

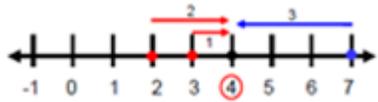
Richmond Public Schools
Curriculum Framework
Math Grade 6

Strand: Measurement and Geometry	
<p>6.11 The student will</p> <ul style="list-style-type: none"> a) represent the mean of a data set graphically as the balance point; and b) determine the effect on measures of center when a single value of a data set is added, removed, or changed. 	
Suggested Pacing	
7 Instructional Days	
Spiraling Standards	
<p>5.17 The student, given a practical context, will a) describe mean, median, and mode as measures of center; b) describe mean as fair share; c) describe the range of a set of data as a measure of spread; and d) determine the mean, median, mode, and range of a set of data.</p>	<p>7.9 The student, given data in a practical situation, will b) make observations and inferences about data represented in a histogram.</p> <p>8.12 The student will a) represent numerical data in boxplots; b) make observations and inferences about data represented in boxplots.</p>
Essential Questions	Common Misconceptions
<p>6.11a</p> <ul style="list-style-type: none"> • How is the mean graphically represented as a balance point? <p>6.11b</p> <ul style="list-style-type: none"> • In which situations would the mean, median, or mode be the best representation of the data? • What effect does adding or removing one piece of data have on the mean? • What effect does adding or removing one piece of data have on the mode? 	<ul style="list-style-type: none"> • Students get confused with the meaning of mean and median • When determining the balance point, students may not include all data points presented when represented multiple times. • Students don't make the connection with mean as a balance point • Students don't recognize the situations that best represent a measure of center.

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<ul style="list-style-type: none"> • What effect does adding or removing one piece of data have on the median? 	
Understanding the Standard	Essential Knowledge and Skills
<ul style="list-style-type: none"> • Categorical data can be sorted into groups or categories while numerical data are values or observations that can be measured. For example, types of fish caught would be categorical data while weights of fish caught would be numerical data. • Measures of center are types of averages for a data set. They represent numbers that describe a data set. Mean, median, and mode are measures of center that are useful for describing the average for different situations. <ul style="list-style-type: none"> ○ Mean may be appropriate for sets of data where there are no values much higher or lower than those in the rest of the data set. ○ Median is a good choice when data sets have a couple of values much higher or lower than most of the others. ○ Mode is a good descriptor to use when the set of data has some identical values, when data is non-numeric (categorical) or when data reflects the most popular item. • Mean can be defined as the point on a number line where the data distribution is balanced. This requires that the sum of the distances from the mean of all the points above the mean is equal to the sum of the distances from the mean of all the data points below the mean. This is the concept of mean as the balance point. <ul style="list-style-type: none"> ○ Example: Given the data set: $2, 3, 4, 7$ <p>The mean value of 4 can be represented on a number line as the balance point:</p> 	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Represent the mean of a set of data graphically as the balance point represented in a line plot. (a) • Determine the effect on measures of center when a single value of a data set is added, removed, or changed. (b)

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- The mean can also be found by calculating the numerical average of the data set.
- In grade five mathematics, mean is defined as fair share.
- Defining mean as the balance point is a prerequisite for understanding standard deviation, which is addressed in high school level mathematics.
- The median is the middle value of a data set in ranked order. If there are an odd number of pieces of data, the median is the middle value in ranked order. If there is an even number of pieces of data, the median is the numerical average of the two middle values.
- The mode is the piece of data that occurs most frequently. If no value occurs more often than any other, there is no mode. If there is more than one value that occurs most often

Vocabulary

Mean
balance point
line plot
median
mode
average
measures of center
Data set

Assessment

Instructional Activities Organized by Learning Objective

Textbook
Virginia Math Connects, Course 1, ©2012, Glencoe/McGraw-Hill
page(s) 613 – 618 (mean)
page(s) 620 – 624 (median, mode, and range)
page(s) 627 – 630 (appropriate measures)
Extra Practice page –EP30 Lesson 11-1

Notes
6.11 Measure of Center Interactive Notes Page

Resources

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	<p>Print Virginia Department of Education Balancing Act – lesson plan Finding the Mean, Median, Mode Practice Problems</p> <p>Technology-based Smart Exchange - interactive skill practice Measures of Central Tendency [SMART Notebook lesson] Graphs, Charts, and Analysis of Data Part 2 [SMART Notebook lesson] Discovering the Mean [SMART Notebook lesson] Gizmo – Mean, Median, Mode - interactive instructional resource Gizmo – Reaction Time - interactive instructional resource Brain Pop – Mean, Median, Mode – interactive skill practice</p> <p>Station Activities Interactivesites weebly – Mean, Median, and Mode Use Your Shoe! Mashup Math - Exploring Mean, Median, Mode, and Range -with Playing Cards! Choosing a Measure of Central Tendency</p>
Cross-Curricular Connections	Tiered Differentiations
Science Content Standards Grades 6-8: Investigation and Experimentation	<ul style="list-style-type: none"> • Prior to building up the concept of mean as the balance point, show an example, including manipulatives, of mean as fair share. • Have students keep track of their grades on tests, quizzes, and homework. Have them find the mean, median, and mode of the data. Have the students look for trends in their grades. • Have students use real-life data from various sources and then determine the mean, median, and mode of the data.

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