CHEMISTRY **MATTERS**
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Purpose:

In this experiment, baking soda ($NaHCO_3$) reacts with hydrochloric acid (HCl) to produce sodium chloride (NaCl, carbon dioxide (CO_2), and water (H_2O). You will use stoichiometry of your lab data to determine the moles of reactants used and moles of products produced. You will then compare the actual lab data to the theoretical yield of product predicted by your calculations.

Safety:

It is important to wear eye protection goggles and a lab apron. Students should wear closed toe shoes and keep their hair pulled back during the lab. All material should be disposed of following teacher instructions.

Materials:

1 evaporating dish or test tube	balance
baking soda	pipette with 1M HCl
Bunsen burner or hot plate	hot pad (hand protection)
safety goggles	lab apron

Procedure:

1. Find the mass of one clean evaporating dish and record the mass in the data table on the next page.

2. Add a small sample of baking soda to the evaporating dish. Measure the total mass of the test tube containing baking soda.

3. Using subtraction, calculate the mass of the baking soda sample.

4. Using a pipette, add 1M hydrochloric acid one drop at a time until the baking soda stops bubbling.

5. Using a heat source (Bunsen burner or hot plate), warm the evaporating dish carefully until the liquid evaporates, leaving behind sodium chloride. WAIT FOR THE EVAPORATING DISH TO COOL BEFORE MOVING ON TO THE NEXT STEP.

6. Using a hot pad, move the evaporating dish to a balance and find the mass of the evaporating dish with sodium chloride.

7. Using subtraction, calculate the mass of the sodium chloride found in the evaporating dish.

8. Clean the glassware and dispose of the leftover chemicals as directed by your teacher.

Data Table:

Mass of empty evaporating dish	
Mass of evaporating dish with baking soda	
Mass of baking soda	
Mass of evaporating dish with sodium chloride	
Mass of sodium chloride	

Safety:

1. Calculate the number of moles of baking soda used in the lab.

2. Calculate the number of moles of sodium chloride produced in the lab.

3. What is the experimental mole ratio of baking soda (NaHCO3) to sodium chloride (NaCl)?

4. Write a balanced equation for the reaction that took place in the experiment.

5. According to the balanced equation, what is the theoretical mole ratio of baking soda to sodium chloride?

6. Was the experimental mole ratio exactly the same as the theoretical mole ratio? If not, explain why not.