**Understanding Chemical Reactions Part A**

**Problem to be solved:** Does mass change during a reaction?

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| Procedure:  **Wear Goggles and Gloves!** | Observations |
| 1. Pour about an inch of barium chloride solution in a large test tube.  | Drawing of Setup |
| 2. Pour about an inch of sodium sulfate, Na2SO4, into a small test tube.  |  |
| 3. Place the small test tube in the large test tube and stopper the large test tube. Be careful not to invert the small test tube and spill the contents. Draw a picture of the setup and describe the appearance of the contents. |  |
| 4. Place the test tubes in a 250 ml beaker and find the mass of the entire setup. Record. | Mass before reaction:  |
| 5. Take the test tube out of the beaker. Without removing the stopper, turn test tube over so the solutions mix.  | Observations:  |
| 6. Record your observations. |  |
| 7. Find the mass of the whole setup again now that the reaction has taken place. Record. | Mass after reaction:  |
| 8. Determine the change in mass. If the mass before and after are within 0.5 grams, no change can be reported, due to the inherent error in the balances.  | Change in Mass: |
| 9. Wash test tubes with soap and water.  |  |

**Conclusion**:

1. Does mass change in a chemical reaction? Explain.
2. What evidence did you see that a chemical change occurred?
3. Write the chemical equation for the reaction that took place in part A:

 Barium Chloride reacts with Sodium Sulfate, Na2SO4 to produce barium sulfate, BaSO4 and Sodium Chloride.

**Understanding Chemical Reactions Part B**

**Problem to be solved:** Does mass change during a reaction?

**Hypothesis: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| Procedure: **Wear Goggles and Gloves!** | Observations |
| 1. Pour about an inch of potassium iodide solution in a large test tube.  | Drawing of Setup |
| 2. Pour about an inch of lead nitrate into a small test tube.  |  |
| 3. Place the small test tube in the large test tube and stopper the large test tube. Be careful not to invert the small test tube and spill the contents. Draw a picture of the setup and describe the appearance of the contents. |  |
| 4. Place the test tubes in a 250 ml beaker and find the mass of the entire setup. Record. | Mass before reaction:  |
| 5. Take the test tube out of the beaker. Without removing the stopper, turn test tube over so the solutions mix.  | Observations:  |
| 6. Record your observations. |  |
| 7. Find the mass of the whole setup again now that the reaction has taken place. Record. | Mass after reaction:  |
| 8. Determine the change in mass. If the mass before and after are within 0.5 grams, no change can be reported, due to the inherent error in the balances.  | Change in Mass: |
| 9. Dispose of the yellow Lead Iodide in the Lead Iodide waste container.  **Do NOT pour down the sink!**  |  |

**Conclusion**:

1. Does mass change in a chemical reaction? Explain.
2. What evidence did you see that a chemical change occurred?
3. Write the chemical equation for the reaction that took place in part A:

 Potassium iodide reacts with lead nitrate, Pb(NO3)2 to produce lead iodide, PbI2, and potassium nitrate, KNO3.

1. Explain what happens to atoms and/or molecules in a reaction.