



Standard #: MAFS.912.S-ID.1.2

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Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. ★

Grade: 912

Cluster: Summarize, represent, and interpret data on a single count or measurement variable. (Algebra 1 - Additional Cluster) (Algebra 2 - Additional Cluster) -

Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Content Complexity Rating: [Level 2: Basic Application of Skills & Concepts](#) - [More Information](#)

Status: State Board Approved

Date Adopted or Revised: 02/14

Date of Last Rating: 02/14

Assessed: Yes

Remarks/Examples

In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.

TEST ITEM SPECIFICATIONS

Item Type(s): This benchmark may be assessed using: [ETC](#), [MI](#). Item(s)

Also assesses:

MAFS.912.S-ID.1.3

Assessment Limits :

Items may require the student to calculate mean, median, and interquartile range for the purpose of identifying similarities and differences.

Items should not require the student to calculate the standard deviation.

Items should not require the student to fit normal curves to data.

Data distributions should be approximately normal.

Data sets should be real-world and quantitative.

Calculator :

Neutral

Clarification :

Students will identify similarities and differences in shape, center, and spread when given two or more data sets.

Students will predict the effect that an outlier will have on the shape, center, and spread of a data set.

Students will interpret similarities and differences in shape, center, and spread when given two or more data sets within the real-world context given.

Stimulus Attributes :

In items that require standard deviation, the value should be given in the stem.

Items should use real-world data and be set in a real-world context.

Response Attributes :

Items may require the student to apply the basic modeling cycle.

Items may require the student to choose an appropriate level of accuracy.

Items may require the student to choose and interpret the scale in a graph.

Items may require the student to choose and interpret units.

Items should not require the student to determine whether a distribution is left- or right-skewed.

SAMPLE TEST ITEMS (2)**Test Item #:** [Sample Item 1](#)**Question:**

Florida has 67 counties, and Texas has 254 counties.

The mean population for the state of Florida by county is 291,834 with a standard deviation of 467,012.03, and the median is 107,056.

The mean population for the state of Texas by county is 104,127 with a standard deviation of 374,012.2261, and the median is 18,293.

Some of the data for both states are shown.

Florida		Texas	
County	Population	County	Population
Smallest	8,349	Smallest	95
First quartile	27,013	First quartile	7,057
Median	107,056	Median	18,293
Third quartile	337,362	Third quartile	49,426
Largest	2,617,176	Largest	4,336,853

A business moves its corporate location from Texas to Florida. As a result of the move, 8,193 people move from the largest Texas county to the smallest Florida county, in terms of population.

Select all the population statistics that will be affected by this population change.

Difficulty: N/A

Type: [MI: Matching Item](#)

Test Item #: [Sample Item 2](#)**Question:**

A librarian in a large city collects data about his summer reading program. He collects data for two years, 2011 and 2012, on how many books are read each week. His ordered data sets are shown.

The librarian writes a summary about his data, as shown.

2011	2012
44,126	35,001
44,901	41,534
55,080	68,550
58,546	75,534
79,984	76,617
99,860	84,834

Click on each blank and select the appropriate word or phrase to complete the librarian's summary.

Difficulty: N/A

Type: [ETC: Editing Task Choice](#)

Related Courses

Course Number	Course Title
1200310:	Algebra 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200320:	Algebra 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200380:	Algebra 1-B (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200400:	Intensive Mathematics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))

