

SNC 2D: Chemistry  
Date: \_\_\_\_\_

Name: \_\_\_\_\_  
Lab Partners: \_\_\_\_\_

### Conservation of Mass Lab

*You and your group will design and conduct an investigation to prove the Law of Conservation of Mass. You will test this law by mixing 10 mL of potassium iodide with 5 mL of lead II nitrate.*

- 1. Question:** Ask a question to state the purpose of the experiment.
  
- 2. Hypothesis:** Make a prediction about your expected results based on an educated guess.
  
- 3. Equipment:** List all of the equipment necessary for the experiment; include measured amounts and quantities if you need more than one of an item.

Materials	Apparatus	Diagram

#### **Important Reminders**

- In your procedure and observation chart, please keep in mind that in addition to the mass, you should also record observations about each substance BEFORE and AFTER the reaction, and observations DURING the reaction (especially ones that indicate a chemical change).*
- Please note that you will need to calculate the mass of the solutions NOT INCLUDING the mass of the beaker, flask or test tube. This means you will need to SUBTRACT the mass of the empty apparatus. Keep in mind that the mass of every beaker, flask or test tube will be slightly different.*



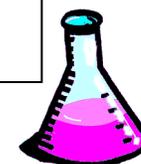
5. **Observations:** Record your qualitative & quantitative observations in the data table below.

**Mass of Empty Glassware:** Record the mass of your empty glassware BEFORE starting your lab.

Apparatus	Mass (g) When Empty

*Example:*

$$\begin{array}{r} \text{Mass of solution \& beaker} \\ - \text{Mass of empty beaker} \\ \hline \text{Mass of solution} \end{array}$$



**Conservation of Mass Observation Chart**

Solutions	BEFORE Reaction		DURING Reaction	AFTER Reaction	
	Appearance	Mass of Solution (Show calculation)		Appearance	Mass of Solution (Show calculation)
Potassium iodide					
Lead (II) nitrate					
Total mass of reactants				Total mass of products	



**8. Evaluation:** Evaluate the procedure used to collect data, and identify any limitations or sources of error. Suggest how the lab could be improved.

- a) Josh and Andrea decided to test the law of conservation of mass with a reaction between vinegar and baking soda. They forgot to put a rubber stopper in their flask, and their results showed that the mass of the products was less than the mass of the reactants. Explain why.

### Conservation of Mass Lab Rubric

<b><i>Curriculum Expectation C2.5: Plan and conduct an inquiry to identify the evidence of chemical change</i></b>					
<ul style="list-style-type: none"> <li>• Question clearly states the purpose of the experiment</li> <li>• Hypothesis makes an educated guess about the results of the experiment</li> <li>• List of equipment is complete and includes amounts and a labeled diagram</li> <li>• Procedure describes in detail all of the numbered steps to conduct experiment safely &amp; accurately, including equipment used, measured amounts, safety &amp; clean up instructions, and observations to record</li> </ul>	0	1	2	3	4
<b><i>Curriculum Expectation C3.5: Describe, on the basis of observation, the reactants in and products of a variety of chemical reactions, including synthesis, decomposition, and displacement reactions.</i></b>					
<ul style="list-style-type: none"> <li>• Observation chart includes detailed qualitative observations about the appearance of the substances before, during and after the reaction</li> <li>• Observation chart includes accurate measurements for the mass of the solutions, and the calculations used to obtain the measurements</li> <li>• Analysis includes an balanced chemical reaction identifying the reactants and products</li> <li>• Evidence of a chemical change correctly described in analysis</li> </ul>	0	1	2	3	4
<b><i>Curriculum Expectation C2.4: Use an inquiry process to investigate the law of conservation of mass in a chemical reaction and account for any discrepancies</i></b>					
<ul style="list-style-type: none"> <li>• Conclusion answers the original question and explains why using scientific concepts and terminology</li> <li>• Conclusion includes measured values from observations as proof</li> <li>• Effectiveness of procedure evaluated, sources of error identified, and possible reasons for discrepancies suggested</li> </ul>	0	1	2	3	4