

Scoring Rubric

Title		Scientific Investigation	Engineering Design Challenge
3	The title clearly states both the independent and dependent variables and is written as a clear declarative statement.		The title clearly states the engineering design challenge or problem to be solved.
2	The title is clearly connected to the investigation, but does not mention the dependent or independent variables.		The title is clearly connected to the investigation, but does not specifically state the design challenge or problem to be solved.
1	The title is present but does not relate directly to the investigation.		The title is present but does not relate directly to the investigation.
0	Not attempted		Not attempted
Question/Problem		Scientific Investigation	Engineering Design Challenge
3	The question that the investigation was designed to answer is well articulated and testable.		The design challenge or problem to be solved is one that is novel and can be solved through the design of a solution or prototype.
2	The question that the investigation was designed to answer is testable.		The design challenge or problem to be solved is one that could be solved through the design of a solution or prototype, but already has solutions in place.
1	The question is present, but is not testable.		The design challenge or problem to be solved is present, but cannot be solved with the design of a solution or prototype.
0	Not attempted		Not attempted
Hypothesis/Prediction		Scientific Investigation	Engineering Design Challenge
3	The hypothesis/prediction is clearly stated and shows a reasonable relationship between the independent variable on the dependent variable.		The proposed solution directly addresses the design challenge or problem to be solved, and includes a measure of success demonstrating a solution.
2	The hypothesis/prediction is stated but is not reasonable or only mentions one variable.		The proposed solution partially addresses the design challenge or problem to be solved, or does not include a measure of success demonstrating a solution.
1	The hypothesis/prediction is present but does not show a relationship between the variables.		A proposed solution is present but does not address the design challenge or problem to be solved.
0	Not attempted		Not attempted
Experimental Design		Scientific Investigation	Engineering Design Challenge
3	At least four of the five components of experimental design are clearly stated.		At least four of the five components of engineering design are clearly stated: research, prototyping, design, testing, refinement.
2	At least three of the five components of experimental design are clearly stated.		At least three of the five components of engineering design are clearly stated.
1	At least two of the five components of experimental design are clearly stated.		At least two of the five components of engineering design are clearly stated.
0	Not attempted or only one of the five components of experimental design is clearly stated.		Not attempted or only one of the five components of engineering design are clearly stated.
Procedure		Scientific Investigation	Engineering Design Challenge
3	A detailed, logical step-by-step procedure is provided.		A detailed, logical step-by-step procedure of the solution/prototype design is listed.
2	A logical step-by-step procedure is provided, but some steps are missing or incomplete.		A logical step-by-step procedure is listed, but some steps are missing or incomplete.
1	A logical step-by-step procedure is provided, but many steps are missing or incomplete.		A logical step-by-step procedure is listed, but many steps are missing or incomplete.
0	Not attempted		Not attempted
Results - Data Tables Investigation		Scientific Investigation	Engineering Design Challenge
3	Data table(s) are accurate, easily understood, and complete including title, appropriate labels, appropriate placement of variables, and use of correct units of measurement.		Data table(s) are accurate, easily understood, and complete including title, appropriate labels, appropriate placement of variables, and use of correct units of measurement.
2	Data table(s) include most of the above components.		Data table(s) include most of the above components.
1	Data table(s) include some of the above components.		Data table(s) include some of the above components.
0	Not attempted		Not attempted

Results - Graphs		Scientific Investigation	Engineering Design Challenge
3	Graph(s) are accurate, easily understood, and complete including title, appropriate labels, appropriate placement of variables, and use of correct units of measurement.		Graph(s) are accurate, easily understood, and complete including title, appropriate labels, appropriate placement of variables, and use of correct units of measurement.
2	Graph(s) include most of the above components.		Graph(s) include most of the above components.
1	Graph(s) include some of the above components.		Graph(s) include some of the above components.
0	Not attempted		Not attempted
Discussion			
3	Discussion includes at least three paragraphs that summarize the results/solution in words, describe trends or patterns in the results, and relate the science knowledge that supports the results.		
2	Most parts of discussion are complete and accurate.		
1	Some parts of discussion are complete and accurate.		
0	Not attempted		
Conclusion			
3	Conclusion clearly restates the question and whether the prediction was supported with evidence; includes an explanation that effectively connects results to scientific knowledge; and also provides suggestions for further investigations.		Conclusion clearly restates the design challenge/problem to be solved and whether the prototype/solution was successful, includes an explanation that effectively connects results to scientific and engineering concepts or knowledge, and provides suggestions for further investigations.
2	Most parts of conclusion are complete and accurate.		Most parts of conclusion are complete and accurate.
1	Some parts of conclusion are complete and accurate.		Some parts of conclusion are complete and accurate.
0	Not attempted		Not attempted
Creativity			
3	Project is clearly the original creative work of the student researcher. Input into the project by adults is limited.		
2	Project is mostly the original creative work of the student researcher.		
1	There is evidence of some input from adults beyond encouragement and assistance in obtaining materials.		
0	There is evidence of significant input from adults beyond encouragement and assistance in obtaining materials.		
Display			
3	Display is easy to read and well-organized. Color, graphics, and other visual components add to the display.		
2	Two out of the three qualities listed above are present.		
1	One out of the three qualities listed above is present.		
0	Display is difficult to read, poorly organized, and visual components, such as graphics or color, are missing or distracting.		
Oral Presentation			
3	Effective communication of scientific concepts, design principles, data analysis, and further studies.		
2	Two out of the four qualities listed above are present.		
1	One out of the four qualities listed above is present.		
0	Communication was not effective.		