

Rubric

NGSS Rubric	Beginning	Progressing	Proficient	Advanced
Defining problems Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints.	We understood the design problem.	We understood the design problem. We paid attention to some of the constraints of the problem. We used some science knowledge to find possible solutions.	We had a good understanding of the design problem. We paid attention to multiple criteria and constraints. We used science knowledge to find possible solutions.	We had an exceptional understanding of the design problem and could clearly articulate it. We paid attention to multiple criteria and constraints and understood the relationships between them. We used science knowledge and could clearly explain the science behind our design.
Developing and using models Develop or modify a model—based on evidence—to explain the phenomena	We created a model of what we thought was in the jars. For example, we saw the jars, and we drew a picture of the jars with some labels.	We created a model of the jars and revised it to show what was really in the jars. We added labels.	We created and revised a model of our jars. We understood and could name all the substances. Our model accurately represents the relationships among the parts of the proposed solution.	We created and revised a model of our jars. We could identify all the substances and their relationships within the solution. Our model explained the relationship between each of the parts and addressed the accuracy and limitations of the model.
Planning and carrying out investigations Collect data about the performance of a proposed object. Evaluate the accuracy of various methods for collecting data.	We collected qualitative performance data of the tools used to filter the solutions for a single trial.	We collected qualitative performance data of the tools used to filter the solutions for a single trial. We evaluated the accuracy of some of the tools used to filter the solutions.	We collected quantitative and qualitative performance data of the tools used to filter the solutions using multiple trials. We evaluated the accuracy of the tools used to filter the solutions.	We collected quantitative and qualitative performance data of the tools used to filter the solution using multiple trials and models of the tools. We evaluated the accuracy of different models of the same tool used to filter the solutions.

A project of CA NGSS K–8 Early Implementation Initiative.

Rubric (continued)

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Analyzing and interpreting data Analyze data to define an optimal process or system that best meets criteria for success. Consider limitations of data analysis (e.g., measurement error), and/or seek to improve precision and accuracy of data and methods (e.g., multiple trials).	We analyzed the data of the single trial.	We analyzed the performance data of the single trial. We considered the limitations of our data collection.	We analyzed the performance data from multiple trials. We considered the limitations of our data collection and analysis.	We analyzed the performance data from multiple trials to refine the design of the tools used to filter the solutions. We created and/ or used different tools to improve the precision and accuracy of the data.
Using mathematics and computational thinking Decide if qualitative or quantitative data are best to determine whether a proposed tool meets the criteria for success. Apply mathematical concepts (e.g., ratio, rate, percent, measurement, time) to solve problems.	We found a good solution to the design problem using trial and error.	We used some digital tools and/ or mathematical concepts to qualitatively evaluate a proposed design solution.	We used appropriate quantitative mathematical tools and/or concepts to design and evaluate the proposed solution.	We used appropriate mathematical concepts to design and quantitatively evaluate different tools used to solve the same problem.



Rubric (continued)

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Designing solutions Apply scientific ideas to solve design problems. Use evidence to design a solution to a problem.	We proposed a design solution that meets some criteria and constraints.	We proposed a design solution that meets the criteria and constraints and is based on scientific ideas.	We proposed a design solution that meets the criteria and constraints, and using data, clearly supports the scientific basis for the design using data.	We proposed a design solution that meets the criteria and constraints and compares supporting data from more than one proposed design solution.

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