1210300:	Probability & Statistics with Applications Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2000350:	Anatomy and Physiology (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2000360:	Anatomy and Physiology Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2020910:	Astronomy Solar/Galactic Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2000320:	Biology 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2000330:	Biology 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))
2003340:	Chemistry 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003350:	Chemistry 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003360:	Chemistry 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2001320:	Earth/Space Science Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2001340:	Environmental Science (Specifically in versions: 2015 and beyond (current))
2000440:	Genetics (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002410:	Integrated Science 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002430:	Integrated Science 2 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002440:	Integrated Science 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002450:	Integrated Science 3 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002500:	Marine Science 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002510:	Marine Science 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002520:	Marine Science 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002530:	Marine Science 2 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003400:	Nuclear Radiation (Specifically in versions: 2014 - 2015, 2015 - 2018 (course terminated))
2020710:	Nuclear Radiation Honors (formerly 202071A) (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003320:	Physical Science Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003380:	Physics 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003390:	Physics 1 Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003410:	Physics 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2002540:	Solar Energy Honors (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501300:	Personal Fitness (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501310:	Fitness Lifestyle Design (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501320:	Fitness Issues for Adolescence (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501340:	Weight Training 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501350:	Weight Training 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501360:	Weight Training 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501390:	Comprehensive Fitness (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1501410:	Power Weight Training 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502300:	Gymnastics 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502310:	Gymnastics 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502400:	Paddleball/Racquetball/Handball (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502410:	Individual and Dual Sports 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502420:	Individual and Dual Sports 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502430:	Individual and Dual Sports 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502490:	Care and Prevention of Athletic Injuries (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1502500:	Sports Officiating (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503300:	Track and Field (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503310:	Basketball (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503320:	Soccer (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503330:	Softball (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503350:	Team Sports 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503360:	Team Sports 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503400:	Aerobics 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503410:	Aerobics 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503420:	Aerobics 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504400:	Golf 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504410:	Golf 2 (Specifically in versions: 2014 - 2015, 2015 - 2019 (course terminated))
1504460:	Swimming 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504470:	Swimming 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504490:	Water Safety (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504500:	Tennis 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504510:	Tennis 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1504520:	Tennis 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505430:	Racquetball 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505440:	Racquetball 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505500:	Volleyball 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505510:	Volleyball 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505520:	Volleyball 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1505550:	Wrestling 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))

1505560:	Wrestling 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1506320:	HOPE-Physical Education Variation (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
3026010:	HOPE-Core (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2107310:	Psychology 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800300:	Aerospace Science 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800320:	Aerospace Science 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800330:	Aerospace Science 4: Leadership Development (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800340:	Advanced Aerospace Science (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800350:	Aerospace Science 4:Transportation (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1800360:	Aerospace Science 4 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1801300:	Leadership Education and Training 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1801310:	Leadership Education and Training 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1801320:	Leadership Education and Training 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1801330:	Leadership Education and Training 4 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1803300:	Leadership Education 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1803310:	Leadership Education 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1803320:	Leadership Education 3 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1803330:	Leadership Education 4 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7912070:	Access Liberal Arts Mathematics (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))
7912090:	Access Algebra 1B (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))
7920011:	Access Chemistry 1 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 and beyond (current))
7915015:	Access Health Opportunities Through Physical Education 9-12 (Specifically in versions: 2014 - 2015, 2015 - 2017, 2017 - 2018, 2018 and beyond (current))
2002445:	Integrated Science 3 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2020 (course terminated))
2003345:	Chemistry 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2003385:	Physics 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2020 (course terminated))
1200315:	Algebra 1 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1200385:	Algebra 1-B for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7912100:	Fundamental Algebraic Skills (Specifically in versions: 2013 - 2015, 2015 - 2017 (course terminated))
1207300:	Liberal Arts Mathematics 1 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1503315:	Basketball 2 (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
2100335:	African-American History (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
7912075:	Access Algebra 1 (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2019, 2019 and beyond (current))
7915020:	Access Personal Fitness (Specifically in versions: 2015 - 2018, 2018 and beyond (current))
2106410:	Humane Letters 1 - History (Specifically in versions: 2019 and beyond (current))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.912.S-ID.1.AP.2a:	Describe a distribution using center and spread
MAFS.912.S-ID.1.AP.2b:	Use the correct measure of center and spread to describe a distribution that is symmetric or skewed.
MAFS.912.S-ID.1.AP.2c:	Identify outliers (extreme data points) and their effects on data sets.
MAFS.912.S-ID.1.AP.2d:	Compare two or more different data sets using the center and spread of each.

Related Resources

Lesson Plan

Name	Description
A MEANingful Discussion about Central Tendency:	This is a discovery lesson to deepen the understanding of central tendency (mean, median) by posing relevant scenarios that students must examine and explore. It is the exploration of the salary negotiations for the Los Angeles Lakers and the use of a see-saw to physically model what the algorithm for an average truly finds. This will lead students to understand the pairing of the measures of central tendency and spread dictated by the shape of the distribution. A detailed explanation of the answers is provided with the guided discovery questions so that the teacher will be able to deepen student knowledge by eliciting the nuances of the information presented.
A Walk Down the Lane:	Students will measure a pre-determined distance between 2 points in a hallway, classroom, or courtyard using 2 different measures (strides or rulers and tailor tape measures.) Once data is collected, return to the classroom to compile data and create box plots. Students should make predictions of which measurement will be most accurate, and how they will determine accuracy. From the box plots created, students should discuss and create a summary of the data collected, median and quartiles, and what conclusions they were able to infer from their graphs about their predictions.
Analyzing Box Plots:	This lesson is designed for students to demonstrate their knowledge of box plots. <ul style="list-style-type: none"> • Students will need to create four box plots from given data. • Students will need to analyze the data displayed on the box plots by comparing similarities and differences.

- Students will work with a partner to complete the displays and the follow-up questions.

Baking Soda and Vinegar: A statistical approach to a chemical reaction.:	Students experiment with baking soda and vinegar and use statistics to determine which ratio of ingredients creates the most carbon dioxide. This hands-on activity applies the concepts of plot, center, and spread.
Birthday Party Decisions:	This lesson has students interpret four different boxplots and has them comparing them to find a solution.
Bowling for Box Plots:	Students will learn about the effects of an outlier and interpret differences in shape, center, and spread using a bowling activity to gather data. The students will learn to score their games, report their scores, and collectively measure trends and spread by collaborating to create a box plot. They will analyze and compare box plots, and determine how much of an affect an extreme score (outlier) can have on the overall box plot of the data.
Bubble Gum Bubbles Lab:	This lesson is a Follow Up Activity to the Algebra Institute and allows students to collect data by blowing bubble gum bubbles and perform statistical analysis, including standard deviation. This lesson provides students an applied setting to use their previously acquired statistical skills.
Centers, Spreads, and Outliers:	The students will compare the center and spread of data sets as well as find the effects of outliers.
Close to the Crossbar with Standard Deviation:	The lesson will allow students to make the connection of prior knowledge of mean absolute deviation and central tendencies to standard deviation and variance. Students will learn how to calculate and analyze variance and standard deviation. With a partner, students will collect data from kicking a ball into a goal mark. Students will collect data and find the mean, then calculate standard deviation and variance, and compare the data between boys and girls. They will analyze the data distribution in terms of how many students are within certain numbers of standard deviations from the mean.
Comparing Data Using Box Plots:	Students will use box plots to compare two or more sets of data. They will analyze data in context by comparing the box plots of two or more data sets.
Comparing Standard Deviation:	Students will predict and compare standard deviation from a dot plot. Each data set is very different, with a small variation vs. larger variation. The students are asked to interpret the standard deviation after calculating the range and mean of the each data set.
Exploring Box plots:	This lesson involves real world data situations. Students will take the data and create, explore, and compare the key components of a box plot.
Grapevine Fabrication Part 1:	This lesson is a Follow Up Activity to the Algebra Institute and allows students to collect data to perform basic statistical operations to analyze and make comparisons on variability within a certain brand of raisins. Part 1 may be completed without Part 2. This investigation can elicit discussion about manufacturing and quality control.
Grapevine Fabrication Part 2:	This lesson is a Follow Up Activity to the Algebra Institute and allows students to collect data to perform basic statistical operations to analyze and make comparisons on variability within a certain brand of raisins. Part 1 must be completed prior to starting Part 2. This investigation can elicit discussion about manufacturing and quality control.
Hot Coffee Coming Through:	In this lesson, students will explore data collection using the temperature probe sensor and perform statistical analysis of the data. Students will use a scientific method of inquiry to plan an investigation to determine which coffee mug is the best. This activity is meant to allow students to use a variety of skills they have acquired throughout a statistics unit in a problem based STEM challenge. Due to the multiple skills there are many standards that are covered. There are two options for this lab. The first student handout is for students at an average high school statistics level (Algebra 1) and will allow for standard deviation and graphical analyses of the data. The second option is for advanced students that have been exposed to hypothesis testing of claims (Algebra 2 or AP Stats).
How many licks does it take to get to the center?:	This lesson will have students collect data through an investigative manner and compile them into a larger spreadsheet. From there students will create different data displays and do a compare and contrast of the data sets to determine "Which one do you think takes the fewest amount of licks to get to the center: a Tootsie Pop, a Blow Pop, or a Dum Dum lollipop?"
How Old are the Players?:	For this lesson, students will use computers to research the ages of players on two basketball teams in pairs. They will find the five number summary, as well as the mean, interquartile range, and determine if there are outliers in the data set. At the end of the lesson, the students will have understood how to appropriately use statistics to compare the median, mean, and the interquartile range of two or more different data sets. This lesson will be guided by several principles: assigning short, meaningful amounts of practice, assigning practice to increase overlearning, and making appropriate use of massed and distributed practice.
How tall is an 8th grader?:	Ever wonder about the differences in heights between boys and girls in grade 8? In this lesson, students will use data they collect and analyze with multiple box plots and 5-number summaries to make inferences about how height and gender may or may not be related.
In terms of soccer: Nike or Adidas?:	This is a lesson where the students will interpret the standard deviation for two data sets.
Marshmallow Madness:	This lesson allows for students to have a hands on experience collecting real-world data, creating graphical representations, and analyzing their own data. Students will make predictions as to the outcome of the data and compare their predictions to the actual outcome.
Plane Statistics:	This lesson starts with an activity to gather data using paper airplanes then progresses to using appropriate statistics to compare center and spread of the data. This is meant to be an application lesson of concepts and skills previously acquired.
Representing Data 1: Using Frequency Graphs:	This lesson unit is intended to help you assess how well students are able to use frequency graphs to identify a range of measures, make sense of this data in a real-world context, and understand that a large number of data points allow a frequency graph to be approximated by a continuous distribution. This lesson unit is intended to help you assess how well students are able to interpret data using frequency graphs and

Representing Data 2: Using Box Plots:	box plots. In particular, this unit aims to identify and help students who have difficulty figuring out the data points and spread of data from frequency graphs and box plots. It is advisable to use the first lesson in the unit, Representing Data 1: Frequency Graphs (32498), before this one.
Sea Ice Analysis:	The changing climate is an important topic for both scientific analysis and worldly knowledge. This lesson uses data collected by the National Snow and Ice Data Center to create and use statistical analysis as a tool to evaluate the sea ice loss. Students will use technology to quickly generate graphs for each month looking for trends, patterns or deviations over time.
Sea Ice Analysis Algebra:	The changing climate is an important topic for both scientific analysis and worldly knowledge. This lesson uses data collected by the National Snow and Ice Data Center to create and use statistical analysis as a tool to evaluate the sea ice loss. Students will use technology to quickly generate graphs for each month looking for trends, patterns, or deviations over time.
Sensorying Data:	In this follow up lesson, students will explore data collection using the weather station sensor and perform statistical analysis of the data. Students will use a scientific method of inquiry to plan an investigation of their own. This activity is meant to allow students to use a variety of skills they have acquired throughout a statistics unit in a personally meaningful way.
Sensorying Data:	In this follow up lesson, students will explore data collection using the weather station sensor and perform statistical analysis of the data. Students will use a scientific method of inquiry to plan an investigation of their own. This activity is meant to allow students to use a variety of skills they have acquired throughout a statistics unit in a personally meaningful way.
Show Me the Money! Selecting Student Athletes for Scholarships:	Students will use data to decide the ideal candidate for a college scholarship by computing the mean and the standard deviation. The student will present the data using the normal distribution and make recommendations based on the findings. Students will recognize that not all data can be presented in this format.
Sweet Statistics - A Candy Journey:	Students will sort pieces of candy by color then calculate statistical information such as mean, median, mode, interquartile range, and standard deviation. They will also create an Excel spreadsheet with the candy data to generate pie charts and column charts. Finally, they will compare experimental data to theoretical data and explain the differences between the two. This is intended to be an exercise for an Algebra 1 class. Students will need at least 2 class periods to sort their candy, make the statistical calculations, and create the charts in Excel.
Texting and Standard Deviation:	This lesson uses texting to teach statistics. In the lesson, students will calculate mean, median, and standard deviation. They will construct and interpret dot plots based on data they collected. Students will also use similarities and differences in shape, center, and spread to determine who is better at texting, boys or girls.
The Debate: Who is a Better Baller?:	In this activity the students will use NBA statistics on LeBron James and Tim Duncan who were key players in the 2014 NBA Finals, to calculate, compare, and discuss mean, median, interquartile range, variance, and standard deviation. They will also construct and discuss box plots.
The Distance a Coin Will Travel:	This lesson is a hands on activity that will allow students to collect and display data about how far different coins will travel. The data collected is then used to construct double dot plots and double box plots. This activity helps to facilitate the statistical implications of data collection and the application of central tendency and variability in data collection.
What's My Grade?:	"What's My Grade" is a lesson that will focus on a sample student's grades to demonstrate how a final grade is calculated as well as explore possible future grades. Students will create the distributions of each of grade category using histograms. They will also analyze grades using mean and standard deviation. Students will use statistics to determine data distribution while comparing center and spread of two or more different data sets.
What's Your Tendency?:	This resource can be used to teach students how to create and compare box plots. After completing this lesson, students should be able to answer questions in both familiar and unfamiliar situations.
Who is the world's best ball player?:	Students will use box and whisker plots to determine who is the better basketball player, LeBron James or Michael Jordan.

Teaching Idea

Name	Description
An Ecological Field Study with Statistical Analysis of Two Populations:	Students will design an investigation that compares a characteristic of two populations of the same species. Students will collect data in the field and analyze the data using descriptive statistics.
Pump Up the Volume:	This activity is a statistical analysis of recorded measurements of a single value - in this case, a partially filled graduated cylinder.
Pump Up the Volume:	This activity challenges students to analyze the statistical distribution of volume measurements from a partially filled graduated cylinder. The free app, GeoGebra is used to create a box plot to aid in the analysis.

Perspectives Video: Expert

Name	Description
Birdsong Series: Statistical Analysis of Birdsong:	Wei Wu discusses his statistical contributions to the Birdsong project which help to quantify the differences in the changes of the zebra finch's song.
Mathematically Exploring the Wakulla Caves:	The tide is high! How can we statistically prove there is a relationship between the tides on the Gulf Coast and in a fresh water spring 20 miles from each other?
Statistics and Scientific Data:	Hear this oceanography student float some ideas about how statistics are used in research.

Problem-Solving Task

Name	Description
Haircut Costs:	This problem could be used as an introductory lesson to introduce group comparisons and to engage students in a question they may find amusing and interesting.
Speed Trap:	The purpose of this task is to allow students to demonstrate an ability to construct boxplots and to use boxplots as the basis for comparing distributions.

