Gas Stoichiometry Lab Name:_____

This lab will demonstrate the Stoichiometry of a reaction with gas as a product.

Materials:

30 mL of HCL (hydrochloric acid)
Magnesium granules
100 mL graduated cylinder
Gas Collection apparatus (set up at your station)

Procedure:

1. Weigh out exactly 0.05 grams of Magnesium.
2. Place 0.05 grams of Magnesium in the glass jar and replace the stopper.
3. Fill the graduated cylinder with water from the trough and invert over the gas evolution area, as demonstrated by Ms. Neiman. (make sure there are no air bubbles in the graduated cylinder)
4. Slowly add the acid to the funnel top tube in the reaction jar.
5. Be sure the bubbles are entering the graduated cylinder.
6. Wait for the reaction to stop completely. (No More Bubbles)
7. Record the amount of gas in the graduated cylinder. (Subtract the exact amount of HCl added to the reaction jar from your total amount of gas)
8. Record the temperature of the water.
9. Remove the graduated cylinder.
10. Remove the stopper from the reaction bottle, and rinse and dry the reaction bottle.
11. Repeat the experiment a second time.
12. After repeating the experiment for a total of 2 times, please return you lab station to the condition in which you found it.

Information:

1. Record the barometric pressure from the board. _____
2. Convert this to atm so it will be useful_____
3. Using the provided chart, what is the vapor pressure of the water at your recorded temperature?
4. Include Information items 1-3 on your report!
5. The total pressure in your cylinder is equal to the atmospheric pressure.

Questions:

1. What is the balanced equation for the reaction you just completed?

2. Using Stoichiometry, determine how much gas should have been generated from the reaction (you had plenty of HCl)

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3. Using the Ideal Gas Law, determine how much gas you actually generated in lab today.

4. Determine your percent yield. Complete this calculation for both trials.

5. How would your calculations in number 3 have changed if the water temperature was 25 degrees Celsius higher than what you measured.

6. How would your calculations in number 3 have changed if you had performed this experiment on the top of a mountain where the atmospheric pressure was only 520 mm Hg?

Table- Vapor Pressure of Water

Temperature ^{o}C	Pressure kPa	Temperature ^{o}C	Pressure kPa	Temperature ^{o}C	Pressure kPa
0	0.6	20	2.3	30	4.2
3	0.8	21	2.5	32	4.8
5	0.9	22	2.6	35	5.6
8	1.1	23	2.8	40	7.4
10	1.2	24	3.0	50	12.3
12	1.4	25	3.2	60	19.9
14	1.6	26	3.4	70	31.2
16	1.8	27	3.6	80	47.3
18	2.1	28	3.8	90	70.1
19	2.2	29	4.0	100	101.3