Notes for Completing the Lab Write-Up for "Molar Volume of a Gas"

(1) You need to find the mass of your strip of Mg ribbon. You never put it on a balance, but you *did* find its length. You wrote down the length in cm. You need to convert this to m, and then convert this to grams using the conversion factor "1.27 g = 1.000 m of Mg ribbon". (Recall that I weighed out 1 whole meter of Mg ribbon before the lab, and recorded its mass on the board.)
*** cm → m → g

(2) Convert g (from #1) to mol using the periodic table.

(3) Correct the P of the gas in the eudiometer to account for the fact that the gas you collected contained water vapor.
   a. The P in your eudiometer is equal to the P outside of the eudiometer (i.e., the atmospheric pressure) because you equalized the water levels (in the eudiometer and water column) before recording the gas volume.
   b. The P of the atmosphere ("barometer reading" in your data table on p.93) was 30.04 **INCHES** of Hg, but must be converted to **mm of Hg** in order for you to finish this lab report.
   c. Dalton's Law: $P_{tot} = P_{H2} + P_{H2O\,(g)}$.
   d. You looked up $P_{H2O\,(g)}$ in the fat green book in class – "vapor pressure of water at observed temperature" in your data table.

(4) QUESTIONS #4 AND #5: *Do not do #4 or #5 as written in the lab handout.* Instead, solve the combined gas law <u>one</u> time. This will answer both questions at once. You are doing this step to correct your volume to standard conditions ("STP").

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

P_1 = your corrected pressure from #3
V_1 = the volume of H_2 gas that you recorded in the Data Table (p.93)
T_1 = the temperature that you recorded the Data Table (p.93), but it has to be converted to K first
P_2 = standard pressure (must be in mm Hg)
V_2 = what you are looking for here
T_2 = standard temperature (must be in K)

(6) Question six: Solve a proportion. You used only a tiny fraction of a mole of Mg, so you only produced a tiny fraction of one mole of H_2. Therefore, find out how much your volume *would have been* if you *had* used a whole mole of Mg:

$$\frac{(answer\ to\ \#2)\,moles}{(answer\ to\ \#4\&5)\,ml} = \frac{1.00\ moles}{X\ ml}$$