Graphing Your Data Rubric Material: Author:

Category	Far below threshold (1)	Below the threshold (2)	Meets the threshold (3)	Exceeds the threshold (4)	Score
Figure Caption(s)	Graph has only a title, not a caption. Important details are missing.	Caption is present but incomplete—missing what is being measured or how.	Caption summarizes what the graph shows, including variables and trends.	Caption is clear, complete, and concise. It explains what is shown, how the data was obtained, and why it's significant.	
Make It Big!	Graph is too small to read comfortably. Axis labels and data are hard to see.	Graph is generally readable, but some elements (e.g., axis numbers or labels) are too small.	Graph and all elements are large enough to read easily, without wasting space. Fits well on a page.	Graph is highly readable and well-sized. All components are well-proportioned and aesthetically clear.	
The Number of Tick Marks	Tick marks are missing, uneven, or overly crowded. Axis scaling is confusing or misleading.	Tick marks are present but irregular or too sparse/dense. Scaling may not be optimal.	Tick marks are evenly spaced and appropriate. Axis scaling makes data interpretation easy. (Approximately 5-7 major ticks are typically a good amount.)	Tick marks are perfectly spaced and support clear, meaningful reading of the graph. Scaling enhances comparison and interpretation.	
Font Type/Size Consistency	Fonts are inconsistent in type or size, making the graph look unprofessional or hard to read.	Some font inconsistencies exist, or fonts are too small or distracting.	Fonts are mostly consistent in type and size. Readable and suitable for scientific presentation.	All fonts are consistent, clean, and professional. Excellent visual clarity.	
Axes Labels With Units	One or both axes are missing labels.	Labels are present but units are missing, incorrect, or in nonstandard form.y	Both axes have correct labels and standard units.	Axes are clearly labeled with accurate and standard units. Labels are well-placed and unambiguous.	
Normalizing and Correcting Data	No attempt is made to subtract background or normalize data, or the method used is clearly incorrect and distorts the results.	One or both processes are attempted but done inconsistently or with insufficient justification. Methods may be unclear or poorly documented.	Data is correctly background-subtracted and normalized using standard and appropriate methods (e.g., subtracting a baseline, normalizing to max/min). The process is briefly explained.	Both background subtraction and normalization are done clearly and skillfully. The result is clean, interpretable data that maintains physical meaning and supports meaningful comparison.	
A Full Box Around Your Graph	No border around the graph area; axes are floating or incomplete.	Only partial borders are present, or framing is inconsistent.	A full box surrounds the data area, improving clarity and presentation.	Box is present and enhances visual appeal. It helps define the data space without distraction.	
Legend/Labels for When More than One Set of Data	Multiple data sets are plotted separately or without identification.	Labels/legend are present but unclear or hard to distinguish (e.g., similar colors/symbols).	Each data set is clearly labeled with a distinct legend or direct labels. Comparisons are easy.	Labeling is exemplary—distinct, clear, and enhances comparative understanding of multiple data sets.	
No Gridlines and Don't Connect the Dots	Gridlines are present and distracting. Data points are connected by default lines.	Either gridlines or line connections remain, though effort is made to follow instructions.	No gridlines. Data points are not connected. A fit line is only added when appropriate.	Excellent attention to detail. Gridlines and inappropriate connections are avoided. Fit lines or reference lines are clearly marked and relevant.	
	F: 0-7	C: 15-21 D: 8-14	A: 30-36 B: 22-29	**Total Score**	

Displaying Your Setup Rubric Experimental Technique: Author:

(If you manage to BOTH get it successfully setup AND take some data, you may pick which rubric you'd like to be judged by. If you are unsure, you are allowed to do both and I will take the better grade.)

Category	Far below threshold (1)	Below the threshold (2)	Meets the threshold (3)	Exceeds the threshold (4)	Score
Detailed Setup	You don't have a detailed setup. **(Audience: optics experts)**	While a detailed setup is provided, it is missing several details important to the setup. Some components may be in the wrong place.	While a detailed setup is provided, it is missing a few minor components.	All components of the setup are shown accurately and clearly labelled. Consistent symbols are used for similar components, such as mirrors or polarizers.	
Simple Setup	You don't have a simplified setup. **(Audience: your classmates)**	While a simplified setup is provided, there are still a lot of extra details or inaccuracies that could confuse the audience.	Essential components of the setup are shown and reasonably clearly labelled.	Essential components of the setup are shown and clearly labelled.	
Clarity and Organization of Simple Setup	Disorganized or hard to follow	May be fairly cluttered or hard to follow.	A little cluttered or a little effort to interpret what is going on is required.	Layout is logical and easy to follow; the beam path is clear.	
Purpose of the Simple Setup	From the figure and caption I'm not sure what the purpose of the setup is. What does it do?	It is somewhat clear what the setup is used to measure and how, but some things are confusing.	It is mostly clear what the setup is used to measure and how.	It is very clear what the setup is used to measure and how.	
Labels	Many labels of the components are missing.	A major thing or several minor labels may be missing.	While important labels for both setups are provided, there are some minor labels missing.	Both setups are clearly label the components shown with correct and consistent terminology.	
Citations If Used	Zero: Figure appears identical to known paper and there is no acknowledgement of use.	Figure appears inspired by known paper but there is no acknowledgement of use.	If either of your figures were inspired by any source, you identify that source info and say adapted from (ref info here).	If either of your setup figures were inspired by any source, you identify that source with enough information to find it.	
Figure Captions	Captions say something only like "MOKE experimental setup." Important details are missing.	Captions are present but incomplete—missing what is being measured or how.	Captions summarize what the figure shows.	Caption are clear and complete. It explains what is shown and measured.	
Font Type/Size Consistency	Fonts are inconsistent in type or size, making the graph look unprofessional or hard to read.	Some font inconsistencies exist, or fonts are too small or distracting.	Fonts are mostly consistent in type and size. Readable and suitable for scientific presentation.	All fonts are consistent, clean, and professional. Excellent visual clarity.	
Professional Presentation	The figures are both sloppy. (I recommend PPT or Google Slides)	One of the two setups is sloppy.	While a good attempt, there are some minor details that make it look a little sloppy.	Both setups look professional given their individual audiences.	
	F: 0-7	C: 15-21 D: 8-14	A: 30-36 B: 22-29	**Total Score**	

Student Checklist

If you are unsure if you have met these criteria, it might be wise to give your setups and this checklist to someone not in your group to get their feedback. Peer feedback is useful! Don't get mad at them if they don't understand; take it as your opportunity to improve your figure.

Completeness

- **Did I include all the major components of the setup (light source, optics, sample, detectors, electronics, etc.)?**
- **Would someone unfamiliar with my experiment understand the general equipment involved?**

Clarity & Flow

- **Can someone follow the "path" through my experiment (e.g., the laser beam path)?**
- **Is the layout organized so the order of components makes sense?**

Labeling

- **Did I label every component clearly?**
- **Am I using consistent and correct terminology?**

Accuracy

- **Does the figure show the right type of equipment (mirror, polarizer, detector, etc.)?**
- **Even if it's not to scale, does it represent the real arrangement (order) and function?**

Presentation

- **Is the figure neat and easy to read?**
- **Are the symbols/shapes consistent? (Lenses look like lenses, mirrors like mirrors, etc.)**

Most people like to start with the more complicated setup and then think about how to narrow down to the critical components. Top views are common, though not required.