

Grade 3 Engineering Design/Science Inquiry catapults:

Grade 3 students used knowledge gained during their Castles unit to create the Keep of a Castle and then made catapults to try and defend their Keeps from neighboring kingdoms. They were given spoons, tongue depressors, elastic bands, and a marshmallow. They were only told that the catapult needed to be freestanding. The rest of their information came from questions they generated during the inquiry process. The catapults were designed and created collaboratively and then they were tested on the Keeps. Groups then went into a re-design phase of their catapult creation and tested them again.

Science and Math Standards:

3-PS2-1 Motion and Stability: Forces and Interactions

Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

3-PS2-2 Motion and Stability: Forces and Interactions

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

3-5-ETS1-1 Engineering Design

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Engineering Design

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 Engineering Design

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

CCSS.MATH.CONTENT.3.MD.B.4

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.