

Just In Time Quick Check
Standard of Learning (SOL) 5.17d

Strand: Probability and Statistics

Standard of Learning (SOL) 5.17d

The student, given a practical context, will determine the mean, median, mode, and range of a set of data.

Grade Level Skills:

- Describe and determine the mean of a group of numbers representing data from a given context as a measure of center.
- Describe and determine the median of a group of numbers representing data from a given context as a measure of center.
- Describe and determine the mode of a group of numbers representing data from a given context as a measure of center.
- Describe and determine the range of a group of numbers representing data from a given context as a measure of spread.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [5.17 What's the Data All About?](#) (Word) / [PDF Version](#)
- VDOE Word Wall Cards: Grade 5 ([Word](#)) | ([PDF](#))
 - Mean
 - Median
 - Mode
 - Range: Measure of Spread
- VDOE Instructional Videos for Teachers
 - [Mean as Fair Share](#)
 - [Mean as Balance Point](#)
- Desmos Activity
 - [Calculating Mean, Median, Mode and Range](#)

Supporting and Prerequisite SOL: [5.17a](#), [5.17b](#), [5.17c](#), [4.1b](#), [4.4b](#), [4.4c](#), [4.4d](#), [3.1c](#), [3.3a](#), [3.3b](#), [3.4b](#)

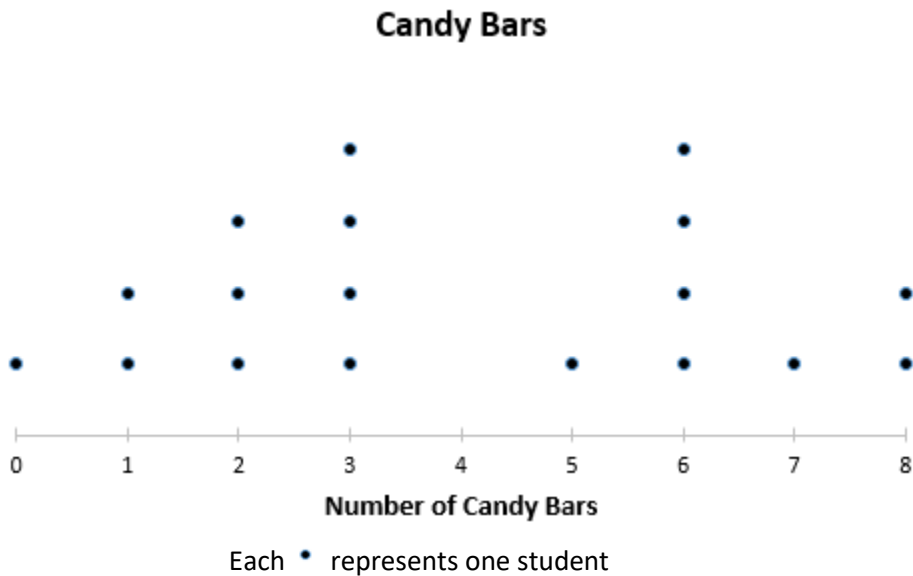
SOL 5.17d - Just in Time Quick Check

1. Joe played five games with his basketball team. The points he scored in each game are listed in the table.

Basketball Game	Points Scored
Game 1	12
Game 2	22
Game 3	19
Game 4	10
Game 5	20

- What is the mean of the points he scored?
- What is the median of the points he scored?
- What is the mode of the points he scored?
- What is the range of the points he scored?

2. Mr. Haley's class created this line plot to show how many candy bars each student sold.



- What is the mean number of candy bars that Mr. Haley's students sold?
- What is the median number of candy bars that Mr. Haley's students sold?
- What is the mode of the number of candy bars that Mr. Haley's students sold?
- What is the range of the number of candy bars that Mr. Haley's students sold?

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Common Errors/Misconceptions and their Possible Indications

1. Joe played five games with his basketball team. The points he scored in each game are listed in the table.

Basketball Game	Points Scored
Game 1	12
Game 2	22
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Game 5	20

- What is the mean of the points he scored?
- What is the median of the points he scored?
- What is the mode of the points he scored?
- What is the range of the points he scored?

A common misconception students may have is confusing the meanings of the terms mean, median, mode, and range. To help students, use the Word Wall cards and ask students to explain each term when introducing and using these terms and concepts.

