

## Core Content

<b>Cluster Title: Develop understanding of statistical variability.</b>
<b>Standard:</b> 3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
<b>MASTERY Patterns of Reasoning:</b>
<b>Conceptual:</b> Understand that the mean of a set of numerical data is a measure of center of that data summarized by a single number and represents the arithmetic average of the data. Understand that the median of a set of numerical data is a measure of center of that data summarized by a single number and represents the point at which fifty percent of the data is greater than or equal to that number and fifty percent is less than or equal to that number. Understand that the mode of a set of numerical data is a measure of center of that data summarized by a single number and represents the most frequent value of a set of data. Understand that the range of a set of numerical data is a measure of how the data varies summarized by a single number and represents the difference between the highest and the lowest numbers in that set.
<b>Procedural:</b> Given different numerical data sets, students will determine appropriate center (mean, median and/or mode) and variation (range).
<b>Representational:</b> Create models such as graphs and data charts that show the range in a set of data. Use models such as data charts to indicate a measure of center in a set of data.

## Supports for Teachers

<b>Critical Background Knowledge</b>
<b>Conceptual:</b> Understand that graphs and tables can organize data and allow that data to be interpreted.
<b>Procedural:</b> Basic computation skills using all four operations. Ordering numbers.

<p><b>Representational:</b> Use models such as graphs and tables to organize data from a numerical set.</p>	
<p><b>Academic Vocabulary and Notation</b> Center, Mean, Median, Mode, Range, Variability, <math>\bar{x}</math></p>	
<p><b>Instructional Strategies Used</b></p>	
<p><b>Resources Used</b></p>	
<p>Create a human graph using the amount of letters in the students' names. Gather the data and summarize in a data chart. Use the amstat.org website at the right for activities related to this graph. See pages 29 and 30 in the guide.</p>	<p><a href="http://amstat.org/education/gaise/GAISEPreK12_LevelA.pdf">http://amstat.org/education/gaise/GAISEPreK12_LevelA.pdf</a></p> <p><a href="http://serc.carleton.edu/sp/cause/conjecture/examples/reasoningcenterandspreadactivity.html">http://serc.carleton.edu/sp/cause/conjecture/examples/reasoningcenterandspreadactivity.html</a></p>
<p><b>Assessment Tasks Used</b></p>	
<p><b>Skill-based Task</b></p> <p>Students will identify mean, median and mode given different data sets.</p> <p>Students identify range given different data sets.</p>	<p><b>Problem Task</b></p> <p>The students create statistical questions that have meaning to them (e.g. how much allowance they get, how far they walk or ride to school) in groups. Students survey students in other grade levels and/or classes to gather data, and they then graph the data. Have them then analyze and summarize the data using the vocabulary in this lesson.</p>