



Grade 6 - Unit E - Data Sets and Distributions

Unit Focus

Building on, and reinforcing their understanding of number, students begin to develop their ability to think statistically. First, they learn what makes a good statistical question. Students recognize that different ways to measure center yield different values. Students recognize that a measure of variability can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected. They work with measures of variability—understanding and using the terms “range”, “mean absolute deviation” or MAD, “quartile”, and “interquartile range” or IQR. Students will use data on dot plots, bar graphs, histograms and box plots. Although the students will be creating data displays, throughout the unit, the emphasis should be on the student reading, understanding and critically reflecting on displayed data.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Standards - Common Core <i>Mathematics: 6</i> - Compute fluently with multi-digit numbers and find common factors and multiples. - Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$. <i>(CCSS.MATH.CONTENT.6.NS.B.4)</i> - Develop understanding of statistical variability. - Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, How old am I? is not a statistical question, but How old are the students in my school? is a statistical question because one anticipates variability in students' ages. <i>(CCSS.MATH.CONTENT.6.SP.A.1)</i> - Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. <i>(CCSS.MATH.CONTENT.6.SP.A.2)</i> - 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. <i>(CCSS.MATH.CONTENT.6.SP.A.3)</i> - Summarize and describe distributions. - Display numerical data in plots on a number line, including dot plots, histograms, and box plots. <i>(CCSS.MATH.CONTENT.6.SP.B.4)</i>	<i>Students will be able to independently use their learning to...</i> T1 Apply models to solve problems. T2 Choose appropriate tools to make reaching solutions more efficient, accessible and accurate.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Mathematicians create or use models to generalize, represent, and solve problems. U2 Mathematicians strategically use different tools to build conceptual knowledge or solve problems. U3 Mathematicians evaluate the usefulness and limitations of the tool for the given situation.	<i>Students will keep considering...</i> Q1 What model best represents this problem? Q2 What tool is most effective and efficient?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
<i>Students will know...</i> K1 a statistical question is answerable by various measurable values	<i>Students will be skilled at...</i> S1 identifying and writing statistical questions	

Stage 1: Desired Results - Key Understandings

- Summarize numerical data sets in relation to their context, such as by: *(CCSS.MATH.CONTENT.6.SP.B.5)*
- Reporting the number of observations. *(CCSS.MATH.CONTENT.6.SP.B.5A)*
- Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. *(CCSS.MATH.CONTENT.6.SP.B.5B)*
- 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. *(CCSS.MATH.CONTENT.6.SP.B.5C)*
- 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. *(CCSS.MATH.CONTENT.6.SP.B.5D)*
- Mathematical Practices
- Model with mathematics. *(CCSS.MATH.MP.4)*
- Use appropriate tools strategically. *(CCSS.MATH.MP.5)*

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Product Creation: Effectively use a medium to communicate important information. *(POG.3.2)*

K2 data can be represented on various types of graphs, charts, including creating scales and showing relationships
K3 different statistics, charts and graphs serve the purpose of accurately representing data and sharing specific attributes
K4 data, trends and measures of central tendency can be interpreted from statistics, charts and graphs
K5 when to use LCM and GCF in solving problems
K6 Vocabulary: dot plot, statistical question, variability, distribution, frequency, typical, center, spread, variability, histogram, symmetrical, outlier, average, mean, measure of center, mean absolute deviations (MAD), measure of spread, median, range, quartile, interquartile range (IQR), minimum, maximum, box plot, whisker, factor, common factor, greatest common factor (GCF), multiple, common multiple, least common multiple (LCM)

S2 collecting and interpreting data on dot plots, histograms and boxplots and tally/frequency charts,
S3 justifying whether a given representation is the best display of a given data set
S4 identifying "typical" data and the center and spread of data
S5 calculating and understanding the mean and mean absolute deviation for a data set
S6 identifying and interpreting the median of a data set
S7 calculating and interpreting the range and interquartile range of a data set
S8 finding the LCM and GCF of a set of numbers
S9 using LCM and GCF to solve real life problems