

# Grade Six Chapters 12 – Data Displays and Measures of Center

## Overview & Support

### Standards

#### **Develop an understanding of statistical variability.**

- 6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

#### **Summarize and describe distributions.**

- 6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.5 Summarize numerical data sets in relation to their context, such as by:
- Reporting the number of observations.
  - Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
  - Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
  - Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

### Suggested Resources:

California 6th Grade Math Frameworks

<https://cpb-us-w2.wpmucdn.com/blogs.egusd.net/dist/3/1081/files/2015/09/Grade-6-13p8rai.pdf>

### Manipulatives:

counters  
index cards

cubes

graph paper

### Vocabulary:

bar graph  
frequency  
mode  
measure of center

line graph  
histogram  
outlier  
mean / balance point  
(framework p. 41)

dot plot  
median  
statistical question  
center / spread (framework p.  
40)

range (framework p. 41 example)

### Strategies for Chapter:

Diagrams, sorts, sentence frames

### Color Coding:

**Green (G)** - The lesson accurately reflects the Framework standard(s).

**Yellow (Y)** - This lesson includes notes to refer to while planning the lesson.

**Red (R)** - This lesson does not accurately reflect the Framework standard(s). Skip the lesson.

## Essential Question:

How can you display data and analyze measure of center?

## Lesson-by-Lesson Overview:

Lesson #, Standard	Title	Materials	Vocab	Notes
Show What You Know			Data, dot plot, frequency table, histogram, mean, measure of center, median, mode, outlier, relative frequency table, statistical question	Introduce Chapter Vocabulary  Grade-six students design survey questions that anticipate variability in the responses
<b>12.1</b> <b>G</b> 6.SP.1	Recognize Statistical Questions		Data, Statistical question	Students are learning to identify and write statistical questions. This will lay the foundation of being able to write unbiased surveys. MP.8 Look for and express regularity in repeated reasoning. **You may want to practice converting nonstatistical questions to statistical questions. See the example on pg. 473. Can continue throughout the lesson on nonstatistical questions.  <b>Grade-six students design survey questions that anticipate variability in the responses.</b>
<b>12.2</b> <b>Y</b> 6.SP.5a 6.SP.5b	Describe Data Collection	Sentence Frames	Observations, Measurements, attributes	Refer to 6th Grade Framework for additional examples and practice. <a href="https://cpb-us-w2.wpmucdn.com/blogs.egusd.net/dist/3/1081/files/2015/09/Grade-6-13p8rai.pdf">https://cpb-us-w2.wpmucdn.com/blogs.egusd.net/dist/3/1081/files/2015/09/Grade-6-13p8rai.pdf</a>  View Common Errors on pg. 478 of GoMath TE Ch. 12. You may want to help students with sentence starters, see pg. 477 EL Strategy Model Language, to help students describe a data set. Example: <ul style="list-style-type: none"><li>• The attribute measured was _____.</li></ul>

				<ul style="list-style-type: none"> <li>The unit used to measure was _____.</li> <li>The measurement was made by _____.</li> <li>The number of observations made was _____.</li> </ul>
<b>12.3</b> <b>Y</b> 6.SP.4	Dot Plots and Frequency Tables		Dot plot, frequency, frequency table, relative frequency table	This lesson only focuses on the part of the standard that addresses dot plots. The rest of the standard will be addressed in upcoming lessons.
<b>12.4</b> <b>Y</b> 6.SP.4	Histograms		histogram, interval, frequency, vertical, horizontal, axis	This lesson only focuses on the part of the standard that addresses histograms. Read About the Math on pg. 485A in Ch. 12 TE about attending to precision in terms of histograms.
<b>Mid-Chapter Checkpoint</b>				
<b>12.5</b> <b>G</b> 6.SP.5c	Means as Fair Share and Balance Points	counters	mean, balance point, dot plot,	Counters, linking cubes, base 10 materials will help students visualize and give them a hands-on activity to solidify their learning.  <b>Allow students to explore and make meaning of their own during the Investigate problem on pg.491</b>
<b>12.6</b> <b>Y</b> 6.SP.5c	Measures of Center	Cubes, counters, graph paper, index cards	mean, median, mode, measure of center	Review of range in preparation  Preview <i>About the Math</i> in Ch.12 TE on pg.495A to strengthen teacher content knowledge.  See EL Strategy Illustrate Understanding on pg. 495 in Ch. 12 TE.
<b>12.7</b> <b>G</b> 6.SP.5d	Effects of Outliers		outlier	This lesson helps students see that outliers can affect the measures of center - particularly the mean.  ***View Common Errors on pg. 500 in Ch. 12 TE. Remind students that the mean is calculated by dividing the total number of data values, which decreases by 1 when removing the

				outlier. The divisor must match the quantity.
<b>12.8</b> <b>G</b> 6.SP.4	Data Displays			Students will use data from lists and tables to create histograms and dot plots.  These histograms and dot plots will help students analyze the data.
<b>Ch. 12 Test</b>				
<b>Reteach Options</b>	<p>Reteach standards from this unit to help meet students' need. Some ideas for reteach activities are listed below:</p> <ul style="list-style-type: none"> <li>● Math centers or math games focused on unit standards</li> <li>● Small group instruction focused on a single standard</li> <li>● Whole group instruction focused on a single standard</li> <li>● My Favorite No – Rewrite student work with an error and work as a class to identify positives in the work and areas that need to be revised</li> <li>● Select 1 – 3 problems to resolve in their groups and discuss whole class. We want new learning to occur on this day that helps students over misconceptions.</li> <li>● Complete the "Performance Task" from Go Math! In the Assessment Book in small groups. Share strategies and discuss whole class.</li> <li>● Use the Reteach activities based on standards that need intervention.</li> </ul>			