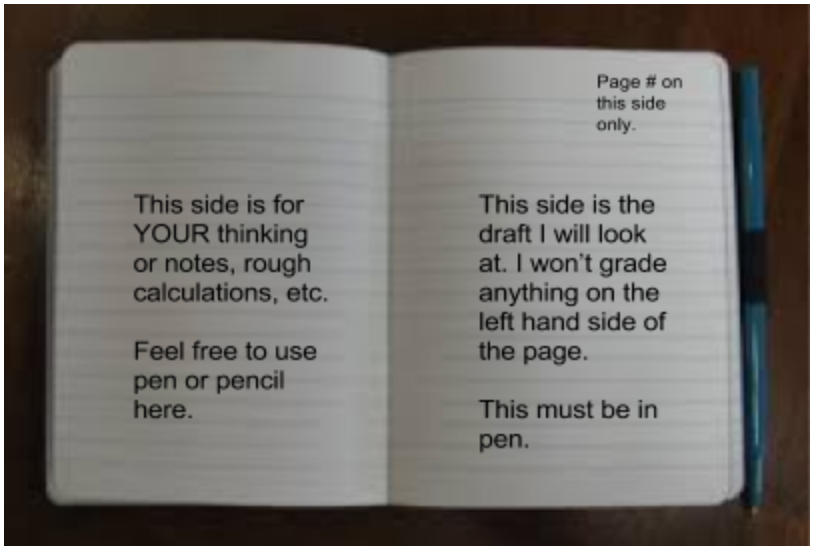

The AP Chemistry Lab Notebook

All of your work in lab will be recorded in a bound laboratory notebook. Anything I grade for the labs must be in the notebook unless otherwise noted. This is standard practice in research.

- The first thing you should do is to create a table of contents. On the top of either page one or two (your choice) place the words "TABLE OF CONTENTS". After skipping 2-3 pages, you then need to number the pages of your notebook. On the top of each right hand page, number the entire book, starting with page 1.

Table of contents:

Date of first day of lab	Title of Lab	Lab Partner(s)	Page lab starts

- All work on your notebook should always be done in pen! Never use pencil! I want you to consider your notebook to actually be two workspaces. There is a reason you have only numbered the right-hand pages of the book. It is here that you will write your formal lab reports. I will never look at the left-hand pages. You may use these to jot notes or do test calculations.

Because chemistry professors at some institutions ask to see a record of the laboratory work done by an AP student before making a decision about granting credit, placement, or both, in the chemistry program, students should keep reports of their laboratory work that can be readily reviewed.

Many of our labs will have inquiry portions in packets. You will keep your composition book in a folder so those are easily accessible for me and for potential future audits by your college.

All labs will often consist of a short pre-lab exercise, the lab itself, and follow up questions. At the end of each lab you will summarize your results in a short lab report, written directly in your permanent bound notebook. Because all of our labs will be inquiry-based, we will use a modified version of the Science Writing Heuristic[1] format for lab reports.

Pre-lab - I'll let you know if you may skip a section- otherwise, it is required

1. **Title** (it should be something descriptive… Lab 3 is not a good idea) + **date** + **lab partner(s)**
2. **Beginning question for the lab (purpose)**
3. **Safety:** Chemicals - What's the chemical formula? Boiling/melting point? Potential hazards to humans (i.e., do you need a fume hood? Does it break down under high temperatures?)? Material Safety Data Sheets's are helpful here - just google the chemical + MSDS.
Lab Equipment - See your flinn safety contract for ideas related to specific glassware.
If you have other safety considerations, I'll give them to you.

Chemical Name/Formula	Melting point/Boiling point (°C)	Potential hazards

Lab Equipment Considerations	

4. **Procedures** (brief outline): Here you want to write a procedure that you will be able to follow in lab. The only object you will be allowed to bring to the lab area is your lab notebook, so you must write a detailed procedure as part of your pre – lab preparations. You may cut out and paste stuff in your notebook that I give to you. Also, here's where you'd include pertinent chemical equations.

Post Lab

5. **Data and observations –** Record all relevant data (including units) and observations during the lab here. Remember, the notebook must be clean and legible, but when handwriting a lab, every table must not look typeset. The ability to clearly read and interpret data is the key. When you write this section, you should be asking yourself: Could someone else read this and understand what happened? Note: if you make mistakes in this or any other part of a lab, use a single line to mark through the errant data. Do not completely mutilate it, as it may turn out that you may need it later.
**Note- sometimes these might be in your inquiry packet.

6. **Calculations and Graphs** – Be sure to include one sample calculation of each type. I want to see how you got your results! Consequently, you must explain your calculations as you are doing them. It is not enough to simply do the calculation: you must explain what you are doing as well . It may be necessary for you to tape or glue in graphs in this section.

7. **Conclusion**
   - Claim: What is the answer to the beginning question?
   - Evidence: Refer to specific data from the experiment
   - Reasoning: Describe how the evidence supplies support for your claim.
   - Sources of Error: You should have at least 2-3 per lab. Always an important part of any lab. Did anything go wrong? Could something have been improved or done any better? This is perhaps the hardest section to learn how to write. When you discuss error, you want to be sure you explain how your potential error affects your results. For example, let us say that you are using the ideal gas law to determine the molar mass of a gas. If your data has overestimated the mass of the gas, what effect will this have on the molar mass? Can you prove this effect with a calculation?

A student came up with this table to make sure he always explained errors. You don't have to use it, but I thought I'd share.

Description of error	What data was affected - what quantitative data was higher or lower than expected? How do you know?

9. **Readings and reflections**: These will vary from experiment to experiment.

10. **Citations** A weblink and date accessed is sufficient. You may want to just copy and paste sources (for things like safety) in a word doc and print out/tape in your notebook.

[1] See http://avogadro.chem.iastate.edu/SWH/Lab_report.htm (accessed 8 July 2014) for details.