

# Identifying an Unknown Metal Carbonate Worksheet

## Data Table — Gas Evolution Reaction

	Trial #1	Trial #2
Mass of flask	_____ g	_____ g
Mass of $M_2CO_3$	_____ g	_____ g
Mass of cylinder and 2 M HCl	_____ g	_____ g
Mass of cylinder empty	_____ g	_____ g
Mass of 2 M HCl	_____ g	_____ g
Mass of beaker + $M_2CO_3$ sample + 2 M	_____ g	_____ g
Mass of beaker + reacted solution	_____ g	_____ g
Mass of released $CO_2$	_____ g	_____ g

## Data Table — Titration Analysis

 Mass of solid  $M_2CO_3$  \_\_\_\_\_ g

	Blank	Trial #1	Trial #2
Volume of $M_2CO_3$ solution titrated	0 mL	mL	mL
Final Volume of 0.10 M HCl	mL	mL	mL
Initial Volume of 0.10 M HCl	mL	mL	mL
Volume of 0.10 M HCl added	mL	mL	mL

## Calculations and Post-Lab Analysis *(Use a separate sheet of paper to answer the following questions.)*

- Using the data obtained in Part 1, calculate the number of moles of carbon dioxide,  $CO_2$ , produced in the reaction.
- Calculate the molar mass of the unknown Group 1 metal carbonate and identify the metal.
- Calculate the percent error in the experimental determination of the molar mass.
- Using the data obtained in Part 2, calculate the moles of hydrochloric acid used to neutralize the unknown Group 1 metal carbonate dissolved in the 50 mL sample for each trial titration.
- For each trial, calculate the total moles of the unknown Group 1 metal carbonate originally dissolved in the 500 mL of distilled or deionized water.
- Calculate the molar mass of the unknown Group 1 metal carbonate and identify the metal.
- Calculate the percent error in the experimental determination of the molar mass.