

Invention Kits Rubric

Standards	Lesson Objectives	Advanced 3 Points	Intermediate 2 Points	Novice 1 Point	Points
<i>MS-ETS1-2</i> <i>ITEE - 12: D, E, & F</i> <i>FAB-DESIGN.1</i> <i>FAB-MODELING.1&2</i>	Design Process	Demonstrates a good understanding of two-dimensional design principles. Excels at applying spatial reasoning skills to visualize how two-dimensional shapes can be assembled into three-dimensional structures by developing multiple successful designs to test.	Demonstrates an understanding of two-dimensional design principles. Applies spatial reasoning skills to visualize how two-dimensional shapes can be assembled into three-dimensional structures by developing one or two successful designs to test.	Demonstrates some understanding of two-dimensional design principles. Attempts to apply spatial reasoning skills but struggles to visualize how two-dimensional shapes can be assembled into three-dimensional structures. Develops one design which may or may not be successful.	
<i>MS-ETS1-2</i> <i>ITEE- 8:C & D; 9:C,D & E</i> <i>FAB-DESIGN.1</i> <i>FAB-MODELING.1&2</i>	Mathematical Concepts	Considers multiple mathematical concepts such as symmetry, proportion, motion, space, ect. in their design. Calculates a kerf independently.	Considers two or more mathematical concepts such as symmetry and proportion in their design. Is able to calculate a kerf.	Applies some mathematical concepts such as symmetry in design. Is able to calculate a kerf with direct assistance.	
<i>MS-ETS1-3</i> <i>3-5-ETS1-2</i> <i>ITEE-9: F, G & H; 10: F, G & H</i>	Prototyping	Utilizes their invention kits for rapid prototyping. Excels at real-world problem solving and creative exploration through tinkering. Creates and tests multiple new designs.	Utilizes their invention kits for rapid prototyping. Showcases real-world problem solving and creative exploration through tinkering. Creates and tests one or more entirely new designs.	Utilizes their invention kits to change one aspect of the original design.	
<i>3-5-ETS1-1 & 1-2</i>	Evaluation & Feedback	Critically evaluates and iterates upon their designs based on feedback and testing. Experiments with different materials and their properties to optimize their design and functionality of their invention kit. Is able to give, receive, and incorporate constructive feedback. Actively seeks feedback from peers and instructors. Generates and compares multiple solutions to determine best final design.	Is able to give, receive, and/or incorporate constructive feedback. Evaluates and iterates upon their designs based on feedback and testing. Experiments with different materials and functionality of their invention kit. Generates and compares several solutions.	Does not give, receive, or incorporate constructive feedback. Experiments with one or two different materials with their invention kit. Generates one design solution.	
<i>3-5-ETS1-1</i>	Communication	Can communicate their findings and how the different materials impacted the use of their invention kits and final design. Is able to communicate all constraints and excels at identifying additional problem solving solutions.	Can communicate their findings and how the different materials impacted the use of their invention kits and final design but does not recognize all constraints or is unable to identify problem solving solutions.	Can communicate how one or two constraints impacted their design or the use of their invention kit.	
Point System Key:		11 - 15 Points	6 - 10 Points	1 - 5 Points	Total: