Name: _____ Period: _____

Conservation of Mass Lab

The ***Law of Conservation of Mass*** states that mass in a closed system will remain constant, regardless of the processes acting on the system. In other words, mass cannot be created or destroyed. A ***closed system*** is one to which nothing can be added or taken away.

Procedure Part 1.
1. Add 100 mL of vinegar to a 2-liter bottle (use a graduated cylinder to measure.)
2. Record the mass of the vinegar + bottle **without the cap**
3. Mass 4 g of baking soda on top of a tissue
4. Record the mass of the baking soda + tissue
5. Wrap the baking soda in the tissue (so it can be put inside the bottle)
6. Add the baking soda + tissue to the bottle with vinegar, and wait for all fizzing to stop. (Do not put the cap on the bottle)
7. Record the mass of the bottle and its contents.

Data Collection:

Do this column BEFORE the experiment starts:
Mass of bottle (no cap) + vinegar: _____
Mass of baking soda + tissue: _____
Add the mass of the baking soda and tissue to the mass of bottle + vinegar to get the total **starting mass**:_____

Do this column AFTER the experiment is Finished:
Mass of bottle (no cap) + vinegar + baking soda: to get the total **ending mass**:_____

Questions:
1. Is the ending mass of the bottle, vinegar, and baking soda *exactly* equal to the calculated starting mass of the beaker, vinegar, and baking soda?

_____
2. Restate the Law of Conservation of Mass in your own words:

_____

_____

_____

_____
3. According to the Law of Conservation of Mass, the starting and ending mass of the ingredients should be *exactly* the same. Give your best explanation or guess as to why the masses are different in this situation?

_____

_____

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_____

4. Do you think the system in this lab is a closed or an open system? Explain.

_____

_____

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_____

5. Has a chemical reaction occurred in this lab? _____ How do you know?

_____

_____

_____

6. If you think a chemical reaction occurred in this lab, does this explain why there was a change in mass at the beginning of the experiment? _____ Why or why not?

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Procedure Part 2

1. Add 100 mL of vinegar to the bottle
2. Record the mass of the bottle + vinegar (**with the cap on the bottle this time**)
3. Mass 4 g of baking soda on top of a tissue
4. Record the mass of the baking soda + tissue
5. Wrap the baking soda in the tissue (so it can be put inside the bottle)
6. Add the baking soda + tissue to the bottle with vinegar, **screw on the cap as soon as you can** and wait for all fizzing to stop.
7. Record the mass of the bottle with cap and its contents.

Do this column BEFORE the experiment starts:

Mass of bottle (**with cap**) + vinegar: _____

Mass of baking soda + tissue: _____

Add the mass of the baking soda and tissue to the mass of bottle + vinegar to get the total **starting mass**:_____

Do this column AFTER the experiment is Finished:

Mass of bottle (**with cap**) + vinegar + baking soda: to get the total **ending mass**:_____

Questions:

1. Is the ending mass of the bottle, vinegar, and baking soda *exactly* equal to the calculated starting mass of the bottle, vinegar, and baking soda? Why or Why Not?

2. Why do we get different results from procedure one and procedure two?