

John Muir High School's TIIP team Science Rubric

Organization of Lab Notebook	Table of Contents	Title and date on each page	Pages numbered
	<i>Minimum of 2 pages at the front of the lab notebook have been left blank</i>	<i>Each page will have the title of the lab in the center of the page and the date on the upper right corner of the lab notebook.</i>	<i>The front and back of each page is numbered in sequence using black or blue ink on the bottom right corner of the lab notebook.</i>
Complete (2)	Student left two blank pages with each lab documented with a title and page numbers in lab notebook.	Student recorded title and date of the lab on the center of each page and the date on the upper right corner of the lab notebook.	Student appropriately numbered each page of the lab notebook from beginning to end of the lab notebook in blue or black ink.
Partially complete(1)	Student left two blank pages without documenting each lab completely in lab notebook.	Student recorded title and date inappropriately in lab notebook.	Student incompletely and/or inappropriately numbered pages in lab notebook.
Incomplete (0)	Student left two blank pages without any labs documented in lab notebook.	Student did not properly record evidence of the lab by title or date in lab notebook.	Student did not appropriately number pages of lab notebook.

	Background	Problem/Research Questions	Experimental and Control Variables	Prediction/Expected Outcomes	Procedural Flowchart and Materials List
PRE-LAB ASSIGNMENTS	State why experiment should be conducted, what will be learned, and what other kinds of similar experiments have been done in the past.	<i>State what will be done in the experiment by clearly stating the research problem/question to be investigated.</i>	<i>Clearly identifies experimental and control variables.</i>	<i>State or predict the outcome of the experiment that is to be conducted.</i>	<i>Flowchart should be brief and cover all steps necessary for successful completion the lab. A list of all materials, reagents and equipment to be used for the lab. Data tables/charts are included as needed under the appropriate heading.</i>
Advanced (3)	Student clearly stated background including expected learning outcomes and properly cited research on similar past experiments.	Student clearly stated a focused problem/research question with reference to relevant background information on the topic.	Student clearly identifies all experimental and effective control variables.	Student clearly states prediction/expected outcomes of the experiment including reference to outcomes of similar experiments conducted in the past.	Student included a complete procedural flowchart and materials list. Prepared tables/charts with titles are included.
Proficient (2)	Student stated background including expected learning outcomes with some research on similar past experiments.	Student clearly stated a focused problem/research question to be investigated.	Student identifies at least one control and one experimental variable.	Student clearly states prediction/expected outcomes of the experiment.	Student included both a procedural flow chart with some steps omitted and a partial materials list. Prepared tables and charts included, but without clear titles.
Basic (1)	Student stated background information and expected learning outcomes.	Student stated a problem/research question that is incomplete.	Student identifies at least one control or one experimental variable.	Student states prediction/expected outcome, but is not aligned with the topic of the experiment.	Student included an incomplete procedural flowchart or materials list. Incomplete or missing tables/charts.
Below Basic (0)	Student did not state background and expected learning outcomes or properly cite research on similar past experiments.	Student does not identify a problem or research question.	Student does not identify experimental or control variables.	Student does not state predictions/expected outcomes.	Student fails to include a procedural flowchart, materials list and tables/charts.

*****If experiment requires tables, they must be included under DATA COLLECTION AND OBSERVATIONS as part of the pre-lab*****

