How to Write a Lab Report – IB version

**Objective and Introduction**

State problem or research question and identify relevant variables. (What are your independent variable, dependent variable and control variables?) An introduction to the topic should be given in your own words. (2 pts)

**Procedures**

The procedure should be complete enough for anyone to take your lab report and repeat it. It must be in your own words.

Record full details of all apparatus that you used (for example, size of beakers and uncertainties. An example of good procedures “ 25.00 cm3 of solution X was measured with a 25.00 + 0.05 cm3 pipette, transferred to a 200 cm3 beaker and heated on a hot plate until….. Note that correct significant figures must always be used.

Labeled diagrams are often an effective way of showing an experimental set-up.

You should collect enough data to give at least five data points on a graph of independent vs. dependent variable. Sometimes you must repeat data collection until you feel that enough reliable data has been collected. (5 pts)

**Data Collection and Processing**

Record appropriate quantitative data and associated qualitative raw data, including units and uncertainties.

Show all calculations with units.

Show all analyzed data with correct units and uncertainties

(20 pts)

**Conclusion and Evaluation**

State a conclusion which is justified by reasonable interpretation of the data.

Evaluate limitations and weaknesses of the data. Identify both **random** errors and **systematic** errors. Random errors are errors of the equipment, over which you have no control. For example, if your thermometer has a mark for every degree Celsius, the error in your reading will be +0.50C. When the error is due to your method, for example, if you have air bubbles in your pipette, this is a systematic error. Systematic errors may be improved with repetition or better procedures. It is important to discuss specifically and realistically how you can improve systematic errors. (25 points)

**Other evaluations.** You will also be evaluated on the following skill sets.

Manipulative skills: You must demonstrate that you: a) follow instructions; b) seek help when you need it; c) know how to use equipment and record measurements correctly; d) pay attention to safety rules.

Personal skills: You must a) demonstrate that you approach the lab with motivation and follow it through to completion; b) show that you are able to collaborate with your peers in a group; c) reflect on your learning.