A lab notebook is your primary permanent record of your research and experiments. Note that if you are taking an AP Placement lab course, you need to present a suitable lab notebook in order to get AP credit at most colleges and universities. Here is a list of guideline that explains how to keep a lab notebook.

* **Notebook must be permanently bound.** It should not be loose-leaf or in a 3-ring binder.
* **Never tear a page out of the lab notebook.** If you make a mistake, you can cross it out, but you should not remove sheets or parts of sheets from your book. When you cross out an error, it should still be legible. You should explaining the reason for the strikethrough and you should initial and date it.
* **Take notes in permanent ink.** It is not acceptable to take notes in pencil or erasable ink.
* **Print your name, contact info, the date and other pertinent information on the cover of the lab book.** Some lab books require you to enter some of this information on every page of the book.
* **If your book is not pre-numbered, number every page.** Usually numbers are located in the upper outer corner and both the front and back of each page is numbered. Your lab or instructor may have a rule regarding numbering. If so, follow their instructions.
* **It's a good idea to reserve the first couple of pages for a Table of Contents.**
* **Start a fresh page for each experiment.**
* **For each experiment, record the date(s) and list lab partners, if applicable.**
* **Record all information real-time.** Don't wait to fill in information. It may be tempting to record data elsewhere and then transcribe it into your lab notebook, usually because it would make the notebook neater, but it's important to record it immediately.
* **Include charts, photos, graphs and similar information in your lab notebook.** Usually you'll tape these in or include a pocket for a data chip. If you must keep some data in a separate book or other location, note the location in your lab book and cross-reference it with the relevant lab book page numbers wherever the data is stored.
* **Don't leave gaps or white space in the lab book.** If you have a big open space, cross it out. The purpose of this is so no one can go back in and add false details at a later date.

Lab reports are an essential part of all laboratory courses and usually a significant part of your grade. If your instructor gives you an outline for how to write a lab report, use that. Some instructors require the lab report be included in a [lab notebook](http://chemistry.about.com/od/chemistrylab/a/How-To-Keep-A-Lab-Notebook.htm), while others will request a separate report. Here's a format for a lab report you can use if you aren't sure what to write or need an explanation of what to include in the different parts of the report. A lab report is how you explain what you did in experiment, what you learned, and what the results meant. Here is a standard format. If you prefer, you can print and fill in the [science lab report template](http://chemistry.about.com/od/chemistrylabexperiments/a/science-lab-report-template.htm) or download the [pdf version](http://chemistry.about.com/od/chartstables/l/LabSheet1.pdf) of the template.

1. **Title Page**
Not all lab reports have title pages, but if your instructor wants one, it would be a single page that states:
	* The title of the experiment.
	* Your name and the names of any lab partners.
	* Your instructor's name.
	* The date the lab was performed or the date the report was submitted.
2. **Title**
The title says what you did. It should be brief (aim for ten words or less) and describe the main point of the experiment or investigation. An example of a title would be: "Effects of Ultraviolet Light on Borax Crystal Growth Rate". If you can, begin your title using a keyword rather than an article like 'The' or 'A'.
3. **Introduction / Purpose**
Usually the Introduction is one paragraph that explains the objectives or purpose of the lab. In one sentence, state the hypothesis. Sometimes an introduction may contain background information, briefly summarize how the experiment was performed, state the findings of the experiment, and list the conclusions of the investigation. Even if you don't write a whole introduction, you need to state the purpose of the experiment, or why you did it. This would be where you state your hypothesis.
4. **Materials**
List everything needed to complete your experiment.
5. **Methods**
Describe the steps you completed during your investigation. This is your procedure. Be sufficiently detailed that anyone could read this section and duplicate your experiment. Write it as if you were giving direction for someone else to do the lab. It may be helpful to provide a Figure to diagram your experimental setup.
6. **Data**
Numerical data obtained from your procedure usually is presented as a table. Data encompasses what you recorded when you conducted the experiment. It's just the facts, not any interpretation of what they mean.
7. **Results**
Describe in words what the data means. Sometimes the Results section is combined with the Discussion (Results & Discussion).
8. **Discussion or Analysis**
The Data section contains numbers. The Analysis section contains any calculations you made based on those numbers. This is where you interpret the data and determine whether or not a hypothesis was accepted. This is also where you would discuss any mistakes you might have made while conducting the investigation. You may wish to describe ways the study might have been improved.
9. **Conclusions**
Most of the time the conclusion is a single paragraph that sums up what happened in the experiment, whether your hypothesis was accepted or rejected, and what this means.
10. **Figures & Graphs**
Graphs and figures must both be labeled with a descriptive title. Label the axes on a graph, being sure to include units of measurement. The independent variable is on the X-axis. The dependent variable (the one you are measuring) is on the Y-axis. Be sure to refer to figures and graphs in the text of your report. The first figure is Figure 1, the second figure is Figure 2, etc.
11. **References**
If your research was based on someone else's work or if you cited facts that require documentation, then you should list these references.