***IB Ideal Lab Report Format***

**(Full Title of Lab, bolded) *The Effect of \_\_ on \_\_ as measured by\_\_\_***

\*There are eight Section Headings you must include, all 14pt, left-aligned and **bolded** or underlined

\*Double-space between sections

\*Most of your investigations will involve a manipulated IV, this format is designed accordingly

Introduction: (1st person)

* + Research question: what is your question of interest?
		- “How does \_\_\_\_ affect \_\_\_\_”
		- “This is an investigation of the effect of ….”
	+ State a hypothesis based on background knowledge (don’t forget the *educated* part of the “educated guess!)
		- Always a statement
			* Manipulation of IV will result in change in DV
		- What do you know? Why did you choose this IV?
		- What do you expect to see based on what you know?
		- CITE at least one SOURCE in your references section
	+ How will it be tested (the description of the “as measured by” part)
		- Generally describe your test
			* Why do you think it a good test for your hypothesis?
		- What will this test tell you; what do *you* expect to see

Variables:

* + Single-spaced
	+ All three variable categories should be explicitly stated, described
	+ Independent:
		- What value are you manipulating?
		- Mention your range of trials/treatments (at least 5)
	+ Dependent:
		- What data are you collecting (think both, quantitative and qualitative)?
	+ Constants/variables to be controlled:
		- Think about all other variables, besides IV, that could impact your data in this test
		- ALWAYS use a table, list the constant, describe possible impact, and state how the experimental design attempts to control each of these variables that must remain constant

|  |  |  |
| --- | --- | --- |
| Variable | Potential impact on experiment | How the variable will be controlled in experimental design |

* + - Strive for at least 5 constants: commonly – temp, moisture, surface area/shape, volume, variation in biological tissue, time
		- You WILL put all constants in parentheses after each step in your procedure where this variable is being controlled!

Materials:

* Single-spaced
* Use bullet points
* Be specific (include size/units)
* Include picture/drawing of original apparatus
* Use columns to avoid splitting this section between pages

Procedure:

* Single-spaced within a step, double-spaced between steps
* Always numbered
* Design a procedure that is exactly what you do (or would do if you are not carrying out the full experiment) and can be followed step-by-step exactly as you did with an expectation of the same results
* Include how, when and what data will be collected; allow for the collection of **sufficient (enough), relevant (to your hypothesis, test)** data
* State when you are attempting to control your constants, italicized in parentheses after the step designed to control a previously described constant *(controlling temperature)*
* Use present tense, like a recipe
* Impersonal, objective language (“Using the 10ml graduated cylinder, measure 6ml of saline solution.”)

Data and Analysis:

* + There should always be at least one table and one graph/chart
		- Raw data and analyzed data can be presented in same table or in two separate tables
	+ **TABLES and GRAPHS should be “stand alone” components of your lab report = I should be able to tell what you tested, the precision of your instrument and see your results in this one snapshot!**
	+ EVERY table/graph/chart should be precisely titled (often lengthy!)
		- Include units
	+ Properly label your table (IV 1st, all DV next,)
		- Include units and precision in column headings (ex. +/- 0.05cm) not in the body of the table
		- ALWAYS include qualitative observations, either in own column or as a footnote under the data table
			* Did all samples look the same from the start? Did any new variables introduce themselves during your experiment? Was there any discrepancy between your trials/replicates? ANALYSIS of any impact will come later!
* Include a sample equation for each analysis used
	+ - 1st value in your table should be the one you choose
		- Place sample equations directly under the table
* Properly label the axes on a graph
	+ - Include units and precision
* NEVER split a table or graph over 2 pages

Conclusion:

* Actual v. expected (if stated a hypothesis, rewrite it here and state your support or rejection and **why**)
	+ - Restate what you expected to see and then explain what you did see
* You MUST reference your actual data in drawing your conclusion
* There is nothing wrong with recognizing that you do not have enough data or there were flaws in your design – just be sure to explain your position specifically about the limitations of your data and the strength of your conclusion.

Evaluation: (3rd person)

* Analyze the test/procedure/data collection method/choice of statistical analysis
	+ - Did you collect **sufficient**, **relevant** data?
* Explain all sources of error.
	+ - Use a separate paragraph for each source of error
			* State the source of error and then explain it
				+ What impact might they have had on your data?
				+ How could you improve this test/procedure/data collection method/choice of statistical analysis?

References:

Use APA or MLA format – choose and be consistent, use an online citation generator!