Rubric for Grading Labs

	Points				
	1	2	3	4	5
Organization: 1) Logical flow of report. 2) Proper notation (units, rounding, etc). 3) Final result written in form $X \pm \delta X$. 4) 2-page limit.	NONE	Major problems in organization prevent reader from following report.	Report somewhat emphasizes author's results but lacks coherency.	Minor issues with coherency but main results clearly highlighted.	Report is very well written and emphasizes author's main result(s).
Physics Understanding Demonstrated: 1) Direct measurements connected to final result. 2) Equation(s) cited and explained. 3) Graphic clearly explained.	NONE	Demonstration of understanding of physics concepts missing or significantly incorrect.	Link between measured data and physics concepts not well established.	Link between measured data and physics concepts partially explained.	Clear understanding of the connection between the physics concepts and measurements well demonstrated.
Questions: 1) Identify the main source of error as systematic or random. 2) Answer questions specified in manual.	NONE	Error analysis not used. Most answers missing or incorrect.	No cohesive demonstration of how uncertainty affected final result. Some questions left unanswered or incorrect.	Thoughtful analysis stating cause, but lacks the clear discussion of effect. Some questions left unanswered.	Insightful analysis of cause and effect. All questions correctly answered.
Graphics: 1) Data plotted in manner relevant to experiment. 2) Title, labels, units, axes, error bars. 3) Caption identifies major patterns in graphic.	NONE	Graphics inaccurately reflects measured data.	Major formatting issues with graphs but data faithfully presented.	Good representation of data but minor formatting issues evident.	Accurate representation of data using graphics. Graphs well formatted.

Score (20 points possible)	
Grade = score/18	

(Grade capped at 100%)

Lab # X: Lab Title

by: John Smith

Collaborators: Sally Jones and Kate Boggs

The purpose of this experiment was to determine...X . A few of the technical terms that will be used in this report are... . A summary of our findings are that $X = \bar{X} \pm \delta X$ and ... .

The central physics concept we used to perform this experiment is YYY's Law:

$$Equation\ Placeholder. \qquad (1)$$

This equation states that the greater the y_1, the more of X we should expect because... . Therefore, we measured y_1 and y_2 in six different trials using the following equipment... . Because of our multiple trials, we determined that even though the equipment appeared to have a random uncertainty of only δy_1, there was also a systematic uncertainty of δY_1.

A summary of our results is displayed in Graph 1. Notice that the $y_1's$ and $y_2's$ have the relationship predicted from YYY's Law (eq 1 above).
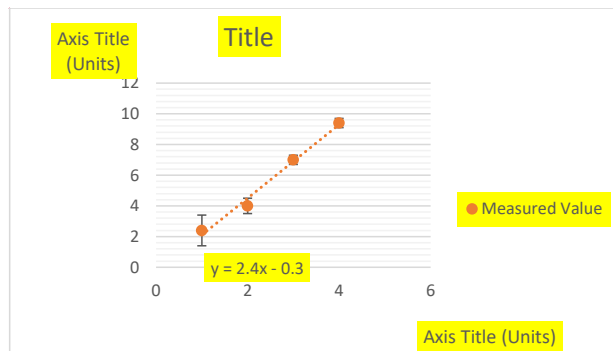
Graph 1: A comparison of measurement X with Y. Since the trend line passes through the error bars of all of our points we determined that... . Also notice that point 1 has a much larger error compared to the other points, this is due to ... .

Based on Graph 1, we can use YYY's law... to determine that $X = \bar{X} \pm \delta X$. This is in agreement with the published value of X since the published value is within the range $\bar{X} - \delta X$ to $\bar{X} + \delta X$. [1]

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[1] This answers question 1 from the manual

Commented [CMB1]: These final results should be numbers with units which are rounded correctly.

Commented [CMB2]: An introductory paragraph should establish the problem. Then provide basic definitions of technical terms. Finally preview the final result for individuals too busy to read the whole report.

Commented [CMB3]: The body of your report should focus on how a particular physics **concept** connects your **measurements** to your **result**.

Commented [CMB4]: The most important equation(s) should be stated AND explained in words.

Commented [CMB5]: All graphs need appropriate UNITS, LABELS, TITLES, ERROR BARS, and TRENDLINES.

Commented [CMB6]: A short discussion of main features of the graph is important in the caption.

Commented [CMB7]: The concluding paragraph should summarize how results were obtained and clearly state results in the same why as the introduction.

Commented [CMB8]: Use footnotes to clearly indicate where you are answering questions from the manual.