Data Sheet	Name_ Sectior Unknov			
Data and Calculations:	Trial #1		Trial #2	
Mass of flask, stopper, rubber ring and condensed vapor		_ g		_ 9
Mass of empty flask, stopper and rubber ring		_ g		_ g
Mass of vapor	<u> </u>	_ g	<u> </u>	_ g
Temperature of boiling water bath		_°C		_°C
Barometer reading ¹		_torr		_torr
Room temp. at barometer		_°C		_°C
Barometer correction		_torr		_torr
Corrected barometric pressure ¹		_torr		_ torr
Volume of flask (volume of vapor)		L		_L
Temperature of vapor		K		_K
Pressure of vapor		_atm		_atm
Gram molecular mass of unknown vapor		_g/mole		_g/mole
Average Gram Molecular Mass		_g/mole		

	True M.W	
	Absolute error	
1 Refer to <i>How to read a Barometer</i>	Percent error	

Questions

- 1. Define the following terms and give an example of each taken from this experiment.
 - a. torr

Example _____

Example _____

Name_____

- b. standard molar volume
- c. atmospheric pressure

Example _____

- 2. Define these terms
 - a. volatile liquid

b. Charles' law

c. absolute zero

3. How would each of the following errors affect the molecular mass obtained in this experiment? Give your reasoning in each case.

a. The flask was properly removed from the cold water bath but was not completely dry before weighing.

b. The flask is removed from the hot water bath while liquid remains.

c. The volume in the flask occupied by the stopper was not accounted for when the volume of the flask was measured.

4. What affect on the molecular mass would occur if twice the experimental volume of volatile liquid was placed in the flask at the beginning of the experiment?

5. Would this experiment be practical if the unknown had a boiling point of 130°C?

Problems

Name_____

1. A 0.678 gram sample of gas occupies 0.214 L at standard conditions; what is the molecular mass of the gas?

- 2. A sample of gas occupies 250. mL at 37°C and 730. torr; what volume would the gas occupy at standard conditions?
- 3. A 5.00 mL sample of an unknown liquid is vaporized in a flask having a volume of 285 mL. At 100°C, 0.4168 g of the vapor exerts a pressure of 740 torr. Calculate the gram molecular mass of the unknown liquid.

4. Calculate the density of oxygen gas at 50.°C and 750. torr.

5. Calculate the density of H_2S at STP.