

## El Diamante High School Guidelines for Writing Scientific Laboratory Reports

The study of science is an attempt to make sense of our natural world. Science includes both the process of scientific inquiry through which knowledge is attained and the knowledge which results from the inquiry. The most effective vehicle by which the process of inquiry can be learned is in the laboratory or field settings where students gain firsthand experience of the inquiry process. Laboratory study has also been shown to be an effective means of acquiring scientific knowledge and answering questions. Thus, *study in a laboratory setting is an integral and essential part of a science course.*

In addition to your lab activities, it is important that you learn how to write a proper scientific lab summary. *It is not similar to writing an essay.* Your reports will be organized and written in the form of a classic scientific science paper consisting of the following sections in this order:

### Title Page with Abstract Procedure Evidence

Each section should be labeled with the heading placed in the left hand margin (except for the title).

1. **Title Page:** Be descriptive and don't worry if the title seems a little lengthy. One word titles, often appropriate for essays, are seldom adequate for lab reports. Place the title at the top middle of the first page. The title page should also include your name and the names of those in your lab group, your class period, your teacher's name, and the date of the lab.

2. **Procedure:** You should summarize the procedure in point form creating a step by step description in your own words of what you did in the lab. It should begin on the **SECOND** page of your lab report.

3. **Evidence:** This is a big part of your lab. Evidence may take the form of diagrams of what you observe. If the evidence includes data, you should present it in a table. Use a graph when the report so specifies. All figures should have figure captions which should clearly explain the diagram, and as a rule should not require reference to the text for explanation. The figure caption should contain magnification and a classification of the organism (if applicable). The diagram should also be completely labeled. Diagrams completed in the lab should be included in your report. Make your diagrams as you perform the lab. *Do not redraw diagrams; it is both invalid and unnecessary.*

4. **Abstract:** There are **five** essential components to an abstract:

- **Background** – Identifies a phenomenon that will be investigated, and the student's question about that phenomenon.
- **Claim** – What is the claim that you believe the investigation and it's evidence will support?
- **Methods** – What methods did you use to complete this investigation? This should be a summary, not a detailed procedure.
- **Evidence** – What evidence resulted from your investigation that addresses your claim?
- **Reasoning** – How does the evidence refute, or support, your claim? What variables might be used to question your conclusion? Suggest modifications that would address questions of experimental reliability.

The abstract is written in narrative form, in the PAST TENSE. It is NOT a list. Do not use fragmented or partial sentences. Write complete thoughts, as if you are having a conversation with the reader. Remember that the abstract goes on the title page!

### Grading

Each lab report is worth **20 points**. Lab reports in which the student has plagiarized from an outside source, or from fellow students automatically earns ZERO POINTS for the plagiarized section(s)! Students are expected to work in groups in the lab, but **do their own thinking and writing on their lab reports!** Do not present the argument, "But we worked on it together" if confronted with cheating. If students submit lab reports with identical abstracts, you will receive no credit for the work. The instructor will not make a distinction regarding who did the original writing and who did the copying. In instances of copying, all students involved lose credit. **DO NOT ALLOW OTHER STUDENTS TO COPY YOUR WORK.**

Students who frequently lose points for problems with calculations, sentence structure, punctuation, or spelling are encouraged to have reports proofread by the instructor prior to submitting the lab report for a grade. Your instructor reserves the right to have you re-write your lab report to correct obvious deficiencies prior to grading the report.

## Lab Grading Rubric

	<b>Far Below Expectations Or Missing</b>	<b>Below Expectations</b>	<b>Meets Expectations</b>
<b>Organization</b>	The lab report fails to meet more than one of the expectations for this section.  <i>Points earned = 0</i>	The lab report fails to meet one of the three expectations for this section.  <i>Points earned = 1</i>	1. Title, Date, Period, and Student name (first and last) is present, including the names of the members of the lab group. 2. The lab sections are in correct order.  <i>Points earned = 2</i>
<b>Abstract - Background</b>	The background statement is missing, or fails to identify the phenomenon being investigated or the question being asked about the phenomenon.  <i>Points earned = 0</i>		The background statement identifies a phenomenon that will be investigated, and the student's question about that phenomenon.  <i>Points earned = 1</i>
<b>Abstract – Claim</b>	The claim is missing.  <i>Points earned = 0</i>	The claim proposed IS NOT the focus of the investigation.  <i>Points earned = 1</i>	The claim proposed IS the focus of the investigation.  <i>Points earned = 2</i>
<b>Abstract – Methods</b>	The methods contain too much detail OR the methods are missing.  <i>Points earned = 0</i>		The methods constitute a BRIEF statement of essential techniques used to complete the investigation.  <i>Points earned = 1</i>
<b>Abstract – Evidence</b>	The section is missing, OR the student merely cites evidence without connecting it their claim.  <i>Points earned = 0</i>	The student draws an incorrect conclusion from their evidence regarding its ability to support or refute their claim.  <i>Points earned = 2</i>	The student correctly identifies evidence from the investigation that supports or refutes their claim.  <i>Points earned = 3</i>
<b>Abstract – Reasoning</b>	Two or more of the expectations for this section have not been correctly addressed.  <i>Points earned = 0</i>	The student fails to correctly address one of the expectations of the Reasoning section of the abstract.  <i>Points earned = 2</i>	1. Student identifies how the evidence supports or refutes their claim and how your claim may need to be modified in light of the evidence. 2. Student identifies uncontrolled variables that might be used to question the reliability of their conclusion. 3. Students suggest modifications to the methods that would address questions of experimental reliability.  <i>Points earned = 3</i>
<b>3. Procedure</b>	Procedure is a mostly copied directly from the lab description, with little attempt at brevity or the procedure is missing  <i>Points earned = 0</i>	Procedure represents a summary of the written procedure in the lab document, but it omits important details that would be necessary to successfully repeat the lab.  <i>Points earned = 1</i>	Procedure is a brief summary of each of the critical steps taken in completing the lab. It is NOT an exhaustive description containing minute detail.  <i>Points earned = 2</i>
<b>4. Evidence</b>	The Evidence fails to meet two or more of the expectations for this section OR Evidence section is missing  <i>Points earned = 0</i>	The Evidence fails to meet one of the three expectations for this section  <i>Points earned = 4</i>	1. <b>ALL</b> data and observations are neatly organized (in tables and graphs where appropriate), are easy to interpret, and are correctly labeled, including axes of graphs. 2. Required calculations have been performed correctly. 3. At least one complete calculation must be shown for each type of calculation utilized.  <i>Points earned = 6</i>