Experiment 3 Post-Lab Sheet   Name:

Results:
Enter your data below (2 pts)

temperature (°C)	length (mm)	temperature (°C)	length (mm)

Graph (3pts)
Attach a photocopy or print of your graphed data, with labeled axes, a title, data points clearly shown, and the best fit lines.

Be careful not to mix up *x* and *y*! Be careful not to mix up mm and cm!
Some things to consider for your analysis: does the amount of air change? Does the pressure change? Does the purity of the air sample matter?

1. (2 pts) What is the ***equation*** of the best fit line for your data? Include both equations if you repeated the experiment. Use (chemically) meaningful variables, <u>not</u> *x* and *y*.

2. (2pts) What is the calculated value of the *x*-intercept? Include both values if you repeated the experiment. ***Not the y-intercept!***

3. (2 pts) Based on the data from the whole class, is the *x*-intercept value correlated with the length at 100 °C? (Hint: you could sketch a graph of intercept *vs* length to see!)

4. (2pts) Find the average and uncertainty on the *x*-intercept values for the class. (Hint: check the Lab Manual, page A-7, for help.)

Discussion:

5. (2 pts) What is the physical meaning of the *x*-intercept? (***Not*** the *y*-intercept!)

6. (2 pts) If you continued to cool your gas sample (not necessarily in a water bath), could you measure its volume at this temperature, or would something else happen first?

7. (2 pts) Below, sketch what your graph would look like if the experiment were performed correctly, and what it would look like if the bottom of the capillary were 2 mm above the bottom of the ruler, as shown (and you didn't correct for this). **Your graph should have two lines; label which line is which!**
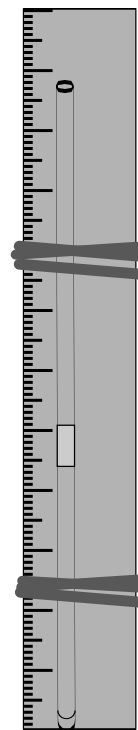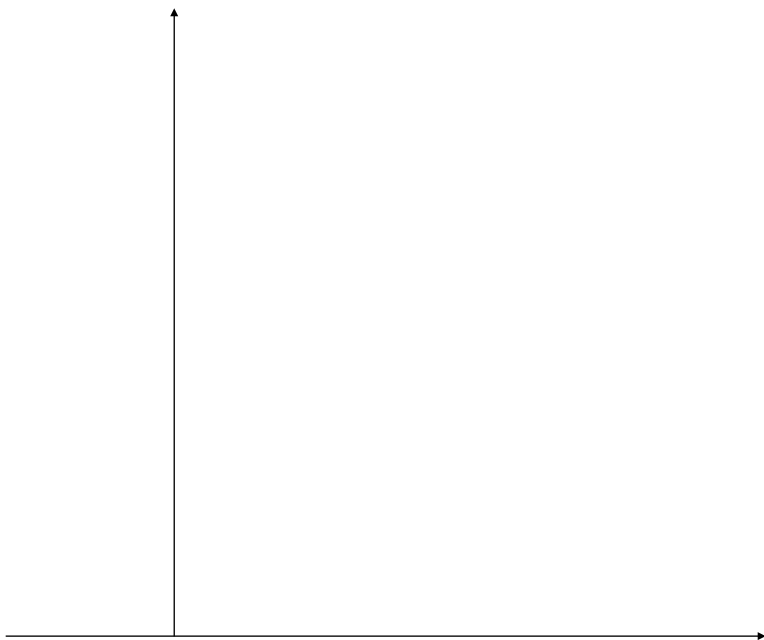
8. (1 pts) What effect would this error have on your *x*-intercept value?