STEAM

SAN JOAQUIN COUNTY OFFICE OF EDUCATION

STEAM FAIR JUDGING CRITERIA - Showcase

Rube Goldberg (10 points)	STEAM Essays (10 points)	Reverse Engineering and Invention (10 points)	Robotics and Coding (10 points)
• Numerous types of simple machines are used and identified accurately. • Several types of energy transfers are used and identified correctly, including indication of direction. • Duration of a sequential event (time) is taken into account as part of the sequence. • Complexity and quantity of steps are considered during development. • Multiple converging simultaneous, recurring, or reusable paths are provided. • Device has a clearly identified task, and a simple trigger event initiates the operation. • Diagram of the operation is understandable.	• Structure of entry is well designed for the intended storyline or concept (may include unusual formatting of unique sequencing) • Combination of entry formats (illustrations with storylines, storyboards with plays, etc.) are well done and appropriate. • "Willful suspension of disbelief" effort is almost negligible. • Stories, visions, and/or characters keep the reader's attention and interest. • Knowledge and understanding of the topic is conveyed. • Use of an alternate scientific idea or concept, which is not currently proven, is important to the piece.	**Project Type: Invention** • Invention addresses real world problem • Prototype of 'mock-up' is relevant and complete enough to show the important aspects of the invention. • Components (materials /sub-components) of the device are correctly identified, and their functions are described. **Project Type: Reverse Engineering** • Disassembly of this product will help the audience understand an unfamiliar operational concept. • How the original unit operates based on the disassembled components works is described completely and accurately • Product selected has appropriate complexity to allow understanding without being overly simple • Cause and Effect between and within sub-assemblies is correctly identified • Methods and concepts are evaluated to improve the disassembled product • Components (materials /sub-components) of the device are correctly identified, and their functions are described.	• The entered robot or software is complete and operational, or if s subassembly, is a critical portion that demonstrates function and operability • The function and purpose of the entry is clearly explained • Any sub-components are described and clarified completely. • The means of operation of the robot or software is explained to an appropriate level for the intended audience • Design information and/or software source code is documented and explained adequately. • Documentation shows the process of building and designing your robot with illustration of plans and steps.

Artwork (10 points)	Project Based Learning (10 points)
• Demonstrates qualities & characteristics of various media, techniques & process • Insight and depth of content understanding are evident • Demonstrates respectful use of tools and materials • Artwork reflects deliberate control having good craftsmanship • Expresses original idea and insightful perspectives with an appropriate amount of details • Inspirational usage and design around a STEM-related theme	• Students demonstrate specific skills such as critical thinking, collaboration, and creativity • The project demonstrates and applies in-depth knowledge about the chosen STEAM content • Student-centered inquiry is apparent throughout the development of the project • Students posed questions, gathered & interpreted data, developed and evaluated a solution or built evidence for answers and asked further questions • Students communicate effectively and passionately about their process and design

Creativity/Originality (10 points)

- Is the project topic unique or the approach original?
- Has the student used a novel approach for checking the hypothesis or testing an engineering design or software? Projects from the internet or other sources are acceptable if clearly acknowledged but should be scored lower.
- Evidence of student's contributions: What level of assistance was received for the idea and execution?

Thoroughness/Organized/Completed (10 points)

For all:

- Record of daily work is evident in notebook/journal
- Notebook supports evidence of work completed.

If applicable:

- Is there development of the product over time?
- Are there adequate data, drawings, flowcharts, schematics presented to address the scope?
- Has all of the work been completed in the past 12 months?
- Is the interpretation or performance claims supported with data?
- Are procedures and materials thoroughly documented?
- Were photos of hardware prototypes or a software demo provided?

Skill/Comprehension (10 points)

For all:

- How much mentoring or other help did the student receive to carry out experiments or testing?
- Does the student understand the subject?

If applicable:

- Has the student used good laboratory, technical or programming skills?
- Did the student build equipment, design experiments, or program software?

Clarity (10 points)

- Are the summary, board, and oral communication accurate and understandable?
- Are the data and test results clear?
- Are phases of the project presented in an orderly manner?