The Laboratory Notebook

A laboratory notebook should be used to explain laboratory procedures, record all laboratory data, show how calculations are made, discuss the results of an experiment, and to explain the theories involved.

A record of laboratory work is an important document which will show the quality of the laboratory work that you have done. You may need to show your notebook to the Chemistry Department at a college or university in order to obtain credit for the laboratory part of your Advanced Placement Chemistry course. As you record information in your notebook, keep in mind that someone who is unfamiliar with your work may be using this notebook to evaluate your laboratory experience in chemistry. When you explain your work, list your data, calculate values and answer questions, be sure that the meaning will be obvious to anyone who reads your notebook.

Procedure

1. Use a quadrille-lined book with pages fastened in place.
2. Write your name and class on the front cover and inside the front cover.
3. In ink, number all the right-hand pages on the lower right corner if they are not already numbered. If you are left-handed, you may use the left pages instead of the right if you wish.
4. Save the first two pages for a Table of Contents. This should be kept current as you proceed. Each time you write up a lab, place the title and page number where the lab report begins in the Table of Contents.
5. Write in ink. Use only the right hand pages. You may use the left-hand pages for preliminary notes or for a quick graph. The left-hand pages will not be graded.
6. If you make a mistake DO NOT ERASE. Just draw ONE LINE through your error, and continue. It is expected that some errors will occur. You cannot produce a perfect, error-free notebook. Errors should be corrected by drawing one line through the mistake, and then proceeding with the new data.
7. Do not use the first person or include personal comments.

Laboratory Reports

Include the following information in your laboratory reports:

1. **Title**

   The title should be descriptive. Experiment 5 is not a descriptive title.

2. **Date**

   This is the date (or dates) you performed the experiment.

3. **Purpose**

   A brief statement of what you are attempting to do.

4. **Procedure**

   A one- or two-sentence description of the method you are using. You may refer to the lab manual for specific instructions, but you should include a brief statement of the method. Do not include lengthy, detailed directions. A person who understands chemistry should be able to read this section and know what you are doing.

5. **Data**

   Record all your data directly in your lab notebook on the right-hand pages. Organize your data in a neat, orderly form. Label all data very clearly. Use correct significant digits, and always include proper units (g, mL, etc.). Underline, use capital letters, or use any device you choose to help organize this section well. Space things out—don't try to cram everything on one page. Use tables where appropriate.

6. **Calculations and Graphs**

   You should show *how* calculations are carried out. Give the equation used and show how your values are substituted into it. Give the calculated values. If graphs are included, make the graphs an appropriate size. Label all axes and give each graph a title. See the section on graphing on page viii. If experiments are not quantitative, this section may be omitted.

7. **Conclusions**

   Make a simple statement concerning what you can conclude from the experiment.

8. **Discussion of Theory**

   In this section you should include such information as: What theory was demonstrated in this experiment? What do the calculations show? How was the purpose of the experiment fulfilled? Why does (or doesn't) the experiment work? Refer back to the purpose of the lab to write this section.

9. **Experimental Sources of Error**

   What are some *specific* sources of error, and how do they influence the data? Do they make the values obtained larger or smaller than they should be? Which measurement was the least precise? Instrumental error and human error exist in all experiments, and should not be mentioned as a source of error unless they cause a significant fault. Significant digits and mistakes in calculations are NOT a valid source of error. In writing this section it is sometimes helpful to ask yourself what you would do differently if you were to repeat the experiment and wanted to obtain better precision. If you can calculate a percent error or percent deviation, do so and include it in this section.

10. **Questions**

    Answer any questions included in the lab directions. Answer in such a way that the meaning of the question is obvious from your answer.