

IB Biology Lab Notebook

The notebook is a permanent record of your lab work, some colleges will ask for it to give you credit for an AP science course. **Therefore, always work neatly and in pen (blue or black ink ONLY). If you make an error DO NOT erase anything, just draw a single solid line through it (NO WHITE OUT). Also, there can be no torn pages.** The following elements need to be included in your lab notebook.

Table Of Contents

- Begin the Table of Contents on the very first page. Include the following: Date; Page Number; Title.
- Skip two pages and then begin numbering each page in the top right corner. You will only be using the right side of the book (the left side will be left primarily blank).

Exploration – Done prior to beginning the lab experiment

1. **Title:** The title is a statement (not a question) reflecting the independent and dependent variables. Use scientific names of organisms. Example: "The Effect of Temperatures on a Reaction Rate" not "Experiment #3"
2. **Reference:** A full reference to the lab source:
For a book: Last Name of Author, First Name. (Year Published). *Title*. Pages.
For the Web: Last Name of Author or Authors. (Year Published). "Title of Web Page."
Place of Origin...example University of California, Berkeley. Date accessed. URL:
<http://.....>
3. **Group:** list the names of other students in your group
4. **Purpose** of the lab: a statement of what you testing. Include:
 - a. level(s) of manipulation
 - b. why you choose this/why is this of interest to anyone?
5. **Hypothesis (Null Hypothesis if applicable):** use the "if...then...because" format. Be sure to answer what do you expect to happen (responding variables and measurement) and why do you expect that to happen (support prediction with references).
6. **Variables and Control(s):**
 - a. State the independent, dependent, standardized variables, each one on a separate line appropriately labeled.
 - b. Identify the control; include an explanation of why this is a control for your experiment.
 - c. What other factors might affect this experiment? How would they be expected to affect it and how are you managing that?
7. **Methods/Procedure:**
 - a. Briefly describe in a paragraph what materials, methods and procedure used in the activity. DO NOT copy the whole detailed procedure from the book or handout.
 - b. Discuss safety precautions relevant to your procedures.
 - c. For inquiry lab you **must** include a photograph/sketch of your equipment setup.
8. **Pre-lab questions:** The answers should be in full sentences and include all calculations and steps

Lab Data Collection & Analysis – Occurs during the lab experiment

1. **Data tables**
 - a. Descriptive title, see the title section for information.
 - b. Data and qualitative data are organized and displayed for easy interpretation (see note on raw data in appendices).
2. **All graphs**
 - a. Must be with the appropriate type of graph to best represent the trends in the data.
 - b. Must have a best-fit curve (not all graphs will be made by connecting the data points).
 - c. Must have both axes labeled with appropriate reference to the units of the measurements taken during the activity.
 - d. Must have a key if more than one data set is shown.
3. **Any calculations**
 - a. Uncertainties of the measurements are noted (mean +/- SD, probability values for statistical tests, etc.).
 - b. Show a fully worked exemplar for each type of calculation used, give equations used, and include all units.

Evaluation – After the lab experiment has concluded

1. **Post-lab questions:** The answers should be in full sentences and include all the calculations and steps
2. **Analysis/Conclusion/Reflection:** Minimum 3 paragraphs including all the following information
 - a. Summary of the purpose of the lab and of your hypothesis.
 - b. A statement concerning what you can conclude from this lab.
 - c. A summary of the lab data and how they demonstrate the purpose and how they support or do not support your hypothesis.
 - d. Compare your results to the results that would be predicted by the literature.
 - e. Comments on the strengths and weakness of your lab and what would you do if repeating the lab:
 - precision/accuracy of measures
 - how well controlled was your experiment?
 - did you have enough samples in your experimental groups?
 - did you have enough levels of the independent variable to determine a trend?

References:

- Use a standard format, (APA, Chicago etc.)
- Ensure that claims based on the sources are cited in the report when you put forward the claim.

Left Hand Appendices:

You may place your raw data tables on the left hand side of your lab notebook, but be sure to refer to them in the report, keep them organized and neat.