glass stirring rod

 Apple, plastic knife Weigh paper

**Reaction 1:** Milk reacts with Coca-Cola.

 *Equation:*

*Reaction type:*

Procedure:

1. Place 20 ml of Coca-Cola into the plastic cup.
2. Add 20 ml of milk into the cup with Coca-Cola.
3. Record your observations.
4. Dispose of the waste in the container provided.

|  |  |  |
| --- | --- | --- |
|  | **Before Combining** | **After Combining** |
| **Coca-Cola** |  |  |
| **Milk** |  |  |

*What metal is in the milk?*

*Why did solid participate?*

*What acid is present in Coca-Cola?*

**Reaction 2:** Solutions of Lead (II) nitrate and Potassium iodide are combined.

*Equation:*

*Reaction type:*

Procedure:

1. Observe the color of the two solutions before combining and record below.
2. Place 5 drops of the Potassium iodide solution into a cup.
3. Add one drop of the Iron (II) nitrate or Lead (II) Nitrate solution to the cup with potassium iodine solution.
4. Record your observations.
5. Dispose of the waste in the container provided and rinse out the test tube.

|  |  |  |
| --- | --- | --- |
|  | **Before Combining** | **After Combining** |
| **Iron (II) Nitrate****Lead (II) Nitrate**  |  |  |
| **Potassium Iodide** |  |

*What do you think caused the color change you observed? Why?*

*Why does the yellow substance settle to the bottom of the test tube?*

**Reaction 3:** Sodium Hydroxide reacts with Sulfuric acid.

 *Equation:*

*Reaction type:*

Procedure: **Caution:** *Sulfuric acid is corrosive!*

1) Using graduated cylinder measure 5 ml of 1M Sulfuric acid. Pour into the test tube.

2) Using graduated cylinder measure 5 ml of 3M NaOH.

3) Pour NaOH into test tube with Sulfuric acid.

4) Feel the test tube. The energy being released is called the heat of neutralization.

5) Make an observation of the reaction and record them below.

6) Pour the contents of the test tube down the sink. What is the type of reaction?

**Reaction 4:** Hydrogen peroxide (H2O2) is heated, releasing water and oxygen gas.

 *Equation:*

*Reaction type:*

Procedure:

1. Using a graduated cylinder, add 5.0mL of 3% Hydrogen peroxide solution into Elmeyrer flask.
2. Add a small amount of manganese oxide.
3. Swirl the flask.
4. Record your observations.

**Reaction:**

*Was the solution boiling? Why or why not?*

**Reaction 5:** Iron and Oxygen

 *Equation:*

*Reaction type:*

Procedure:

1. *Take an apple*.
2. Cut an apple into quarters.
3. Let the quarter of an apple sit on the table for 5 minutes.
4. Make observations of the reaction.

|  |  |  |
| --- | --- | --- |
|  | **Before Combining** | **After Combining** |
| **Iron** |  |  |
| **Oxygen** |  |

*Where the iron comes from?*

*Where the oxygen comes from?*

*What color is iron oxide?*

*What type of reaction is this?*

**Reaction 6:** Propane burns in the presence of oxygen.

 *Equation:*

*Reaction type:*

Procedure: Observe the burning of a Bunsen burner. Adjust the *sleeve* of the burner and make observations.

|  |  |
| --- | --- |
|  | **Observations** |
| **When sleeve is Open.** |  |
| **When sleeve is closed.** |  |

*What is the purpose of the sleeve? What does it control?*

*What adjustment of the sleeve seems to give the hottest flame? Why do you think that is?*