

HOW TO WRITE UP A SCIENCE LAB REPORT

While there is NO single style that is used by all scientists, all of the different organizational approaches meet the following criteria:

- 1. Legible** – The notebook will not be perfectly neat, but it must be neat enough to be read by someone other than the author. This also includes creating a table of contents. Any “typos” should be lined out with a single line, NOT scribbled out. NO WHITE OUT is allowed in the notebook.
- 2. Permanent** – The notebook itself should be a bound text. All writing should be in pen and even crossed out items should be legible. **ONLY** diagrams/drawings may be done in pencil.
- 3. Complete** – All chemicals, equipment, units, diagrams, procedures, computer programs, references, etc. should be included.
- 4. Narrative** – The notebook should tell a story. Why are you doing this experiment? What are you doing? What happened? What are your conclusions? What is your explanation? This so-called “story” should be factual but not “flowery”. The purpose of the narrative is to allow others to repeat the experiment.
- 5. Responsibility** – You must be willing to take responsibility for your work and results. If your job was on the line, would you present the report as it is? At the end of every lab, you need to sign and date the lab.

Specific Requirements, in addition to the five guidelines above:



- ☆ The first pages of the lab book are for the Table of Contents (T of C)
- ☆ After the T of C, number EVERY page (*front & back*) in the upper corners.
- ☆ All “PRE LAB” sections should be **completed before the start of lab**. (If you do not know who your partner will be, leave that area blank until the start of the lab.)
- ☆ Remember... never ever ever EVER use white out!! (Use a SINGLE line to cross out mistakes or changes... Do NOT scribble!)
- ☆ Any “empty spaces” should have a line through it, initialed, and dated.

What is to be written up **BEFORE** the lab is done

Experiment Title

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Date (Start of Lab); Partner Name(s)

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Pre-Lab: to be done BEFORE doing the lab



These will be checked **BEFORE** you start the Lab!

- 1. What is the problem?** Describe the problem in your own words. Then restate the problem in the form of a question or questions that will guide your research.
- 2. What is your hypothesis?** Using what you know about the problem and the scientific concept of the lab, state a hypothesis: your best estimation of the answer to your research question. (If – then statements work well.) Do NOT say “I think...”!!!
- 3. What variables can you use to test your hypothesis?** Identify the variables that you will be testing during your experiment: what you can measure or observe (dependent variables) and what you can manipulate in an experiment for the measurements or observations (independent variables). (HINT: The *independent* variable AFFECTS the *dependent* variable...)
- 4. What materials will you need to complete this lab?** Write a list or create a chart of everything you need to complete this experiment.



What is to be written up **DURING** the lab?

Purpose: State the goal and reason for completing the experiment. What are you trying to accomplish?



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Procedure: Write the lab protocol that you did **TODAY**; state every reagent used and every procedure followed ***in your own words!** Record **one line** at a time **AS IT WAS DONE**.

Please document this with a flow chart or bullet points – Just copying the procedure given to you will not earn you points! You need to make it yours!



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Results: The Results section tells “What you found”. It consists of at least 3 components: description of **results**, **figures** (graphs, diagrams, pictures), and **tables**. State every measurement/observation made.

The Results are the meat of the report. The data can be presented in graphs, tables, and other illustrations (figures). The tables allow you to present your results clearly to the reader, and graphs allow you to visualize the effects that the independent variable has had on the dependent variable in your experiment. Do not forget to label all graphs, tables, and figures.



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Analysis: This is where you tell us what your results mean. This may be included with the results section OR it could be separate.

What is to be written up **AFTER** the lab?

Questions: If a given lab experiment contains questions, include **both** the question and your answer. There are two reasons for this section in a lab write-up. First, it requires that you sift through experimental data to find specific information and present it in a clear and understandable way. The second purpose is to initiate the thinking process about what you did and to possibly find additional outside information pertaining to the experiment.



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Conclusion: *(In paragraph form)* Describe your final results based upon what you found & recorded in the “results” section. Answer the problem question from the beginning of the lab by explaining what you have learned from the lab. State any issues or problems you may have run into that may have affected the outcome of the lab. If the lab were repeated, what changes would you recommend?



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Signature: SIGN and DATE the bottom of your lab write-up, signifying that the work is yours.

How do I write a Super Scientific Conclusion?!

Glad you asked...

A conclusion is a report of what happened and what you learned by what happened. Look over your results and data, decide what information had a direct bearing on your results and write up a short summary. Remember that the purpose of an experiment is not to prove your hypothesis, it is to learn, and whether you supported it or disproved it, your summary should show the work you did.

Your **conclusions** summarize how your results support or contradict your original hypothesis:



- # Restate the purpose of the lab... (Why am I –teacher- having you –student- do this lab again???)
- # Summarize your experimental results in a few sentences and use this summary to support your conclusion. Include key facts from your background research to help explain your results as needed.
- # State whether your results support or contradict your hypothesis.
- # If appropriate, state the relationship between the independent and dependent variable.
- # Summarize and evaluate your experimental procedure, making comments about its success and effectiveness.
- # Suggest changes in the experimental procedure (or design) and/or possibilities for further study.

Example of a Conclusion:

In this lab we wanted to determine which type of vegetation would help prevent erosion more effectively. **My hypothesis was** that grass would do a better job at preventing soil erosion on the hillside than shrubs. I based my hypothesis on the idea that there are more roots in the grass than the shrubs. **The results indicate that this hypothesis is not supported.** The areas covered by grass were 10% more eroded than the areas covered by shrubs. This is because the dense amount of shrub cover shielded the underlying dirt better than the grass did. **The procedure was** effective; we measured the amount of erosion that occurred in each vegetation scenario and compared the amounts to the area without plant life. **Because of the results of this experiment, I wonder** if different kinds of shrubs have the same effect on preventing erosion. I had no problems with conducting this experiment. **If I were to conduct this science experiment again I would** try both deciduous as well as coniferous shrubs.

