2026-2027 STEAM Fairs
Maker Division – Engineering/Invention Project Description & Rubrics
6th Grade – 12th Grade

Project Overview: Engineers and inventors solve problems by designing, building, testing, and improving solutions. For this project, identify a problem and use the Engineering Design Process to create a prototype that helps solve it. Record your thinking, research, plans, testing, and reflections in an engineering notebook.

Project Steps:

Keep track of each step in your Engineering Notebook.

1. Ask: Define the Problem
Identify a problem you want to solve. Explain who experiences the problem and why solving it matters.

2. Explore: Research the Problem
Learn more about the problem and existing solutions. Record important facts, ideas, and sources in your engineering notebook.

3. Imagine: Brainstorm Solutions
Think of several possible ways to solve the problem. Use drawings, notes, diagrams, or labels to show your ideas.

4. Plan: Choose a Solution
Select the solution you want to create. Make a detailed plan showing what you will build, the materials you will need, and the steps you will follow.

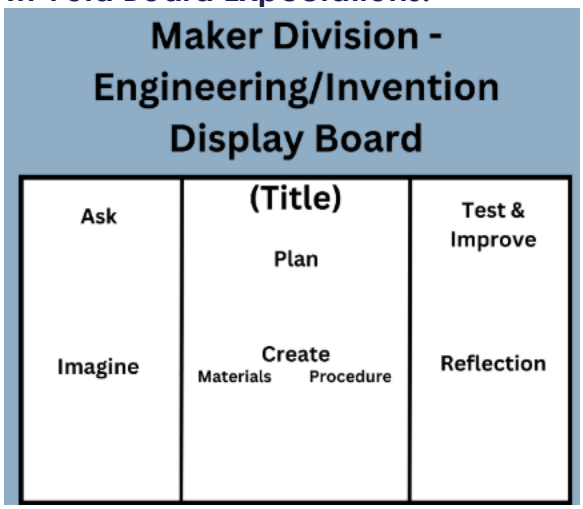
5. Create: Build Your Prototype
Build your prototype using your plan. Use labels and apply elements of art such as line, shape, color, texture, form, space, and value when appropriate to make the design functional and visually engaging.

6. Test & Improve: Evaluate Your Design
Test your prototype and record the results. Explain what worked, what did not work, and what changes could improve the design.

7. Prepare Your Presentation
Organize your tri-fold board or digital presentation to clearly show the problem, research, design process, prototype, testing, and reflection.

8. Practice Sharing Your Project
Be prepared to explain your problem, how you developed your solution, how your prototype works, what you learned from testing, and how you would improve your design.

Tri-Fold Board Expectations:



Display boards may be a maximum of 36 inches high by 48 inches wide, must be a tri-fold board, and must stand on their own.

Engineering Notebook Expectations:

- Definition of the problem
- Research notes
- Citations from research
- Brainstorming and planning sketches
- Materials list
- Procedures for building
- Notes and data from testing
- Improvements and reflection

Students may create a digital presentation instead of a tri-fold board. The presentation should clearly show the same project information required on the tri-fold board, including the problem, research, planning, prototype, testing, results, and reflection.
Include pictures, drawings, diagrams, labels, data, or other visuals to help explain the project.

2026-2027 STEAM Fairs
Maker Division – Engineering/Invention Project Description & Rubrics
6th Grade – 12th Grade

Student Names:		Grade:		Sequence #:	
Teacher's Name		Project Title:			

Category	Exceeds Expectations	Meets Expectations	Approaching	Beginning
Title & Description (5)	**5** Creative, specific title and strong description of the invention's purpose	**4** Clear title and short description	**2-3** Title or description is incomplete or unclear	**0-1** No title or description
Define the Problem (5)	**5** Problem is clearly explained with detail about who it helps and why it matters	**4** Problem is explained with some details	**2-3** Problem is vague or missing important details	**0-1** Problem not explained
Research (5)	**5** Includes detailed, accurate research with multiple credible sources; explains existing solutions and why this design matters	**4** Includes accurate research with some details and examples	**2-3** Limited or partially accurate research	**0-1** Minimal or no research provided
Engineering Notebook (20)	**20** Complete with problem, research notes, citations, sketches, materials, steps, test data, and reflection; sketches show accuracy and detail	**15-19** Includes most required sections; shows effort and organization	**10-14** Missing sections or limited detail; sketches lack accuracy	**0-9** Incomplete or missing logbook
Imagine (10)	**10** Brainstorming shows multiple creative ideas and thoughtful consideration of possible solutions	**8-9** Shows more than one idea with some details	**5-7** Shows only one simple idea with little detail	**0-4** No brainstorming shown
Plan (10)	**10** Detailed step-by-step plan with clear drawings/writing; easy for others to replicate	**8-9** Plan is clear but missing some detail	**5-7** Plan has limited steps or detail	**0-4** Plan unclear or missing
Create & Build (20)	**20** Prototype is well-built, accurate, labeled, and visually engaging; strong application of art/design elements; originality evident	**15-19** Prototype is complete, mostly neat, and labeled; some design/artistic elements used effectively	**10-14** Prototype incomplete, messy, or lacking labels; minimal artistic effort	**0-9** Prototype missing or poorly constructed
Test & Improve (10)	**10** Prototype tested thoroughly; reflection clearly explains outcomes, strengths, weaknesses, and possible improvements	**8-9** Prototype tested with reflection on what was learned	**5-7** Prototype tested but reflection lacks clarity/detail	**0-4** No testing or reflection shown
Presentation (Trifold or PowerPoint) (10)	**10** Presentation is polished, organized, and engaging; student demonstrates deep knowledge and confidence	**8-9** Presentation is complete and clear	**5-7** Presentation is missing parts or difficult to follow	**0-4** Presentation incomplete or unclear
Artistic Expression (5)	**5** Student skillfully integrates elements of art throughout the invention; originality and creativity make the work both functional and visually engaging	**4** Student includes some elements of art with effort toward visual appeal	**2-3** Minimal effort toward artistic quality; little evidence of elements of art	**0-1** No attempt to use artistic elements

****Students/Teachers are to complete the top portion of this form and make sure it is attached to the STEAM Fair project for judges to reference, all scores are entered through the shared digital scoring form.****