Grades 6-12 - Experiment Rubric

Project Number: _____ Judge: _____

Section 1: Scientific Method

Criteria	Grading Guide Each Checkbox ≈ 3pts (A score higher than 9/10 must go above & beyond)	Score/10
Problem Statement	☐ Provides a problem/question and hypothesis. ☐ Includes background research into the problem & hypothesis ☐ Explains other existing hypothesis and why they chose their hypothesis	
Experimental Design	☐ Describes the experiment procedure ☐ Includes clear labeling of variables & controls ☐ Explains benefits & drawbacks of this experiment design over others	
Data Collection	☐ Provides collected data ☐ Completes at least 3 trials for each variable change ☐ Explains benefits & drawbacks of the data collection method	
Data Analysis	☐ Data was analyzed and a conclusion was made based on the data ☐ Draws valid conclusions based on the data ☐ Describes possible problems with the collected data or analysis method	

Section 2: Presentation

Project Board	☐ Board is legible and shows all elements of the scientific method ☐ The board is visually appealing and well designed ☐ The board can fully explain the project if the student were not present	
Oral Presentation	☐ Describes the basics of their project ☐ Describes all aspects of the project including details beyond the board ☐ Is able to discuss the broader implications of the research at length	
Question & Answer Session	☐ Student can answer basic questions ☐ Student can provide basic answers to some deeper questions ☐ Student has well thought out answers for most questions	

Section 3: Innovation and Creativity

Novelty of the Project	*[~3pts]* Googled “science fair project ideas” and added their own twist *[~6pts]* Found existing research and attempted to replicate results *[~9pts]* Improved on existing research using a novel approach or data	
Creativity	*[~3pts]* Student clearly just followed a series of instructions *[~6pts]* Student was somewhat creative in their approach *[~9pts]* Student showed clear creativity in their experiment and data analysis	
Potential Impact	*[~3pts]* Impact is not discussed but they have an answer if asked about it *[~6pts]* Impact is discussed as an afterthought *[~9pts]* Impact is part of the background research and experiment design.	

TOTAL:_____/100

Grades 6-12 - Engineering Rubric

Project Number: _____ Judge: _____

Section 1: Engineering Process

Criteria	Criteria Description Each Checkbox ≈ 2.5pts (A score higher than 7/10 must go above & beyond)	Score/10
Problem Definition	☐ Problem/Need are provided ☐ Includes background research into the problem ☐ Explains existing solutions and the problems with the existing solutions	
Design Solution	☐ Provides a basic description of the proposed solution ☐ Explains materials choice, construction methods, and tech used ☐ Calculates or models the expected result before construction	
Testing & Evaluation	☐ Tests their solution and documents the results ☐ Iterates on their solution based on testing results ☐ Compares results to data from existing solutions	
Documentation	☐ Design process and testing was documented ☐ Sketches and diagrams of the solution are provided ☐ Calculations of expected results for each iteration are included	

Section 2: Presentation

Project Board	☐ Board is legible and shows the problem, solution and testing info ☐ The board is visually appealing and well designed ☐ The board can fully explain the project if the student were not present	
Oral Presentation	☐ Describes the basics of their project ☐ Describes all aspects of the project including details beyond the board ☐ Is able to discuss the broader implications of the project at length	
Question & Answer Session	☐ Student can answer basic questions ☐ Student can provide basic answers to some deeper questions ☐ Student has well thought out answers for most questions	

Section 3: Innovation and Creativity

Novelty of the Project	*[~3pts]* Googled “science fair project ideas” and added their own twist *[~6pts]* Tried a novel approach to an already solved problem *[~9pts]* Improved an existing solution with a novel approach or materials	
Creativity	*[~3pts]* Student simply followed a series of instructions *[~6pts]* Student was somewhat creative in their approach *[~9pts]* Student showed clear creativity in their solution and methods	
Potential Impact	*[~3pts]* Impact is not discussed but they have an answer if asked about it *[~6pts]* Impact is discussed as an afterthought *[~9pts]* Impact is part of the background research and design of the solution	

TOTAL:_____/100

Grades 6-12 - Programming Rubric

Project Number: _____ Judge: _____

Section 1: Programming Process

Criteria	Criteria Description Each Checkbox ≈ 2.5pts (A score higher than 7/10 must go above & beyond)	Score/10
Problem Definition	☐ Problem/Need are provided ☐ Includes background research into the problem ☐ Explains existing solutions and the problems with existing solutions	
Algorithm Design	☐ Describes the algorithm used to solve the problem ☐ Understands data structures and programming language nuances ☐ Can explain alternative algorithms and why this one was chosen	
Code Implementation	☐ Code functions as intended ☐ Code is readable, well organized, and follows best practices ☐ Code is efficient and doesn't rely on libraries to do the heavy lifting	
Testing & Debugging	☐ Explains issues encountered and how those issues were solved ☐ Shows ability to debug errors ☐ Solution was based on a test driven development process	

Section 2: Presentation

Project Board	☐ Board is legible and shows the problem, algorithm and code ☐ The board is visually appealing and well designed ☐ The board can fully explain the project if the student were not present	
Oral Presentation	☐ Describes the basics of their project ☐ Describes all aspects of the project including details beyond the board ☐ Is able to discuss the broader implications of the program at length	
Question & Answer Session	☐ Student can answer basic questions ☐ Student can provide basic answers to some deeper questions ☐ Student has well thought out answers for most questions	

Section 3: Innovation and Creativity

Novelty of the Project	*[~3pts]* Googled "programming project ideas" and added their own twist *[~6pts]* Tried a novel approach to recreating existing software *[~9pts]* Created a program that solves a problem using novel methods	
Creativity	*[~3pts]* Student simply followed a series of instructions *[~6pts]* Student was somewhat creative in their approach *[~9pts]* Student showed clear creativity in their solution and methods	
Potential Impact	*[~3pts]* Impact is not discussed but they have an answer if asked about it *[~6pts]* Impact is discussed as an afterthought *[~9pts]* Impact is part of the background research and design of the solution	

TOTAL:_____/100