



Design Award Rubric

Page 1 — Engineering Notebook Review

Rubrics are strictly confidential; they are not shared beyond the Judges/Judge Advisor and shall be destroyed at the end of the event.

Team #: _____

Program level: Elementary Middle High or VEX U

Judges: _____

Directions: Write the points in each row for the criterion that best describes the performance of the Engineering Notebook on each topic. Total the points.

Topic	Criteria			Points
	Expert (4-5 points)	Proficient (2-3 points)	Emerging (0-1 points)	
Engineering Design Process	Identify game and robot design challenges and goals	<u>Identifies</u> the game challenge or robot design challenge in detail at the start of each design process cycle with words and pictures. States the goals for accomplishing the challenge.	Identifies the challenge at the start of each design cycle. <u>Lacking details in words, pictures, or goals.</u>	<u>Does not identify the challenge</u> at the start of each design cycle.
	Brainstorm and diagram or prototype solutions	<u>Lists three or more possible solutions</u> to the challenge with labeled diagrams. Citations provided for ideas that came from outside sources such as online videos or other teams.	<u>Lists one or two possible solutions</u> to the challenge. No citations provided for ideas that came from outside sources.	<u>Does not list any solutions</u> to the challenge.
	Select the best solution and plan	Explains why the solution was selected through testing and/or a decision matrix. <u>Fully describes the plan</u> to implement the solution.	Explains why the solution was selected. <u>Mentions the plan.</u>	<u>Does not explain</u> why the solution was selected or does not mention the plan.
	Build and program the solution	Records the steps to build and program the solution. Includes enough detail that the reader <u>could recreate the solution following the steps in the Notebook.</u>	Records the key steps to build and program the solution. <u>Lacks sufficient detail to recreate the solution.</u>	<u>Does not record the key steps</u> to build and program the solution.
	Test solution	<u>Records all the steps</u> to test the solution, including test results.	<u>Records the key steps</u> to test the solution.	<u>Does not record the steps</u> to test the solution.
	Repeat design process	Shows that the <u>design process is repeated multiple times</u> to improve performance on an individual design goal or overall robot or game performance.	Shows that the <u>design process is not often repeated</u> for individual design goals or overall robot or game performance.	<u>Does not show that the design process is repeated.</u>
Usefulness and repeatability	<u>Records the entire design and development process</u> in such great clarity and detail that the reader could recreate the project's history and build the current robot from the notebook.	Records the design and development process completely but <u>lacks sufficient detail</u> to fully recreate the entire project or robot.	Does not record the design and development process or <u>lacks sufficient detail</u> to understand the design process.	
Record of team and project management	Provides a <u>complete record of team and project assignments</u> ; written in ink; notes from team meetings including goals, decisions, and accomplishments; name or initials of author; each page numbered and dated. Design cycles are easily identified. Includes Table of Contents and/or Index so anyone can easily locate needed information.	Records <u>most of the information listed</u> at the left. Not written in ink. Organized so that team members can locate most of the needed information.	<u>Does not record most of the information</u> listed at the left. Not organized; needed information difficult to locate.	
Notebook construction	Five (5) points if notebook is bound. Notebook must have been <u>bound before any entries</u> were made in it.	Zero points for any other notebook construction.	Zero points for any other notebook construction.	
Describe a few of the best features of the Engineering Notebook:			Total points for Engineering Notebook	

Design Award Rubric Page 2 — Team Interview with Judges

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Team #: _____

Program level: Elementary Middle HS or VEX U

Judges: _____

Directions: Write the points in each row for the criterion that best describes the performance of the Engineering Notebook on each topic. Total the points.

Topic	Criteria			Points
	Expert (4-5 points)	Proficient (2-3 points)	Emerging (0-1 points)	
Design process and Engineering Notebook	Students <u>clearly explain all aspects of the design process</u> and how they recorded their use of the design process in the Notebook.	Students <u>can explain most aspects of the design process</u> and how they recorded their use of the process.	Students <u>can explain only limited aspects of the design process</u> and how they recorded their use of the process.	
Game strategies and robot designs	Students can describe <u>three or more game strategies</u> and robot designs that were considered; students can fully explain how and why the current game strategy and robot design were chosen.	Students can describe <u>two game strategies</u> and robot designs that were considered; students can explain how and why the current game strategy or robot design were chosen.	Students can describe <u>only their current game strategy</u> and design, or they cannot explain how and why the current game strategy or robot design were chosen.	
Project and team management	Students can explain <u>how team progress was tracked against an overall project timeline</u> , and how students were assigned to tasks based on their skills and availability; students can explain management of material resources.	Students can explain <u>how team progress was monitored</u> , or how students were assigned to tasks, or management of material resources.	Students <u>cannot explain how team progress was monitored</u> or how students were assigned to tasks or how material resources were managed.	
Teamwork and communication	Students can explain how <u>multiple team members contributed</u> to the robot design and game strategy. All students answer questions independently.	Students can explain how <u>most team members contributed</u> to the robot design and game strategy. Students support each other as needed to answer questions.	Only <u>one team member answered</u> questions or contributed to the robot design process.	
Respect and courtesy	Students answer respectfully and courteously. Students <u>make sure each team member contributes</u> . Students wait to speak until others have finished.	Students answer respectfully and courteously. <u>Some students attempt to contribute</u> but are interrupted by other students.	Students <u>do not answer respectfully</u> and courteously. Students interrupt each other or the Judges.	
Describe a few of the best features of the team interview:			Total points for Team Interview:	
			Total points for Engineering Notebook:	
			Total points for Design Award Rubric:	



