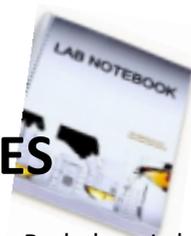


PTHS AP CHEMISTRY LAB NOTEBOOK GUIDELINES



Carbonless Barbakam Lab Notebook

One of the most useful skills you will acquire in the laboratory is the proper use of a laboratory notebook. Notebooks are an essential tool in many careers, ranging from that of the research scientist to that of the practicing physician. The effort invested in developing good habits of notebook use will be amply repaid for students who pursue a future in the basic or applied sciences. Experience has indicated that skillful notebook use is developed by most students only through continued special effort – it does not come naturally! **The laboratory notebook is perhaps the single most important piece of laboratory equipment.** The laboratory notebook is a complete record of what you have done in the lab. In a “real life” research situation, someone may have to reproduce your work several years after you have left the laboratory and the only record they will have to rely on will be what you wrote in your notebook. In both academic and industrial settings, the notebook is a legal document that records your original work.

The laboratory notebook provides a written record of what you have done and observed. It should be complete and correct enough so that someone who is not familiar with your work could reproduce your work by following your notes. They should know what to do and should know what they will observe while they perform the experiment.

Your lab notebook is a working document. As such, it is going to reflect the uncertainties, failures, and surprises of a work in progress. It is normal for it to contain the scars of a hard fought battle.

As you work on the lab, new ideas will occur to you. You can, and should, write down your ideas and do not hesitate to make any changes to your work (to make corrections, simply draw a line through your words, numbers, etc.). **The lab notebook is expected to be a bit messy (within reason) and to include multiple corrections.**

Your lab notebook is created to allow you to **create a copy of each page** of writing **by placing the back cover** (has the graphic of the periodic table on it) **between the first page (white) and the under page** (has a grey “copy” watermark in the middle of the page).

On most days you will submit some or all of the copy pages.

**Be prepared for the lab day when just your pre-lab work (the first one or two copy pages) will be collected as soon as class begins!

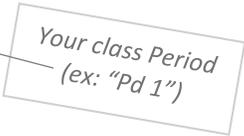
Pre-Lab Requirement

BEFORE coming to class on the day of the lab, you must read the entire experiment and complete the following work in your lab notebook:

There is much evidence that supports the belief that the number one cause of laboratory accidents, mistakes, and misunderstandings of experiments is not being prepared in advance. Therefore, **the pre-lab requirement is mandatory.**

Students who do not have their lab notebooks on the day of the lab, or have not completed these requirements will not be permitted to do the experiment at that time and will not receive credit for the pre-lab requirements. Completion of the lab will have to occur at a rescheduled time.

- **Lab Heading**

- NAME (your name)
- COURSE No. (AP Chem, Pd _?_) 
- EXPT No. (leave blank)
- DATE (first work day in lab)
- LAB PARTNER (his/her name(s))
- EXPT TITLE (title of lab)
- FROM PAGE No. (leave blank)

- **Objective**

The objective is a single statement that communicates the purpose(s) of the experiment, written in your own words. Your objectives will improve with time – it takes practice to be specific enough.

Weak Objectives: The purpose of the lab is to titrate an acid solution.

The goal is to learn how to use different balances.

Better . . .

The purpose of the lab is to use a standardized NaOH solution to titrate a weak acid solution.

Stronger . . .

The goal is to compare the precision of three different balances.

The purpose of the lab is to use a standardized NaOH solution to titrate a weak acid solution in order to determine the concentration of the weak acid.

The goal of the lab is to compare the precision of three different balances – two top-loading (0.01g and 0.001g measure) and one analytical balance.

Write Pre-Lab
in
Present Tense:

- **Procedure**

Write a brief synopsis of the procedure conducted.

This is a summary of the procedure, written in your own words. You are writing this so that a fellow AP Chemistry student could repeat the lab work from your directions. Specific details are not expected.

Do not simply copy the procedure from the lab book or lab handout.

- **Data & Calculations**

- ✓ Data are measurements and observations recorded during an experiment and results are calculations performed with these data.
- ✓ Prepare tables, in advance, for the recording of the necessary data of the lab.
**You can use the data tables within the lab manual as models.*
- ✓ **Data tables are to include all measured, calculated, and theoretical values used in the lab.** *A data value should never be first seen in a calculation – it is always presented first in the data table* (associated calculations follow the table).
- ✓ **Data must be recorded to sufficient precision, be clearly labeled with correct units**
- ✓ The data sections may be combined into one table or separated at your discretion.
- ✓ Be sure each table is titled to direct the reader. Calculations performed using the data should follow the table.
- ✓ Data and/or observations are to be recorded throughout the experiment in these tables that you have made in advance.
- ✓ **GRAPHS**
Any graphs created are to be glued or taped into your lab notebook – be sure to make enough copies of the graph to place it on the original *and* the copy pages.

During Lab . . .

- Collect data
- Correct any mistakes made in the pre-lab work
- Perform calculations
- Create graphs

After Lab Work and Calculations . . .

- **Conclusion**

- Restatement of lab objective
- Evaluation of whether objective was accomplished – **BACK UP WITH LAB DATA**
- **TWO** Possible Sources of Error
- **ONE** Suggestion for Lab Improvement

Written in Past Tense
(after lab has been
completed)

The conclusion is a continuous paragraph that includes single statements that address each of the above requirements. Your conclusion should be 4-6 quality sentences.

Other Odds and Ends . . .

- *You are to write in PEN in your lab notebook (no pencil).
- *There are to be no loose papers added to the lab notebook (with the exception of cut-out graphs if applicable).
- *Your lab notebook begins with a Table of Contents – keep up with this throughout the year.
- *All calculations must be shown and labeled.
- **Your lab notebook is not meant to be a perfectly polished collection of labs – it is destined to have written mistakes, corrections, etc.!

Periodically, a **lab quiz or test** will be given which will assess the pre-lab work, or the labs completed since the last lab test. Students are permitted to use their lab notebooks for these quizzes and tests, but may not use the lab handouts or lab manual. Forgetting to bring your lab notebook on the day of the test does not excuse you from taking the test.

The lab quizzes and tests will vary in points depending on the labs assessed and the number of questions.