

Lab #2: Excel and Chapter 1
Due date: At the end of lab

Name: _____
(Print and Pledged)

Purpose for lab: To learn calculation and graph skills in Excel while examining practical examples of gas calculations

Instructions: Work the following problems **only in Excel**. (You may work them on paper first, but must have a complete Excel spreadsheet when you're finished. Show all work and highlight answers using the highlight feature in Excel.) Feel free to work together but turn in your own work.

Exercises: 1.7b, 1.12a

Problems: 1.24 (Does this gas behave ideally?)

Extra problem not in book:

Problem 1.5: Deduce the relationship between the pressure and mass density, ρ , of a perfect gas of molar mass M . Confirm graphically, using the following data on dimethyl ether at 25 °C, that perfect behavior is reached at low pressures and find the molar mass of the gas. (How do we know it's exhibiting perfect (ideal) behavior?) In addition, please determine the % error in the calculated molar mass.

P (Torr)	ρ (g/L)
91.74	0.225
188.98	0.456
277.3	0.664
452.8	1.062
639.3	1.468
760	1.734

As we're working today, please put all problems in a single Excel file in a single "sheet". Thanks!

To learn some formatting techniques, please follow the directions below for each exercise/problem. Thanks!

Exercise 1.7b

→ Type each problem number and problem into the Excel worksheet using the text feature. You should use the following features...

Merge cells (Merge A6 through F10.)

Type "**Exercise 1.7b:** The following data..." into this space.

Format this area where the text is wrapped and the justification is left.

(Make sure you use the subscript feature with O_2 .)

→ When working Exercise 1.7b, make the data look like the following...

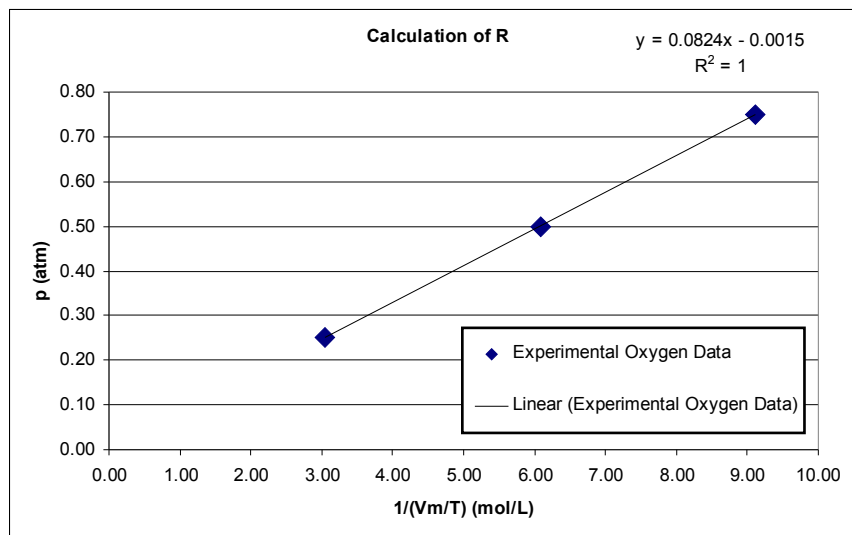
p/atm	$V_m/\text{L mol}^{-1}$	$\rho/(\text{g L}^{-1})$
0.750000	29.9649	1.07144
0.500000	44.8090	0.714110
0.250000	89.6384	0.356975

You'll have to use the superscript features, insert a symbol, and make the middle column "fit to width."

Make sure that your cells show the correct number of decimal places.

Show the line underneath the variables.

→Make your graph look like the following...



You'll have to calculate the values for $1/(V_m \cdot T)$, make a graph, input the correct data and labels, and use linear regression (making sure that you select the feature to where the equation and R^2 show on the screen).

→Highlight your answers in yellow when you're finished and **add units** (in a separate cell).

Proceed to the next problem.

When you're finished, use the "set print area" and "print preview" to have each problem print out on a separate page. Staple and turn in with the cover sheet. Thanks! 😊 Good work!