**Measurement Lab (do not need to do a full lab write up)**

**Introduction:**

You will be performing the chemical reaction below to produce CARBON DIOXIDE gas. Your task is to try to produce exactly 1.3 g of carbon dioxide gas (CO2). To do this you will need to measure out exactly 4.9 grams of baking soda (NaHCO3) and 14.9 mL of Calcium Chloride solution (CaCl2). You will be allowed THREE tries to get as close as possible. If you are within a 15% error range (that is + or – 0.3 g from 3.5 g) then you have accomplished this task.

**CaCl2  +  2NaHCO3  🡪  CaCO3  +  2NaCl  +  CO2  +  H2O**

**Purpose (goal/objective of the lab):**

**Materials:** Beaker, graduated cylinder, scale, baking soda, calcium chloride solution, Erlenmeyer flask, spatula

**Procedure:**

1. Place the 50 mL beaker on the electronic balance. Tare it by pushing the tare/zero button.
2. Weigh out 4.9 g of baking soda into the 50 mL beaker using the spatula. Make observations about the baking soda in your data table.
3. Place the Erlenmeyer flask on the electronic balance. Record the mass in your chart below. Tare the scale.
4. Using a graduated cylinder measure out 14.9 mL of calcium chloride solution and pour it into the flask. Record the mass of the calcium chloride solution. Record observations about the calcium chloride in your data table.
5. SLOWLY sprinkle the baking soda into the calcium chloride solution. Swirl periodically. Make observations in your data table.
6. Weigh the flask after the reaction is finished (fizzing has stopped). Record it in your chart for trial 1. Perform calculations to complete the chart
7. Wash out your flask. Repeat twice to fill in trial 2 and trial 3.

**Results:**

Initial Values and Observations

|  |  |
| --- | --- |
| Mass of empty flask |  |
| Observations of baking soda |  |
| Observations of calcium chloride solution |  |
| Observations after mixing |  |

Trial 1

|  |  |
| --- | --- |
| Mass (g) of baking soda |  |
| Mass of calcium chloride solution |  |
| Initial total mass (add flask, baking soda, and calcium chloride masses) |  |
| Final total mass  |  |
| Mass of CO2 produced (initial total mass – final mass) |  |

Trial 2

|  |  |
| --- | --- |
| Mass (g) of baking soda |  |
| Mass of calcium chloride solution |  |
| Initial total mass (add flask, baking soda, and calcium chloride masses) |  |
| Final total mass  |  |
| Mass of CO2 produced (initial total mass – final mass) |  |

Trial 3

|  |  |
| --- | --- |
| Mass (g) of baking soda |  |
| Mass of calcium chloride solution |  |
| Initial total mass (add flask, baking soda, and calcium chloride masses) |  |
| Final total mass  |  |
| Mass of CO2 produced (initial total mass – final mass) |  |

**Post Lab Questions:**

1. Why is making accurate measurements important when doing a lab?
2. Find the average mass of CO2 produced. Show work and write g CO2 on your answer to get full credit. (trial 1 + trial 2 + trial 3)

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1. You were supposed to produce 1.3 g CO2. Does your average match that value? If your value does not match it explain why that would have happened.

**Conclusion:**

**CHEMICAL OR PHYSICAL CHANGE?**

The lab you did resulted in a change. I would like you to determine if that change was chemical or physical. Start by looking up the definitions online or using one of the textbooks on the bookcase. Then fill in the graphic organizer below.

Define chemical change:

Define physical change:

