Writing a Lab Report

A good lab report has a format that includes five main sections. They are the **introduction, methods and materials, results, discussion and conclusion, and citation.**

1. **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'.
2. **Abstract**
   Some instructors also require that you include an abstract in your lab report. An abstract is a concise summary of your experiment. It should include information about the purpose of the experiment, the problem being addressed, the methods used for solving the problem, overall results from the experiment, and the conclusion drawn from your experiment. The abstract typically comes at the beginning of the lab report, but should not be composed until your written report is completed.
3. **Introduction / Purpose / Aim**
   Usually the Introduction is one paragraph that explains the objectives or purpose of the lab. In one sentence, state the **hypothesis** (what is your best guess of the expected results). 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, as well as a brief statement about how you intend to test your hypothesis. To be sure that you have a good understanding of your experiment, sometimes it is best to write the introduction after you have completed the methods and materials, results, and conclusion sections of your lab report.
4. **Materials / Methods**
   List everything needed to complete your experiment. Equipment, chemicals, materials.
   Methods - Describe the steps you completed during your investigation. Could be a numbered or bulleted list. 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.
5. **Results – Data - Observations**
   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.
   a. 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.
   Describe in words what the data means. Sometimes the Results section is combined with the Discussion (Results & Discussion).
6. **Discussion or Analysis - including calculations**
   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. Often includes graphs and charts.
7. **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. It is good to remember: **RERUN**
   - **R**estate – the purpose
   - **E**xplain - (briefly) what you did
   - **R**esults – State them- include whether or not your hypothesis was proven
   - **U**ncertainties – give reasons for errors or suspected errors. State what did not go as you expected and why.
   - **N**ew Information – state new terms or concepts that were learned
8. **References - Citations**
   If your research was based on someone else's work or if you cited facts that require documentation, then you should list these references.

Do Your Own Work
Remember that lab reports are individual assignments. You may have a lab partner, but the work that you do and report on should be your own.

Always give credit where credit is due in your report. You don't want to plagiarize the work of others. That means you should properly acknowledge the statements or ideas of others in your report.

Use the following template to set up an outline to write your lab report for the Stream Lab-

Title:
Abstract:
Materials:

Methods:
Results / Data:
Conclusions: