2026-2027 STEAM Fairs
Maker Division – Engineering/Invention Project Description & Rubric
Kindergarten – 5th 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. K-2 notebooks may include drawings, student writing, adult writing, and words dictated by the student.

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.

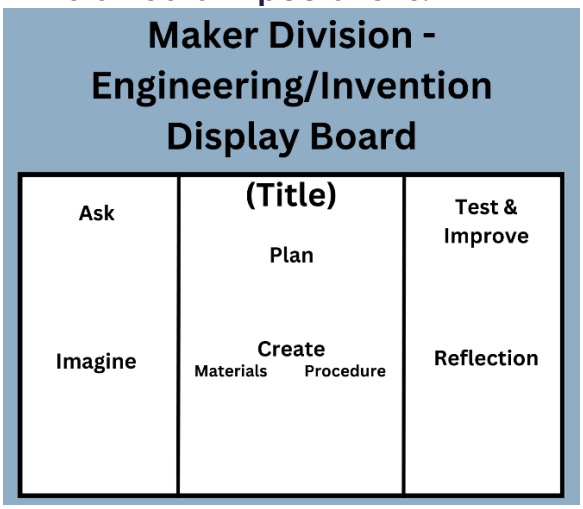
5. Create: Build Your Prototype
Build your prototype using your plan. Use labels and apply elements of art such as line, shape, color, texture, form, space, and value when appropriate to make the design functional and visually engaging.

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.

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

Category	Exceeds Expectations	Meets Expectations	Approaching	Beginning
Title & Description (5)	**5** Creative title and clear description that explains 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 details 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 many accurate facts, examples, or existing solutions; shows strong understanding	**4** Includes some accurate facts and examples	**2-3** Includes few facts; may be unclear or incomplete	**0-1** Little or no research provided
Engineering Notebook (20)	**20** Notebook is complete and organized; includes problem, research notes with citations, sketches, materials list, steps, test data, and thoughtful reflection. Sketches demonstrate accuracy in shape, proportion, and detail; exploration of light, shadow, and composition when appropriate	**15-19** Notebook includes most parts; sketches show some accuracy	**10-14** Notebook includes some parts but is missing important details; sketches lack accuracy	**0-9** Notebook missing or mostly empty
Imagine (10)	**10** Many creative ideas listed or drawn; shows wide brainstorming of possible solutions	**8-9** Several ideas listed or drawn	**5-7** One or two ideas with little detail	**0-4** No brainstorming shown
Plan (10)	**10** Step-by-step plan with clear drawings/writing; easy for others to follow	**8-9** Plan is clear and complete	**5-7** Plan is missing steps or unclear	**0-4** No plan provided
Create & Build (20)	**20** Prototype is complete, neat, labeled, and accurate; pictures/drawings show process. Student skillfully applies elements of art to make the invention both functional and visually engaging; design shows originality	**15-19** Prototype is complete and mostly neat; some elements of art are applied effectively	**10-14** Prototype is incomplete, messy, or missing labels; minimal use of artistic elements	**0-9** Prototype not built or missing most parts; no attention to artistic quality
Test & Improve (10)	**10** Prototype tested; results are shared; reflection explains what worked, what did not, and how to improve	**8-9** Prototype tested; some results or improvements described	**5-7** Prototype tested but results are unclear or no improvements suggested	**0-4** Prototype not tested
Presentation (Trifold or PowerPoint) (10)	**10** Presentation is neat, complete, and easy to follow; student explains project confidently	**8-9** Presentation is neat and complete	**5-7** Presentation is missing some parts or hard to follow	**0-4** Presentation is unclear or incomplete
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.****