

STEM Week 2019 Mini Challenge Standards by Grade

	Math Standards	Science/Engineering	DLCS	Activity Notes
K	<p>A. Describe and compare measurable attributes.</p> <p>2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.</p>	N/A	<p>K-2.CT.c.3: Individually and collaboratively, propose a solution to a problem or question based on an analysis of information.</p> <p>K-2.CT.c.4: Individually and collaboratively, create information visualizations (e.g., charts, infographics).</p>	<p>Tallest Tower Challenge, with cups.</p> <p>Compare the heights of the towers: which is taller/tallest, which is shorter/shortest?</p>
1	<p>A. Measure lengths indirectly and by iterating length units.</p> <p>2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end</p> <p>C. Represent and interpret data.</p> <p>4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</p>	<p>1.K-2-ETS1-2. Generate multiple solutions to a design problem and make a drawing (plan) to represent one or more of the solutions.</p>	<p>K-2.CT.c.3: Individually and collaboratively, propose a solution to a problem or question based on an analysis of information.</p> <p>K-2.CT.c.4: Individually and collaboratively, create information visualizations (e.g., charts, infographics).</p>	<p>Tallest Tower Challenge, with toothpicks, craft sticks, and clay.</p> <p>Discuss: how can we decide who has the tallest tower?</p> <p>Find an object in the classroom that can be used to measure; use object to determine the height of your tower. Create line plot on flipchart or board. Use graph to answer questions: tallest tower, shortest tower. How many towers greater than __? Less than __?</p>

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2	<p>A. Measure and estimate lengths in standard units. 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.</p> <p>D. Represent and interpret data. 9. Generate measurement data by ... making repeated measurements of the same object. Organize and record the data on a line plot (dot plot) where the horizontal scale is marked off in whole-number units.</p>	2.K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same design problem to compare the strengths and weaknesses of how each object performs.	<p>K-2.CT.c.3: Individually and collaboratively, propose a solution to a problem or question based on an analysis of information.</p> <p>K-2.CT.c.4: Individually and collaboratively, create information visualizations (e.g., charts, infographics).</p>	<p>Tallest Tower OR Powerful Pompom Launcher Challenge</p> <p>Students choose how to measure and record distances on handout. Class creates line plot on the board or on flip chart. Discuss: which tool(s) worked best for measuring distances? Which materials/designs were most successful/powerful?</p>
3	<p>B. Represent and interpret data. 4. Generate measurement data by measuring lengths of objects using rulers marked with halves and fourths of an inch. Record and show the data by making a line plot (dot plot), where the horizontal scale is marked off in appropriate units....)</p>	3.3-5-ETS1-2. Generate several possible solutions to a given design problem. Compare each solution based on how well each is likely to meet the criteria and constraints of the design problem.	3-5.CT.c.2: Individually and collaboratively collect and manipulate data to answer a question using a variety of computing methods (e.g., sorting, totaling, averaging) and tools (such as a spreadsheet) to collect, organize, graph, and analyze data.	<p>Tallest Tower OR Powerful Pompom Launcher Challenge</p> <p>Class creates data table and line plot in Sheets (with teacher help). Discuss: how did each group solve the problem? Strengths and weaknesses of each solution?</p>

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4	<p>A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. 1. ... Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.</p> <p>B. Represent and interpret data. 4. Make a line plot (dot plot) representation to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). ...</p>	4.3-5-ETS1-5: Evaluate relevant design features that must be considered in building a model or prototype of a solution to a given design problem.	3-5.CT.c.2: Individually and collaboratively collect and manipulate data to answer a question using a variety of computing methods (e.g., sorting, totaling, averaging) and tools (such as a spreadsheet) to collect, organize, graph, and analyze data.	<p>Tallest Tower OR Powerful Pompom Launcher Challenge</p> <p>Class creates data table and line plot in Sheets (teacher enters data, projects onto whiteboard). Discuss: which design features were important in designing the solution?</p>
5	<p>B. Represent and interpret data. 2. Make a line plot (dot plot) to display a data set of measurements in fractions of a unit. Use operations on fractions for this grade to solve problems involving information presented in line plot (dot plot). ...</p>	N/A	3-5.CT.c.2: Individually and collaboratively collect and manipulate data to answer a question using a variety of computing methods (e.g., sorting, totaling, averaging) and tools (such as a spreadsheet) to collect, organize, graph, and analyze data.	<p>Tallest Tower OR Power Pompom Launcher OR Challenging Maze</p> <p>Students create data table and line plot in Sheets (working with partner on a Chromebook)</p>

Example of line plot (grades 3-5):

Length of Each Pencil

