

HOW TO DO A LABORATORY WRITE-UP.

There are two types of laboratory write-ups: informal and formal.

LAB WRITE-UP.

The key elements are as follows:

- TITLE
 - this may or may not involve a title page, depending on the teacher
 - it should be descriptive telling the reader exactly what reagents were involved and what was done with them
- PURPOSE OR QUESTION
 - a summary paragraph expanding on the title in which you describe **why** the lab was done (relevance), **what** procedures were done
- PREDICTION
 - May or may not be included depending on prior knowledge
- EXPERIMENTAL DESIGN/PROCEDURE
 - In an **informal lab**, simply refer to the text pages or handout as a reference
 - In a **formal lab**, each step should be written out in a numbered step format so that anyone reading the lab could easily reproduce it
- OBSERVATIONS
 - Table is drawn with straight lines, entirely closed in
 - Table should have a proper title
 - Observations should be clear and concise as well as neatly written
 - Numerical values should always have units and the proper number of significant digits (refer to http://www.physics.uoguelph.ca/tutorials/sig_fig/SIG_dig.htm for GHSS chemistry)
- EXPLANATION (the majority of Thinking marks are in this section)
 - Answer the question or resolve the purpose (what did you achieve from this lab?)
 - Was your prediction verified or falsified?
 - You may be assigned additional questions from the text or a handout
 - You may also need to have at least 3 **sources of experimental error**
 - This is a very important aspect as it allows you to suggest ways to improve the experiment for those who might try it in future
 - It also allows you to explain why your results may not be the same as those predicted or those of other groups
 - In this case, an explanation is also required in which you explain the effect of your error on your final result. See example on back of page)

Also consider:

- Any graphs or calculations should be included under an Analysis section after Observations but before Explanation. Graphs are worth 5 Thinking marks (title, labelled axes with units, proper scale, accurate data points, line or curve of best fit). Calculations are usually worth 3 to 5 marks and are a combination of Thinking and Communication marks.
- Never write in the first person. Science writing is not flowery but straight to the point. Occam's Razor = Entities should not be multiplied unnecessarily. (i.e. simple is best!)
- Numbers below 10 are written out and numbers 10 or greater are written numerically.
- Spelling and grammar are extremely important!! This is a major part of your Communication mark.

Also a formal lab write-up differs only in that the Experimental Design is fully written out as Materials & Methods and Procedure and the Explanation is written in paragraph form (not just answers from the text). There are more marks awarded for the depth of answers and completeness of the Experimental Design.

Lab Report Rubric Lab: _____

Student's Name: _____

Date _____

	Level (1)	Level (2)	Level (3)	Level (4)
Problem /2K	Student omits the problem or states an objective that does not relate to the lab.	States a problem but it is not a goal statement with clear dependent and independent variables.	The problem relates to the lab with clear dependent and independent variables listed, but it is not in question form.	Clearly states the correct problem for the lab in question form including dependent and independent variables.
Hypothesis /5K	Omits or does not state a related guess to the problem.	States a hypothesis but does not include the variables to be tested	States a hypothesis that has the variables being tested but lacks the correct order of the variables that are being tested.	States a hypothesis in which the dependent and independent variables are clearly understood as to what is to be expected in the outcome.
Data /5A	Data is missing, incomplete, inaccurate, or has several defects (charts, graphs, or diagrams are missing lines or labels.	Data is presented clearly but in an unlined chart; may have inaccurate or missing data; no titles/labels. Graph or diagram is inaccurate in display of data.	Data is clearly and neatly presented with a lined chart but title is incomplete or missing. Graph/diagram's display of data is correct but is missing label(s).	Data is presented clearly and neatly. All charts, tables, diagrams, graphs and pictures are accurately labeled. Appropriate graphing or diagram of data (line/bar/pie) chosen.
Results /5A	Explanation of data is missing, inaccurate, or not expressed as complete sentences.	Incomplete description of what occurred in exp., description of data is missing 3 or more important observations, or not in list format.	Results of the experiment stated correctly in a complete sentences. But may be missing 1-2 important observations, or not in list format	Complete description of what occurred in the experiment is stated in a list of complete sentences. Data is used accurately in reporting the results.
Conclusion /10T	The conclusion is very limited or does not fully explain the objective of the lab -or- Conclusion guidelines were not followed. Relevant vocabulary missing/ not used (Only 1-2 sentences) Missing Sources of error	A conclusion that explains the objective but does not accurately use the data or results to support the data, or any explaining of why the data happened. -or- Parts of the conclusion guidelines were followed. Relevant vocabulary not used or not used correctly. (Only 2-3 sentences) 1-2 sources of error	A written paragraph that includes evidence supported with data explaining the objective, but missing "big picture", the "why", scientific error and/or further experiments. Vocabulary used correctly. (Only 4-5 sentences) 3 sources of error	A well written paragraph(s) with a logical explanation supported by data that discusses 1) whether the hypothesis was correct and what occurred, 2) if the problem was resolved, and what they learned, 3) what further experiments or unanswered questions that might pertain or further the study, and 4) real-life applications. 3 or more sources of error
Analysis Questions /5K	Answers to analysis questions are incomplete and incorrect. Many questions are missing.	Answers to most analysis questions are incomplete and incorrect.	Answers to analysis questions are complete and correct. Some may be incorrect.	Answers to analysis questions are complete and correct.
Grammar and Spelling /5C	Report contains six or more typo, spelling or grammar errors.	Report contains three to five typos, spelling or grammar errors.	Report contains one to two typos in spelling or grammar errors.	There are no errors in grammar and all spelling is correct
Format and Presentation /5C for informal /15 C for formal	The lab report does not follow the guidelines for formatting.	Presents some sections of the lab in the correct order. Three or more sections are not in the correct order; missing heading or title;	Presents most sections of the lab in the correct order, one or two sections may not be in the correct order; heading or title missing or not complete;	Presents all the sections of the lab in the correct order with correct formatting; includes correct heading, section headings and title of lab;

Comments:

Grade: ____/____