Chemistry 11
Lab: Percent Yield

Name:

Block:

For Students:	For Teacher:
Lab performed:	Pre-lab completion: Yes No
Lab due:	Lab Submitted: On Time Late

Introduction & Objectives

Part I:

The formula for baking soda is: _____.

When baking soda decomposes, _____ gas is produced.

Part II:

The precipitate being produced is: _____.

<u>Objectives:</u>

1.

2.

3.

4.

5.

Procedure & Observations

Part I:

Baking soda formula:		Molar Mass:	
Mass of empty test tube:	Mass of test tube + baking soda:		Mass of baking soda:
Mass of test tube + product:		Mass of product:	
Qualitative Observations:			
Initial colour: _____ Initial pH:_____		Final colour: _____ Final pH:_____	

Part II:

| Sodium carbonate formula:	Molar Mass:	Mass of sodium carbonate:
Calcium chloride formula:	Molar Mass:	Mass of calcium chloride:
Qualitative Observations:		
Mass of filter paper:	Mass of filter paper + product:	Mass of product:

Part I:

1. Balanced reaction for the partial decomposition of baking soda (sodium bicarbonate):

$$\_\_\_\_ \ NaHCO_{3\ (s)} \rightarrow \_\_\_\_ \ Na_2CO_{3\ (s)} + \_\_\_\_ \ H_2O_{\ (g)} + \_\_\_\_ \ CO_{2\ (g)}$$
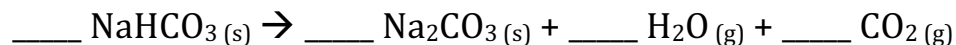
2. Using the initial mass of baking soda used, calculate the mass of sodium carbonate that <u>theoretically</u> should've formed.

3. What mass off sodium carbonate <u>actually</u> formed?

4. Calculate the percent yield.

5. Using the initial mass of baking soda used, calculate the mass of water <u>theoretically</u> formed.

6. **Using the percent yield** calculated in #4, calculate the mass of water that was <u>actually</u> formed.

7. Using the initial mass of baking soda used, calculate the mass of carbon dioxide <u>theoretically</u> formed.

8. **Using the percent yield** calculated in #4, calculate the mass of carbon dioxide that was <u>actually</u> formed.

9. A pH of under 7 represents an acidic system; a pH higher than 7 represents a basic system. When the Q-tip was placed into the test tube, the pH _____ (decreased/increased) and the system was determined to be _____ (acidic/basic).

10. Two of the products react further to produce carbonic acid, H_2CO_3. Write the chemical reaction for the production of carbonic acid.
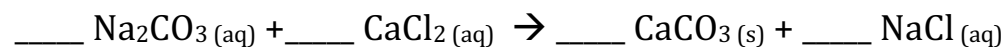
_____ + _____ → _____
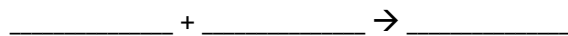
Part II:

1. Calculate $[Na_2CO_3]$.

2. Calculate $[CaCl_2]$.

3. Balance the precipitation reaction and fill in the table below:

_____ Na_2CO_3 (aq) + _____ $CaCl_2$ (aq) → _____ $CaCO_3$ (s) + _____ $NaCl$ (aq)

_____ mL	_____ mL
_____ M	_____ M

4. Calculate the <u>theoretical</u> mass of the precipitate *(hint: which reactant is limiting?)*

5. What mass of the precipitate <u>actually</u> formed?

6. **Calculate the percent yield** of the reaction.

Conclusion

State the results of Objectives 1-5

    1.

    2.

    3.

    4.

    5.