**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Homeroom: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**For each of the science and engineering practices below, explain in what way you completed this part and how it relates to your project or how you could use these practices now that you have finished your project. You may not have used all of these, depending on the type of project you completed, but most are used in some way whenever you assemble or create something. See rubric for expectations in thought, reflection, details, and implications for possible future use or broader connections.**

**1. Asking Questions and Defining Problems** (every project should include a detailed answer for this)

**2. Developing and Using Models** (every project is creating some form of a model when something is made)

**3. Planning and Carrying Out Investigations** (any time you tested something, even if it was to make sure something you made was working or needed modification)

**4. Analyzing and Interpreting Data** (this may be very thorough or as simple as evaluating the success of your project and the reaction of others)

**5. Using Mathematics & Computational Thinking** (any measurement or calculation, including cost)

**6. Constructing Explanations & Designing Solutions** (every project, you should be able to explain what it is, what it does, why you made it, or why it may be useful, and what you did to complete the challenge of creating your project)

**7. Engaging in Argument from Evidence** (some projects provide evidence of a particular fact, proof of your ability or even a hypothesis)

**8. Obtaining, Evaluating, & Communicating Information** (every project likely includes doing some research and gathering of information, considering what ideas seem interesting or more feasible or more cost-efficient, and finally how you are sharing or communicating what you learned)

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| --- | --- | --- | --- | --- |
|  | Novice (1 point)Project is present, but is characterized by minimal effort | Apprentice(2 pts)Some effort is clear in the overall project | Proficient (3 pts)Most expectation in all parts of project are met. Some additions needed. | Distinguished(4 pts)Project clearly demonstrates effort & perseverance in all areas. |
| Board Display:This simply should be self-supportive and has no size requirement. | Title or purpose of project is unclear. Display is not self-supporting. Generally lack of detail and neatness, | Clear title, but letters may still be sloppy or messy | Clear title, name of student, description of project and identify some aspect, but not necessarily all, of the science and engineering practices used. | All aspects of Proficient and Display is neat, clear, well organized with color and design, representing aspects of their project. May or may not include pictures, sketches, etc. |
| Project:The project itself should represent  | Project is unclear, completely inoperable, or unrecognizable for purpose and is without detail, care, or effort. | Novice and project may be recognizable as having purpose, but still have minimal effort or appear incomplete | Project appears complete and presentable, working (if applicable), may or may not have personal details and demonstrates time and effort into making something worth sharing. | Everything in Proficient, but also clearly has significant and clear personal modifications and additions if made from a kit. |
| Reflection questions:Answers may be type or well-written. | Answers are incomplete, lacking detail or evidence. May be hand-written and not legible or difficult to read | Answers are in complete sentences, but may be lacking details, evidence, lacking thorough thought or analysis. | Answers five or more questions and responses are complete with supporting examples and details from their work during project completion. If hand-written, should be very neat, clear, & legible. | Answers six or more questions, answers use expected writing practice of full and complete detail, citing multiple examples with connections to learning and implications for further project development |

The purpose is for student to apply the science and engineering practices in making, creating, or testing items and concepts. As many students are less experienced in Making things, we have necessarily intended to allow students to pursue an *almost* unlimited range of options and possibilities so they may use their personal interests as motivation. From the assembly of kit robots or custom, to origami, art, and jewelry, and even text-based computer games (think Zork), students will use many of the science practices and apply their knowledge of the properties of materials to make, create, and innovate. Additional considerations and allowances will be given to projects based on sophistication of concepts and skill.

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