

Core Content

Cluster Title: Summarize, represent, and interpret data on a single count or measurement variable.
Standard: S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).
Concepts and Skills to Master
<ul style="list-style-type: none"> Graph numerical data on a real number line using dot plots, histograms, and box plots. Describe and give a simple interpretation of a graphical representation of data. Determine which type of data plot would be most appropriate for a specific situation

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Know how to compute a median. Find the lower extreme (minimum), upper extreme (maximum), and quartiles. 	
Academic Vocabulary	
dot plot, histogram, box plot, quartiles, lower extreme (minimum), upper extreme (maximum), median, outlier	
Suggested Instructional Strategies	Resources
Gather or provide data and have students plot each type of graph. Analyze the strengths and weakness inherent in each type of plot by comparing different plots of the same data. Have students collect their own data and choose a graph to represent it.	http://www.freestatistics.info (data sets) http://lib.stat.cmu.edu/DASL (data sets) National Library of Virtual Manipulatives (box plots and histograms) <i>Making it Happen</i> , NCTM 2011
Sample Formative Assessment Tasks	
Skill-based Task: The following data set shows the number of songs downloaded in one week by each student in Mrs. Jones' class: 10, 20, 12, 14, 12, 27, 88, 2, 7, 30, 16, 16, 32, 15, 25, 15, 4, 0, 15, 6 Choose and create a plot to represent the data.	Problem Task: On the midterm math exam, students had the following scores: 95, 45, 37, 82, 90, 100, 91, 78, 67, 84, 85, 85, 82, 91, 92, 93, 92, 76, 84, 100, 59, 92, 77, 68, 88. What are the strengths and weaknesses of presenting this data in a certain type of plot for <ul style="list-style-type: none"> Students in a class, Parents, The school board?

Core Content

Cluster Title: Summarize, represent, and interpret data on a single count or measurement variable.

Standard: S.ID.2 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.

Concepts and Skills to Master

- Given two sets of data or two graphs, identify similarities and differences in shape, center and spread.
- Compare data sets and be able to summarize the similarities and differences between the shape, and measures of centers and spreads of the data sets.

Supports for Teachers

Critical Background Knowledge

- Know how to compute the mean, median, interquartile range, and standard deviation by hand in simple cases and using technology with larger data sets.
- Create a graphical representation of a data set.

Academic Vocabulary

mean, median, interquartile range, standard deviation, center, spread, shape

Suggested Instructional Strategies

Use technology to manipulate plots of data sets to explore how changing data affects the measures of center and spread.

Discuss what it means when related data sets have differing centers or spreads in relation to the context.

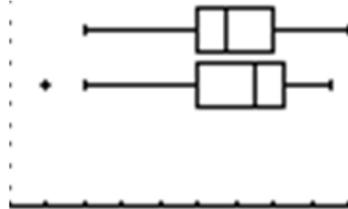
Resources

<http://lib.stat.cmu.edu/DASL/> (data sets)
<http://www.freestatistics.info> (data sets)

Sample Formative Assessment Tasks

Skill-based Task:

The boxplots show the distribution of scores on a district writing test in two fifth grade classes at a school. Compare the range and medians of the scores from the two classes.



Problem Task: Plot data based on populations of European countries. Plot data based on populations of Asian countries. Compare and discuss differences in center and spread.

Core Content

Cluster Title: Summarize, represent, and interpret data on a single count or measurement variable.
Standard: S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
Concepts and Skills to Master
<ul style="list-style-type: none"> Given two sets of data or two graphs, identify similarities and differences in shape, center and spread. Interpret similarities and differences between the shape, and measures of centers and spreads of data sets. State the effects of any existing outliers.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Know how to compute the mean, median, interquartile range, and standard deviation by hand in simple cases and using technology with larger data sets. Create a graphical representation of a data set. 	
Academic Vocabulary	
extreme data point (outliers), skewed, center, spread	
Suggested Instructional Strategies	Resources
<p>Use data from multiple sources to interpret differences in shape, center and spread.</p> <p>Use data that includes outliers and explore what happens when outliers are removed. Discuss the effect of outliers on measures of center and spread and the effect on the shape.</p>	<p>http://lib.stat.cmu.edu/DASL/ (data sets)</p> <p>http://www.freestatistics.info (data sets)</p>
Sample Formative Assessment Tasks	
<p>Skill-based Task: The boxplots show the distribution of scores on a district writing test in two fifth grade classes at a school. Which class performed better and why?</p>	<p>Problem Task: Find two similar data sets A and B (use textbook or internet resources). What changes would need to be made to data set A to make it look like the graph of set B?</p>

