



Advanced Placement Biology

Laboratory Report Format

All lab reports must be typed & include **ALL** of the following sections in sequence: title, purpose, introduction, methods & materials, results, calculations, graphs, discussion, & addendum.

Make sure that each section of your report is clearly & appropriately labeled & in the correct sequence. Titles for all sections should be left-justified & in bold type. Do NOT include a cover sheet.

Title

- Name of the lab exercise being performed.

Purpose/Objective

- Summarize in a concise sentence the objective or purpose of the investigation. In other words, you must explain **why** the investigation was performed. **Example:** *“This investigation was performed to measure the effects of light duration on the growth of soy bean seedlings over a 7-day period.”*

Introduction (should consist of 2 paragraphs incorporating the following):

- In the first paragraph, provide background information that focuses on the main topic of research in your investigation & should be limited to the specific parameters of the lab. For example, an investigation involving the ability of chlorophyll to absorb light would not require you to provide a detailed discussion of photosynthesis. Rather, it would be more appropriate to discuss the structure of chlorophyll & how this enables the molecule to absorb light.
- In your second paragraph, state your hypothesis or hypotheses. Keep in mind that a hypothesis is simply an educated guess regarding the outcome of your investigation. **Example:** *“It is hypothesized that seedlings exposed to the longest duration of light will exhibit the greatest amount of growth over a 7-day period.”*

Do not retroactively alter your initial hypothesis if proved invalid by your results.

Methods & Materials

- Summarize the general procedure, providing enough detail so the reader can understand how the experiment was performed. **Please do NOT list every step in the procedure nor every piece of equipment used.** You may, when appropriate, mention specialized materials/equipment in the context of your summary (“specialized equipment” includes colorimeters & O₂ gas sensors but definitely not beakers & test-tubes).
- Since you are not restating each step in your procedure, the last sentence of your summary should refer the reader directly to the original lab protocol if they wish to



repeat the activity. **Example:** “For a more detailed description of the procedure used in this investigation, refer to Lab 2: Investigating Environmental Effects on Plant Growth.”

Results

- Organize data into tables, figures, photographs, etc. Do not discuss the implications of the data (this will be addressed in the discussion section).
- **Include a title for all tables &/or figures.** Number all tables & figures separately. **Titles should be descriptive enough so that the reader knows exactly what the numerical values represent.**

Example:

Table 1: Effect of Light Duration on Soy Bean Seedling Growth

Duration of Light / Day (hrs)	Height (cm)
0	1
4	3
8	7
12	10

*Data was collected over a 7 day period.

Calculations

- **List all formulas that were used.** You need only to show **one** calculation for each type of problem (if there are several identical calculations to be done, just work out one completely). Only include formulas that apply directly to the concept tested in the lab.
- Omit this section completely if no calculations were performed during the lab.

Graphs

- **Each graph is to be done on a separate page (full page graphs).** Each graph must have a **title** & both axes must be clearly labeled. If you're asked to draw a curve through your data points, this should always be a **best-fit curve** (for example, a straight line that best represents your data, not a dot-to-dot connection of data points).
- If you're asked to calculate the slope (or perform other analysis) of your graph, show such analysis directly on the graph, indicating clearly which points on the graph you used in your analysis.



Discussion (should consist of 3 paragraphs incorporating the following):

- In your first paragraph, summarize & interpret the meaning of your data.
Example: *“According to the results in Table 1, there exists a direct relationship between the duration of light exposure & growth rates in soy bean seedlings. This suggests that light is essential for growth in soy bean seedlings.”*
- In your second paragraph, state whether the results validate or refute your original hypotheses. You must explain the rationale/logic that allows you to do so.
Example: *“Based on the data, the hypothesis suggesting a direct relationship between light duration & soy bean growth seems to be valid.”*
- In your third paragraph, discuss factors ***inherent in the experimental setup*** that might have caused deviation from the expected results (this does NOT include human error!). ***Only cite factors that affected to YOUR results! Do not cite every possible source of error if your results do not suggest this is so.***

Example -Human Error: occurs when YOU, the experimenter, make a mistake. Examples would be when you set up your experiment incorrectly, when you misread an instrument, or when you make a mistake in a calculation. Human errors are NOT a source of experimental error; rather, they are “experimenter’s” error. DO NOT quote human error as a source of experimental error.

Example -Experimental Error: is an error inherent in the experimental design that causes the results to be skewed in the same direction every time, i.e., always too large or always too small. Some experimental errors can be eliminated by using a different experimental setup.

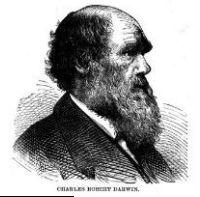
- At the end of the third paragraph, include suggestions for improving your techniques or the experimental design to minimize the cited source(s) of experimental error in the future.

Addendum

- Include any supplemental discussion questions that are part of your lab handout.
- **For each question, be sure to RESTATE the question, followed by your response.**

Suggestions

- **Keep your writing impersonal; avoid the use of the first person (i.e. “I” or “we”).**
- Use the past tense & be consistent within the report -note: “data” is plural & “datum” is singular; species is singular & plural.
- Italicize all scientific names (genus & species)
- Use the metric system of measurement & abbreviate measurements without periods (i.e. cm kg) spell out all numbers beginning sentences or less than 10 (i.e. “two explanations of six factors”).
- Write numbers as numerals when greater than ten (i.e. 156) or associated with



measurements (i.e. 6 mm or 2 g)

- Have a neutral person review & critique your report before submission

*At the top of each report, include your name & the name of any partner(s) you conducted the lab with. Although you are collecting data with these partners, there **must be no collaboration** with them when writing your report! Each report must be your own original work. **Failure to produce original work may result in a zero.**