

# Make up DATA

Chem Lab: Stoichiometry with Gas laws! Name: \_\_\_\_\_ p. \_\_\_\_\_ ~~Sent~~

## Quantitative Data:

Mass Mg	0.0368	g
Volume H <sub>2</sub> gas	35.9	mL
pressure (barometric)	783.9	mmHg
H <sub>2</sub> O temp	19.9	°C

Qualitative Data: (Observe as the HCl solution falls down the tube and as it reacts.)

## Data Analysis:

1. Write a chemical equation for the reaction that occurred between the Magnesium and the solution of HCl (balance and include subscripts).



3a. Based on the mass of magnesium you used, use stoichiometry to determine the moles of hydrogen gas that should have formed.

\_\_\_\_\_ g Mg  $\left( \text{—————} \right) \left( \text{—————} \right)$  \_\_\_\_\_ mol H<sub>2</sub>

3b. Use the **ideal gas law** to convert your answer to 3a to a volume of gas, in liters.  $(PV=nRT)$

3c. Convert your answer to 3b to milliliters. This will be your "theoretical value" for the volume of hydrogen gas.

\_\_\_\_\_ mL H<sub>2</sub>  
theo

4. Compare the theoretical value with the actual lab volume of H<sub>2</sub> gas (data table) to calculate the **percent error** for the reaction! (Use your expected value and your lab value)

Proficient = 10% or less error

5. Give two reasons why you could tell (from your observations) when the reaction was done.

1)

2)

6. Which substance was the limiting reactant in the reaction? \_\_\_\_\_  
Which substance was the excess reactant? \_\_\_\_\_

7a. The hydrochloric acid solution you used had a concentration of 6.0 Molar.

This means that the solution contains \_\_\_\_\_ of HCl per \_\_\_\_\_ of solution.

7b. Calculate the number of **moles of HCl** present in the 10. mL that you used:

7c. Calculate the **grams of HCl** present in the 10. mL that you used

8. It is possible that your piece of Mg had partially oxidized to form MgO, before the lab started.

a. Write the reaction that would have occurred between MgO and the HCl. Balance and subscript.

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b. If some of your Mg was actually MgO instead, how would this have affected the volume of gas collected in the tube? (would the amount of gas collected increase or decrease, if some was MgO?): \_\_\_\_\_

9. It is likely that some of the water in your gas measuring tube evaporated to form  $\text{H}_2\text{O}_{(g)}$ .  
How would this affect the overall volume of gas collected in the tube (would it increase or decrease)? \_\_\_\_\_

10a. Calculate your **percent yield**: