

## Informal Lab Write-up Guidelines

While I keep saying, “This Isn’t Quant,” I do care that you are careful in your measurements, and your calculations. However, this course is more about understanding the procedure, what you are measuring, and especially WHY, rather than making sure your result is within a certain percent of the known value. Although, the more care you take with measurements, the easier it will be to understand and interpret the results.

Writing is one of the most important ways that data is passed from a researcher to the scientific community. Work is not considered complete until the finished result is properly reported. While most of your reports will be somewhat “informal,” I expect them to be well-organized and easy to follow. There should be a clear idea of what you measured, how you measured it, and what the results mean. While I do not need a textbook written about the subject, explain important equations verbally, and mention alterations to the published procedure.

I am not going to hold you to a certain number of sections, or specific section headings. You will usually need: Introduction, Experimental Method, Data, Results, and Discussion or Conclusions, although there may be times when a different set of headings better helps you tell your story.

Title	<ul style="list-style-type: none"><li>List the title of the lab, your lab partner’s names, and the date.</li></ul>
Introduction	<ul style="list-style-type: none"><li>State the purpose</li><li>Give a <i>brief</i> outline of the theory. You do not have to try to explain the theory to your grandmother. Assume your audience is one of your classmates. For example, you should not have to derive the “method of initial rates” in the iodine lab.</li><li>If there are reactions, important equations, or diagrams that are needed, you should put them here.</li><li><i>For example: In the Iodine Clock Experiment, this section should include:</i><ul style="list-style-type: none"><li><i>the reaction we are studying</i></li><li><i>the rate law for the reaction without numbers (this will help you explain why you are doing this experiment)</i></li><li><i>an explanation of how the second reaction helps you measure the rate of reaction</i></li></ul></li></ul>
Experimental Method	<ul style="list-style-type: none"><li>This section should be very brief. You should site the appropriate reference to the procedure you used. “The procedure used was similar to that described in...”</li><li>Next mention if you modified the procedure.</li><li>Always include a list of the runs made and the conditions (concentrations, temperatures,...)<ul style="list-style-type: none"><li><i>For the iodine lab, you should list the runs for part A and B, the temperature measured for these, and the actual concentrations for the various components. You don’t need the volumes used of each stock solution. You can make two tables for the different parts, or arrange them all in one table.</i></li></ul></li></ul>

Discussion/ Results	<ul style="list-style-type: none"> <li>• This should be the section you spend the most time on. You should really focus on showcasing your data using graphs and tables, and explaining what the data means.</li> <li>• This is really a flexible section. You are telling your story of how the data you collected help you reach your goal</li> <li>• Not every behind-the-scenes calculation belongs here. <ul style="list-style-type: none"> <li>▪ <i>For example, in the iodine lab, you measure the time until the reaction turns blue. There are several calculations that take you from this number to the rate of the reaction. They involve stoichiometry and other basic calculations. Rather than show these calculations (which should be found in your lab notebook) you should in words talk about how the coefficients and the known <math>[S_2O_3^{2-}]</math> are used to calculate the rates. A table of reaction rates would be appropriate.</i></li> </ul> </li> <li>• Although I don't need to see the trivial calculations, this is the story. You may use subsections to help you organize the results to make things more clear if needed. <ul style="list-style-type: none"> <li>▪ <i>For the kinetics, you need to show/explain how you got the orders for the rate law, how you calculated k, and then how you used the Arrhenius equation to get <math>E_a</math>. (A plot would be great here...)</i></li> </ul> </li> </ul>
Conclusions	<ul style="list-style-type: none"> <li>• This is your spot to brag about how awesome your group did. How did your group's data compare to the literature value/published paper? What went wrong? You don't need major error propagation for an informal report, but you should talk about what you could have done to get better results, and if your numbers are reasonable.</li> </ul>
References	<ul style="list-style-type: none"> <li>• You will only have references here of published data for comparison to your numbers. One is fine for an informal report, but you should practice citing in the Journal of Physical Chemistry format: <p style="text-align: center;">Brock, L. R.; Duncan, M. A. <i>J. Phys. Chem.</i> <b>1996</b>, <i>100</i>, 5654.</p> <p style="text-align: center;">Guo, B. C.; Kerns, K. P.; Castleman, A. W., Jr. <i>J. Am. Chem. Soc.</i> <b>1993</b>, <i>115</i>, 7415.</p> <p style="text-align: center;">Kerns, K. P.; Guo, B. C.; Deng, H. T.; Castleman, A. W., Jr. <i>J. Am. Chem. Soc.</i> <b>1995</b>, <i>117</i>, 4026.</p> <p>Note that the authors are all listed, the journal is abbreviated and in italics, the date is in bold, volume number is in italics, and the page is in regular format.</p> </li> </ul>