

The Laboratory Notebook

Source: AP Chemistry Lab Book (Flinn)

A laboratory notebook should be used to communicate what has occurred in the laboratory setting; dates, procedures, data, calculations, results, connections to theory are all included.

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 do so thoroughly, and clearly illustrate your knowledge.

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.

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**
Draw the procedure and include a few words as necessary to communicate the process. Do not include lengthy, detailed directions. A person who understands chemistry should be able to read this section, understand what you did, and repeat the experiment by using your notes.
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. You correct significant digits, and

always include proper units (g, mL, etc.) Underline, use capital letter, 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. If experiments are not quantitative, this section can be omitted.

7. **Conclusion Statement.**

Make a short significant 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 (details such as formulas, examples, explanations are necessary)? How do the observation support the theory (or not)? What was learned considering the purpose did the experience allow you to go beyond the original purpose? Why does (or doesn't) the experiment work? Include connections to the real world (molecular shapes, health or environmental issue, **List Sources in APA format**).

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. 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 percentage error or percentage deviation, do so and include it in this section.

10. **Questions.**

Answer any questions included in the lab directions directly into the graph paper laboratory notebook. Rewrite the question or answer the question in such a manner that the question is inferred.