STEM Research Project and Video Presentation



Teams will share the results of their STEM Research Project with VEX IQ Challenge event Judges in a creative and effective four (4) minute video presentation. Following the video there must be a 15 second credits section which includes the name of the entrant or entrants, the team number, the name of the video.

Team #: _____

Team Name: _____

Program level: Elementary Middle

Judges: _____

For more details review the STEM Research Project and VEX IQ Challenge Awards Appendix on the [VEX IQ Challenge web page](#).

Directions: Mark the descriptor that best describes the team's performance for each criterion.

Criteria	Expert (3 points)	Proficient (2 points)	Emerging (1 points)	Points
Identifies a challenge topic of interest that relates to the STEM theme for the season	Challenge topic clearly identified, with a strong connection to the STEM theme for the season	Challenge topic identified, with some connection to the STEM theme for the season	Topic not identified and/or limited connection to the STEM theme for the season	
Completes research and collect evidence using reliable sources	Provides evidence of thorough research using 3-5 reliable and credible sources	Provides evidence of research using 1-3 reliable sources	Provides evidence from no reliable sources	
Demonstrates a well-organized and documented process to study/explain research findings	Demonstrates highly organized and well documented process to study and explain the research data	Demonstrates some organization and documentation of the project	Demonstrates little to no documentation of the project	
Describes how the research findings were applied to develop and test the solution	Demonstrates an in-depth understanding of the application of the research to develop and test the solution	Demonstrates some understanding of the application of the research to develop and test the solution	Demonstrates little to no application of research to develop and test the solution	
Shares the solution in an effective and creative high-quality video	Video provides clear, effective, and creative explanation of how solution was developed and how it works	Video provides adequate explanation of how the solution was developed and how it works	Video lacks detail needed to understand the team's solution	
Students demonstrate an understanding of the research process	All students demonstrate mastery of the research process	Most students demonstrate some understanding of the research process	Students demonstrate little or no understanding of the research process	
Students demonstrate teamwork and effective communication skills in a student produced video	All students demonstrate high levels of cooperation, courtesy, enthusiasm, confidence, accuracy, and clarity	Students demonstrate some cooperation, courtesy, enthusiasm, confidence, accuracy and clarity	Students demonstrate limited cooperation, courtesy, enthusiasm, confidence, accuracy, and clarity	
Describe the best features of this video presentation: <i>(Continue on back of sheet)</i> <hr/> <hr/> <hr/>		Add a 3-point bonus for staying within the 4-minute allotted time and including up to 15 seconds of appropriate credits.		Total Points

NOTE: This is a confidential judging document. It should not leave the Judge's room after a competition. Return to the Judge Advisor for disposal.



VEX IQ Challenge Awards Scoring and Ranking



	Team #	Score each criteria cell 1 to 5, (5 is best) Adjust Ranks after each interview Use tick marks. (1 tick mark is best)
	All	Demonstrate knowledge & teamwork skills
	Amaze	Robot design consistently high scoring
		Robust robot constructed to fulfill design task
		Robot programming consistent, effective, successful
	Amaze Award Ranking	
	Build	High quality construction; robust, clean, effective
		Efficiently use mechanical and electrical components
		Detailed attention to rigors of competition
	Build Award Ranking	
	Create	Well-crafted, unique design, creative thinking
		Highly creative design process & methodology
		Ambitious & creative approaches to solving challenge
	Create Award Ranking	
	Think	Programming cleanly written, understandable
		Clear Programming Strategy
		Programming management process, version history
	Think Award Ranking	
	Notes and Comments: <i>(continue on the other side)</i>	Checklist suggestion for each interview: 1. Write team number below. 2. First picture of team is the pit sign 3. Interview team 4. Robot picture include team number 5. Have team pick and place Judge dot on pit sign 6. Wish team success and say goodbye 7. Score each award 8. Adjust all award ranks using tick marks 9. Consider team for Judge Award (e.g. Special effort, perseverance, season accomplishments)
	Judge	
	Division	