Name: _____ Section: _____

Data and Calculations

1. Unknown sample number _____
2. Mass of test tube: _____
3. Mass of test tube and sample *before* heating: _____
4. Mass of test tube and sample *after* heating: _____
5. Mass of sample in the tube *before* heating: _____
6. Mass of residue in test tube *after* heating: _____
7. Mass of oxygen gas released: _____
8. Volume of oxygen gas at room temperature: _____
9. Atmospheric pressure: _____
10. Vapor pressure of water: _____
11. Temperature of water: _____

Questions (to be completed while in the laboratory)

1. Calculate the pressure of the collected oxygen gas (i.e. correct for the vapor pressure of water).

2. How much volume would the gas in question #1 occupy at STP?

3. Determine the moles of oxygen gas collected from the experimental mass of the oxygen gas.

Name: _____ Section: _____

4. Use questions #2 and #3 to determine the molar volume (i.e. how many Liters/mole the gas would occupy at STP).

5. Determine the % error of your molar volume from that of an ideal gas.

6. Along with oxygen gas, potassium chloride is also formed from the potassium chlorate. Write a balanced equation for the reaction. Also describe the purpose of the MnO_2. Do you suspect that this "filler" is necessary for this particular reaction? Briefly explain why or why not.

7. Calculate the number of grams of potassium chlorate in your original sample.

8. Determine the mass percent of $KClO_3$ in your original sample. (Remember that the sample was not pure $KClO_3$ but has varying amounts of other compounds)

9. What would happen if you didn't remove the stopper from the hot test tube?

Name: _____ Section: _____

Post-lab Questions

1. A sample of an unknown metal chlorate weighing 1.725 g is heated until all of the oxygen is driven off. The residue remaining in the container weighs 0.859 g. Calculate the percentage of oxygen in this metal chlorate.

2. 340 mL of oxygen gas are collected by displacement of water at 33 ^{o}C and 742 torr, where the vapor pressure of water at this temperature is known to be 37.8 torr.

   A. What is the pressure of the oxygen gas?

   B. Determine the volume of the oxygen gas at STP.