***LAB REPORT FORMAT***

**General Guidelines:**

Always keep your audience in mind. Lab reports in this course should be written for a competent peer (perhaps a student in another class).

The purpose of the report is to convey what you have done in a concise, organized, and easy to read fashion. Each lab report should include proper references for all procedures and chemical information. A peer should be able to read your lab report and perform the lab with no additional instructions. Plagiarism of any form is not tolerated. Nothing should be taken from other sources (including classmates and the internet) without a proper reference.

Past tense should be used to describe what you did in the lab. Present tense should be used for statements of fact and chemical properties. For example: "The melting point of unknown 3319801 *was* measured to be 109ºC. The melting point of acetanilide *is* 114ºC."

Avoid using the first person and any statements of how you "felt" about an experiment, whether it was "easy," or the supposition that you "learned a lot" from the lab. Do NOT include any personal comments…..no “I, we, they.”

The example lab report and following outline of subject headings should help you submit an acceptable lab report.

**Name, data, period, (Lab partners:\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

**Lab Number: TITLE**

**Introduction**

* The purpose of the lab or question you are trying to answer should be clearly stated.
* The introduction should include the hypothesis. The hypothesis begins with an “if/then” statement that clearly states the prediction and relationship of variables in the lab. This “if/then” is followed with background information that supports your hypothesis. This background information will come from what you learned in class discussions, notes, books, and/or the Internet.
* The introduction is where you show that you understand the theory behind each step of the lab (e.g., why are the crucibles heated before adding the compound?). Anything that is done in the lab (physically or mathematically) should be addressed in the hypothesis.
* Be sure that you have put ALL information into your own words.

**Materials and Hazards**

* Material, chemicals and equipment should be listed in bullet form rather than paragraph (so that you can check the items off), so include a square or circle in front of each item listed.
* Hazards must be listed (flammable, toxic fumes, heat given off, etc.).
* Physical properties should be referenced (solid, liquid, etc.).
* Include protective gear, such as goggles or gloves.

**Procedure**

* Each step should be listed in bullet form plus a sketch. Use this bullet form so that you can check off each step as they are completed, so put a square or circle in front of each step.
* Be as concise and complete as possible! The procedure should contain all of the necessary details that one would need to achieve the same results and nothing more.
* Include actual amounts of reagents used and a description and weight of products formed. [This information may need to be repeated in tabular form in the Data section.]
* Always include your unknown number if you have one.
* The last procedure in any lab is cleanup: washing out equipment, where to put the chemicals and waste, washing counters and hands, etc.

**Data**

* All data that you have collected in the lab should be here in tabular format. Observations are included here, such as color change or gas formation. Always have a sentence or two explaining what is in the data table. Preferably this explanation is BEFORE the data table.
* Math calculations are to be shown after the data table. Show all of your math (adding, subtracting, multiplying, etc.).
* Graphs should be in addition to tabular data and should be done on the computer, or very neatly on graph paper, using a ruler. The axes should be scaled so that the information can be clearly discerned (in general, the data in a plot should be, as nearly as possible, a full-page width and a minimum of half page height).
* This section is for data and observations only. Do NOT include any discussion or evaluation of the results. This belongs in the discussion section. Do not refer to an unknown's identity--that's a conclusion!

**Discussion**

* Include a rationalization of ALL of your results, a discussion of what you expected to find and possible reasons that this differs from what you really found, and contrast different methods of achieving the same goal.
* This is a discussion of your results; NOT a discussion of your feelings about the lab.
* Justify any conclusions you are asked to make.
* Discuss any assumptions that you have made.
* Use specifics. Cite specific values from your data section and compare them to specific known or expected values. [e.g., Don't say "A narrow mp range indicates purity," instead say "The compound was found to be pure by comparing its corrected mp (103-104ºC) to the literature value (104ºC). The 1ºC mp range is a further indication of purity."]
* Discuss any possible errors in the lab and identify whether these errors were avoidable (your mistake) or unavoidable (equipment not sensitive enough).
* The last sentence of the discussion should comment on a DIFFERENT experiment that could be done in the future to lead to better understanding of the topic. That does NOT mean to do this experiment better.

**Conclusion**

* One sentence is often adequate for a short lab. State how the data and results support or refute the hypothesis.

**Answers to Post-lab Questions**

* The questions at the end of each lab should be included at the end of the lab report.
* Be concise, but show all calculations.