

# How to do labs in your Interactive Notebook

## *The Right Side*

- Problem:** Your instructor will give you this most of the time. It is what you are trying to solve. Sometimes, you will be asked to come up with your own problem.
- Hypothesis:** To be done AFTER you have completed the procedure and you write this on your own. A hypothesis is stating what the results could be and, most importantly, what those expected results mean. Can be done using an “if...then...” statement. “If (these are my results), then (this is the answer to the problem).”
- Procedure:** Sometimes your instructor will give you the procedure before hand. You will need to read over the procedure and then write the procedure in your own words here. The procedure needs to be written in paragraph form and NOT as a list. Make sure to include the appropriate materials to be used at the proper place in the procedure. Materials should NOT be in a separate list. There will also be times where you need to create your own procedure. In either case, you need to make sure that every step is included, it collects quantitative data that will help solve the problem and any one that reads your procedure could perform it the exact same way and obtain the exact same results every time.
- Control Group:** A “normal” group that goes through the experiment as a comparison. If you want to see how different temperatures make plants grow, room temperature would be the control group. A control group has everything in it, or goes through everything that the other groups of an experiment goes through, EXCEPT what is being tested.
- Units Measured:** In this section, identify the quantitative data that you are going to measure in your procedure. Make sure to put the specific units. Always use the metric system for units in your experiments.

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## *The Left Side*

**Data:** This section will usually have two parts to record all of your data. All of the information that you stated that would be collected in your procedure and units measured sections needs to be written here in the first part, the data table. When making a data table, place the experimental groups and control groups in the far left-hand column. Each will have their own row. Starting to the right of the experimental group and control group column, at the top each column needs to state the title of whatever quantitative data that was collected, along with the appropriate units. An example of a data table might look like this:

	Height day 1 (cm)	Height day 2 (cm)	Height day 3 (cm)	Height day 4 (cm)
Warm Temperature	9 cm	11 cm	15 cm	27 cm
Room Temperature	9 cm	10 cm	13 cm	17 cm
Cold Temperature	9 cm	10 cm	11 cm	12 cm

The second part is collecting qualitative data and this is also mandatory. Any observations, interesting items or other that is not quantitative, but related to the experiment can be qualitative data. Qualitative data goes underneath any data table(s).

**Graph(s):** Any time numbers are involved with a lab, you need to have a graph. There are two graphs you can use: Line Graphs and Bar Graphs. When two pieces of quantitative are measured and related to one another, use a line graph (e.g. plant height and time/days). When only one type of quantitative data is collected, use a bar graph (e.g. plant height only). All graphs must have a functional title that describes exactly what the graph is representing. The X-axis and Y-axis must be labeled and with the appropriate units. Use a ruler to make your graph(s).

**Data Analysis:** The data analysis is where you write out everything that can be taken away from the lab/experiment. Each data analysis needs to have the following:

1. Answer the problem and use data to back up your answer (answer and data need to appear in the same sentence. Do not make a list). This should be at least FIVE sentences. You should end this portion by stating the overall big picture of the lab.
2. Explain how to make your lab better, scientifically. This is also the place explain why/what happened if the actual results and your expected results are different.