

It Isn't Easy Being Green Lab Report

Lab Reports should follow the following format.

1. **Introduction:** Include a statement of the problem investigated (is it the environment or genotype that effects phenotype), why the work was carried out, background of the problem including an explanation of how the problem relates to you and the world, a brief statement of the general method of approach to the problem, and expected results.

2. **Methods and materials:** This section tells the reader how and with what “stuff” the work was done. You should try to strike a balance between an over-detailed description of even the most trivial items and a very sketchy statement that provides insufficient information. The important guideline is that another worker of similar training and ability, following your description, should get the same results. This section should be written as a description of what you did, not as a set of numbered instructions.

3. **Results:** Here is the real meat of a report. In this section you should **describe** the important qualitative and quantitative observations in your work. You are **not yet** drawing conclusions from your data. Data should be tabulated and/or graphed and described. One of the common errors in report writing is to say, “The data are plotted in Fig. 1” without saying something like, “As can be seen in the pie graph, the ratio of yellow to green seedlings is closest to a 1:1 ratio.” Be aware that tables and graphs are not self-explanatory, and must be summarized for the reader. All graphs and tables should be numbered and provided with a title. Any additional information that makes the data more comprehensible should be provided as needed. You will include both your individual data chart and the class data.

4. **Discussion and conclusions:** This section serves two functions. First, it provides a place where the data may be fully discussed and interpreted (you answer all the WHYS and HOWS), and second, it allows you as the author to delve into the realms of speculation. Here one may address questions like “why did something unexpected happen?” or “why are some human traits not altered by the environment?” or “why did the expected results not materialize at first?” You will need to include a punnet square to help explain the observed ratios of seedlings. In this section the author may (discretely) pat him- or her-self on the back, criticize other workers results, suggest improvements in methodology, etc. You should also find and explain one major source of experimental error. This could be as simple as “we never counted the seedlings before moving them to the light.” You will want to compare your individual ratios to the class ratios. What is the probable genotype of the parents of your seedlings based upon that ratio?

5. **References:** Some papers have no references while others have 200 or more.

Required Graphs/Diagrams

- A diagram of your petri plates at the start of your experiment.
- A pie graph of your initial light yellow vs green.
- A pie graph of your initial dark yellow vs green.
- A pie graph of your dark into light yellow vs green.
- A class data pie chart for in light and dark to light.

Be sure you address the following in your lab report:

- Experimental error (human or otherwise)
- Your conclusion for the effect of environment and genotype on phenotype
- A comparison of the class data vs. your individual data (why would you want to use group data?)
- What is the probable genotype of the parents of your seedlings based upon the observed ratios?

It Isn't Easy Being Green Lab Report Rubric

Student Name: _____ Period: _____

This analytic rubric is used to verify specific tasks performed when producing a lab report. If the task has been completed, all points are awarded. If the task is incomplete half points may be awarded. No points are awarded if the task is not complete.

Category	Scoring Criteria	Points	Student Evaluation	Teacher Evaluation
Lab Introduction <i>15 points</i>	The question to be answered during the lab is stated.	5		
	The hypothesis clearly shows it is based on facts.	5		
	Specific predictions of genotype or environment controlling phenotype are made.	5		
	A connection is made between the lab and the "real world" (how might data from this lab improve life?)	5		
Materials and Methods <i>10 points</i>	Only the materials actually used in your lab procedure are listed	3		
	Procedures are written in paragraph form and clearly state what is planned. (<i>not just a list of numbered steps.</i>)	5		
	There are no understood procedures or materials. (<i>Such as: graduated cylinders or use microscope to view slides.</i>)	2		
Results <i>25 points</i>	Individual data is shown in both data tables and pie graphs	10		
	Class data is shown in both data tables and pie graphs.	10		
	The lab data is described (summarized) in words	5		
Discussion <i>30 points</i>	Summarize the essential lab data. (Explain what the data tells you about your hypothesis)	10		
	How does the experimental data answer the lab's essential question? (Does genotype, environment or both impact phenotype)	10		
	A Punnett square is used to show the likely genotypes of the parents of your tobacco seeds.	5		
	Identify the one area of the lab most likely responsible for measurable experimental error. (<i>Think carefully.</i>)	5		
Presentation <i>15 points</i>	Report is printed in black ink on white paper using 12 point Times New Roman or Arial font, double spaced with one inch margins on all sides with no visible corrections	5		
	Each section of the lab report has a BOLD , left justified title (Introduction, Materials and Methods, Results, Discussion)	2		
	A diagram of the apparatus used in the experiment is drawn in the largest available white space on the front of the lab report.	3		
	Report is written in such a way that others could accurately duplicate the experiment.	5		
Participation <i>5 points</i>	No group members were sited for safety or participation violations.	5		
Rubric <i>5 points</i>	This rubric is completed and included with the finished lab report	5		
Score	Total Points	110		
Self-evaluation	If the difference between the student evaluation and the teacher evaluation is less than 5 points, 5 points will added to the teacher's score when the grade is recorded.			
Deadline	Reports will be accepted after the beginning of class for 3/4 credit. Papers turned after that time will be mulched for use in the greenhouse and receive ¼ credit.			