	Data Collection and Observation	Data Processing and Calculations	Conclusion and Evaluation
IN-LAB/POST-LAB	<i>All data and relevant observations are recorded in the appropriate tables/charts in the lab notebook. Units should be included at all times where appropriate.</i>	<i>Sample calculations, including formulas used, are appropriately noted in the lab notebook. Units are included throughout calculations. Any graphs and tables are appropriately and clearly displayed and must include a title, a brief caption and axes must be labeled.</i>	<i>The conclusion is stated with supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are clearly identified and realistic suggestions for improvement are stated.</i>
Advanced (3)	Student clearly recorded all data and relevant observations in the appropriate tables/charts in the lab notebook, and included all appropriate units.	Student clearly noted all sample calculations, including formulas used. Units are included throughout calculations. Graphs and tables are appropriately, and clearly displayed and include a title, a brief caption and labeled axes.	Student clearly stated the conclusion with supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are clearly identified and realistic suggestions for improvement are stated.
Proficient (2)	Student clearly recorded most data and relevant observations in the appropriate tables/charts in the lab notebook, and included some appropriate units.	Student noted most sample calculations, including formulas used. Some units are included throughout calculations. Graphs and tables are displayed and include a title, a brief caption and labeled axes.	Student stated the conclusion with some supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are partially identified and some suggestions for improvement are stated.
Basic (1)	Student clearly recorded some data and relevant observations in the appropriate tables/charts in the lab notebook, but did not include appropriate units.	Student noted a few sample calculations, without including formulas used. No units are included throughout calculations. Graphs and tables are displayed, but lack all of the following: a title, a brief caption and labeled axes.	Student stated the conclusion without any supporting reference from the processed data obtained during the experiment. No weaknesses and limitations in the experimental procedure are identified and no suggestions for improvement are stated.

Below Basic (0)	Student did not record any data nor observations.	Student did not process any data and did not include calculations and units.	Student did not state any conclusion based on experimental data nor outline weaknesses and areas for improvement within the experiment.
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Lab Report Write-Up	Formatting of lab report	Content of Report			
	<i>Lab report is typed, using 12 pt font, double-spaced. All citations are appropriately referenced in MLA format.</i>	Background information	Data collection and processing	Data presentation	Conclusion and Evaluation
		<i>State why experiment should be conducted, what will be learned, and what other kinds of similar experiments have been done in the past. Clearly state the research problem/question to be investigated. Clearly identifies experimental and control variables. Expected outcome of the experiment is clearly stated.</i>	<i>All data and relevant observations are recorded in the appropriate tables/charts in the lab notebook. Units should be included at all times where appropriate. Sample calculations, including formulas used, are appropriately noted in the lab notebook.</i>	<i>Processed data is processed appropriately. All tables/charts have a title, a brief caption and labeled axes.</i>	<i>The conclusion is stated with supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are clearly identified and realistic suggestions for improvement are stated.</i>
Advanced (3)	Student properly typed lab report using 12 pt font. All text is double-spaced. All citations are appropriately referenced in MLA format.	Student clearly stated the purpose and the research problem/question to be investigated including background research on the topic. All variables, control and experimental, were clearly stated.	Student included all relevant collected data and observations using appropriate tables/charts. Units were included in all sample collections and processing of data.	Processed data is appropriately presented; all tables/charts have a clearly stated visible title, brief caption and labeled axes.	Student clearly stated the conclusion with supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are clearly identified and realistic suggestions for improvement are stated.
Proficient (2)	Student typed lab report using 12 pt font and text	Student stated purpose and research	Student included some relevant collected data	Processed data is appropriately presented,	Student stated the conclusion with some

	is double-spaced. Some citations are appropriately referenced in MLA format.	problem/question, but omitted background research on the topic. All variables, control and experimental, were stated.	and observations using appropriate tables/charts. Units were included in most sample collections and processing of data.	but with some mistakes or omissions; missing title, brief captions or labeled axes.	supporting reference from the processed data obtained during the experiment. Weaknesses and limitations in the experimental procedure are partially identified and some suggestions for improvement are stated.
Basic (1)	Student typed lab report using inappropriate font and text spacing. Citations are inappropriately referenced and are not in MLA format.	Student makes an attempt to state the purpose and the research problem/question. No background research is included. Identifies at least one variable.	Student included collected data and observations. Relative data is processed, but with some mistakes and units in sample calculations were omitted.	Presents data inappropriately or incomprehensibly. Tables/charts are missing title, brief caption and labeled axes	Student stated the conclusion without any supporting reference from the processed data obtained during the experiment. No weaknesses and limitations in the experimental procedure are identified and no suggestions for improvement are stated.
Below Basic (0)	Lab report is poorly typed. No citations are referenced. MLA format is not used.	Student did not state purpose for lab. Research question/problem is missing and no variables (control or experimental) were stated.	Student included no data or observations. Calculations and units are missing throughout the report.	No data is presented. All tables/charts are omitted.	Student did not state any conclusion based on experimental data nor outline weaknesses and areas for improvement within the experiment.