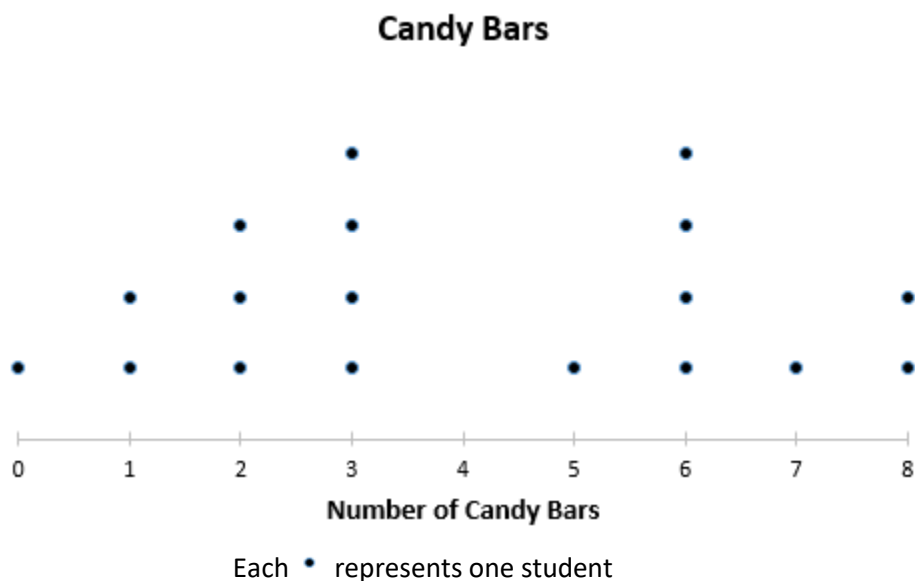
An error students might make in finding the mean is not adding or dividing properly. They may not regroup or may have trouble when finding the decimal needed for the mean of this data set. Multiple opportunities to practice finding the mean of a data set with feedback on computational errors will help students. Additionally, students may use the calculator for this standard. Help students learn how to use the calculator properly with lessons from the Desmos calculator.

Another error students might make is in finding the median. They may neglect to put the data in order from least to greatest. They might be reading the information too quickly to observe that the values are not in order. To help students, provide multiple opportunities to practice putting data for practical problems in order prior to finding the median.

Students may have difficulty with stating that there is not a mode for this data set. They may feel that there must be a mode if there is a question asking them to find mode. Provide multiple opportunities to practice analyzing real life data sets where there is no mode to help them see that it is possible for data to have no mode.

In finding the range, students may not consider putting the data points in order first. They may simply see that the first value is less than the last value and use those data points to find the range. Provide multiple opportunities to find the range with data sets similar to these to help students see they must review all of the data points prior to finding the range.

2. Mr. Haley's class created this line plot to show how many candy bars each student sold.



- What is the mean number of candy bars that Mr. Haley's students sold?
- What is the median number of candy bars that Mr. Haley's students sold?
- What is the mode of the number of candy bars that Mr. Haley's students sold?
- What is the range of the number of candy bars that Mr. Haley's students sold?

A common error students may make in finding the mean is including only one of the data points when values are repeated. If students make this error and divide by 8 to find the mean, they will have a skewed mean. Provide opportunities for students to work with data sets where values are repeated multiple times to help them see that they must include the value each time it is listed. Using actual student grades as an example will help them to see the importance of including each value every time.

Students may have trouble in finding the median as this data set has an even number of data points. Students may not remember to find the average of the two values in the "middle" or may have difficulty in performing the computation to do so. To help students, ask questions like "How do you think we will find the middle of this data? Where would the middle of the data set lie?" A visual representation of a number line to find the middle of two numbers may help some students.

In this data, there are two modes. Some students may only list one mode, thinking a set of data may only have one mode. Other students may feel frustration in trying to decide which of the two data points to name as the mode. Provide opportunities to practice analyzing real life data sets where there are multiple modes to help them see that this is a possibility.

In finding the range, students may be confused as to what value to use for the lowest possible number of candy bars sold in the data set. They may have the misconception that at least one candy bar must be sold. This might indicate that a student believes the lowest value is 1 and perform the calculation $8 - 1$ to find the range. Provide opportunities for students to find the range with data sets similar to these to promote understanding that a review of the data points should occur.