**Internal Assessment Grading**

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| **Score** | **Comments** | **Criteria** |
| Intro  number  20 |  | **Introduction**  1 - Your (first) paragraph reflects personal significance, interest, and curiosity  10 - You organize background information from broad to narrow. The first things you talk about are less related to your research, the last things are specifically the physics you think is behind your research – the most closely related. When the reader sees your statement of the problem, they say “of course!!!”.  5 - You have a clear statement of the problem. Keep it simple. “The purpose of this investigation therefore, is to find the relationship, if any, between IV and DV” – or something like that.  3 - You state your variables – dependent, independent, and controlled and define them explicitly.  1 - You state a hypothesis (optional but recommended) and state why you have that hypothesis.  Any sources cited are included in your bibliography. |
| Method  number  20 |  | **Method/Procedure**  2 - Your procedure is a narrative, not an ordered list. You talk us through how you collected your data  1 - You address possible safety/ethics concerns. (with humor?)  5 - There is a diagram of your setup that is annotated with all the materials and equipment you used. You can include photos as well, but you do need a diagram. If you used a program for data acquisition, you have included screen shots to explain how you gathered data.  3 - You describe how you manipulated your independent variable.  3 - You describe how you measured your dependent variable.  3 - You explain how the controlled variables you listed are kept constant.  2 - You state which variations you used of your independent variable, and how many trials (repetitions) of the measurements of your dependent variable you did.  1 - You explain why you chose those variations and number of trials. |
| Res  number  30 |  | **Results/Analysis**  5 - You have at the very least 10 variations with 3 trials of each variation. (If it is difficult to get your trials) It would be better to have 20 variations with 5 trials each if your data is easy to collect.  1 - Your raw data is included. If it is derived from thousands of computer gathered points, be creative, and walk us through using screenshots how you derived your table graph or gathered data from the computer data. If there are thousands of data points, you don’t need to include all the points, just your derived data.  5 - Your data table includes the name of the quantity, the symbol for the quantity, and the units for that quantity, and the uncertainty of the quantity in the header of each column.  2 - The numbers in your data table include the same level of precision. (They are rounded to the same decimal place)  2 - You include your graphs in the body of the paper, and they have titles, axis labels and units.  5 - You have a graph of the average of your raw data with error bars  10 - Any processing of raw data is described briefly and completely. You walk us through one sample of data processing.  You have a graph of your processed data with error bars. (If you did something like calculate speed, or pressure, or viscosity) The error bars of the processed data follow the rules of error propagation we learned last year.  or  10 - If your data is linear, you have graphed it with error bars and a linear trendline with the equation displayed, and have included max and min slopes, as well as the uncertainty of the slope.  or  10 - If your data is a curved line, you have done your best to linearize it using a log log graph, and you have linearized it with a y1/n line analysis (or ln(y) vs x if it is exponential). You include a trendline with max and min slopes for your linearized graph. |
| CE  number  30 |  | **Conclusion and Evaluation**  10 - You state a conclusion based on a logical interpretation of your data. Summarize the trend in the data, and explain why you think that is happening. Use Physics and terminology and knowledge. (i.e. make it seem that you just took a course in IB Physics)  If you made a hypothesis you evaluate the truth of the hypothesis.  If you are measuring a well known quantity, (like absolute zero) state its value and give it a bibliography reference.  10 - You discuss the limitations of your research (sources of error)  10 - You suggest improvements that could be made to minimize your cited sources of error – or other things about your work that could be improved.  You suggest ideas for further research (thereby reflecting your personal curiosity for the subject)  You include a bibliography for any sources cited |