Formative Assessment

Name	Description
How Many Jeans?:	Students are asked to select a measure of center to compare data displayed in dot plots and to justify their choice.
Texting During Lunch:	Students are asked to select a measure of center to compare data displayed in frequency tables and to justify their choice.
Texting During Lunch Histograms:	Students are asked to select measures of center and spread to compare data displayed in histograms and to justify their choices.

Lesson Study Resource Kit

Name	Description
Measurement Matters:	This Lesson Study Resource Kit is an introductory unit on measurement for a Chemistry I course.

Virtual Manipulative

Name	Description
Multi Bar Graph:	This activity allows the user to graph data sets in multiple bar graphs. The color, thickness, and scale of the graph are adjustable which may produce graphs that are misleading. Users may input their own data, or use or alter pre-made data sets. This activity includes supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the java applet.

Perspectives Video: Professional/Enthusiast

Name	Description
Nestle Waters & Statistical Analysis:	Hydrogeologist from Nestle Waters discusses the importance of statistical tests in monitoring sustainability and in maintaining consistent water quality in bottled water.
Revolutionize Wing Design with Equations and Statistics:	Brandon Reese, a PhD candidate in the FAMU-FSU College of Engineering, discusses the significance of both Bernoulli's equation and statistical analysis for the design of a "smart wing."
Winning the Race with Data Logging and Statistics:	Data logging has transformed competitive racing! These SCCA drivers discuss how they use computers to compare multiple sets of data after test runs.

Unit/Lesson Sequence

Name	Description
Sample Algebra 1 Curriculum Plan Using CMAP:	<p>This sample Algebra 1 CMAP is a fully customizable resource and curriculum-planning tool that provides a framework for the Algebra 1 Course. The units and standards are customizable and the CMAP allows instructors to add lessons, worksheets, and other resources as needed. This CMAP also includes rows that automatically filter and display Math Formative Assessments System tasks, E-Learning Original Student Tutorials and Perspectives Videos that are aligned to the standards, available on CPALMS.</p> <p>Learn more about the sample Algebra 1 CMAP, its features and customizability by watching the following video:</p> <p style="text-align: center;">Using this CMAP</p> <p>To view an introduction on the CMAP tool, please click here.</p> <p>To view the CMAP, click on the "Open Resource Page" button above; be sure you are logged in to your iCPALMS account.</p> <p>To use this CMAP, click on the "Clone" button once the CMAP opens in the "Open Resource Page." Once the CMAP is</p>

cloned, you will be able to see it as a class inside your iCPALMS My Planner (CMAPs) app.

To access your My Planner App and the cloned CMAP, click on the iCPALMS tab in the top menu.

All CMAP tutorials can be found within the iCPALMS Planner App or at the following URL: http://www.cpalms.org/support/tutorials_and_informational_videos.aspx

Student Resources

Name	Description
Haircut Costs:	This problem could be used as an introductory lesson to introduce group comparisons and to engage students in a question they may find amusing and interesting.
Mathematically Exploring the Wakulla Caves:	The tide is high! How can we statistically prove there is a relationship between the tides on the Gulf Coast and in a fresh water spring 20 miles from each other?
Multi Bar Graph:	This activity allows the user to graph data sets in multiple bar graphs. The color, thickness, and scale of the graph are adjustable which may produce graphs that are misleading. Users may input their own data, or use or alter pre-made data sets. This activity includes supplemental materials, including background information about the topics covered, a description of how to use the application, and exploration questions for use with the java applet.
Speed Trap:	The purpose of this task is to allow students to demonstrate an ability to construct boxplots and to use boxplots as the basis for comparing distributions.

Parent Resources

Name	Description
Haircut Costs:	This problem could be used as an introductory lesson to introduce group comparisons and to engage students in a question they may find amusing and interesting.
Speed Trap:	The purpose of this task is to allow students to demonstrate an ability to construct boxplots and to use boxplots as the basis for comparing distributions.