

Just In Time Quick Check
Standard of Learning (SOL) 5.16b

Strand: Probability and Statistics

Standard of Learning (SOL) 5.16b

The student, given a practical problem, will interpret data represented in line plots and stem-and-leaf plots.

Grade Level Skills:

- Interpret data by making observations from line plots and stem-and-leaf plots, describing the characteristics of the data and describing the data as a whole. One set of data will be represented on a graph.
- Interpret data by making inferences from line plots and stem-and-leaf plots.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [Statistics: Learning about Our Class from Mystery Data \(Word\)](#) / [PDF Version](#)
- VDOE Algebra Readiness Remediation Plans
 - [Data Organizers](#) (Word) / [PDF version](#)
 - [Graph Match](#) (Word) / [PDF version](#)
 - [Interpreting Graphs](#) (Word) / [PDF version](#)
 - [Mystery Data](#) (Word) / [PDF version](#)
- VDOE Word Wall Cards: Grade 5 ([Word](#)) | ([PDF](#))
 - Line Plot
 - Stem-and-Leaf Plot

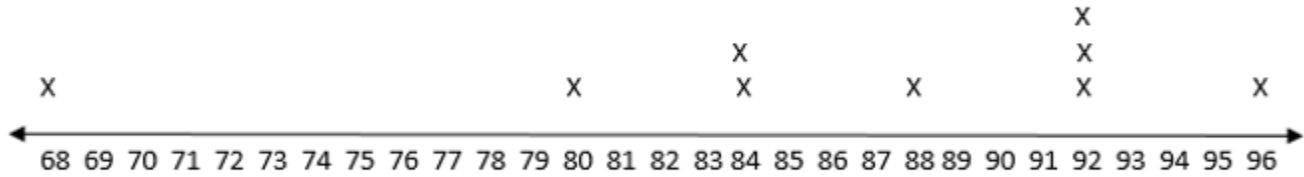
Supporting and Prerequisite SOL: [5.16a](#), [4.14b](#), [3.15b](#)

SOL 5.16b - Just in Time Quick Check

Use the line plot shown for questions 1 – 4.

Lenore received one grade per week during the first quarter of school in her math class. Her grades are displayed in the line plot below.

Lenore's First Quarter Math Grades



Each X represents one math grade.

- 1) According to this line plot, how many grades did Lenore receive during the first quarter in her math class?
- 2) What grade did she receive the most often?
- 3) How many grades did Lenore receive that were greater than 80?
- 4) What do you notice about the data point of 68 as compared to the others? What could be a reason for this?

Use the stem-and-plot shown for questions 5 – 8.

Mrs. Yi recorded the total number of minutes each student in her class read during a four-day period. The stem-and-leaf plot shows the total number of minutes each student read during the four-day period.

Minutes Read Per Student

Stem	Leaf
4	0 4
5	2 4 8
6	
7	5 8 8 9 9
8	0 0 0 0 1 2 5 6
9	8 9

KEY	
4	1 means 41 minutes

- 5) How many students are in Mrs. Yi's class?
- 6) How many students read between 75 and 80 minutes?
- 7) What is the longest amount of time a student spent reading during the four-day period?
- 8) Based on the data in this stem-and-leaf plot, what inference can you make about the approximate number of minutes students read each night during the four-day period in Mrs. Yi's class

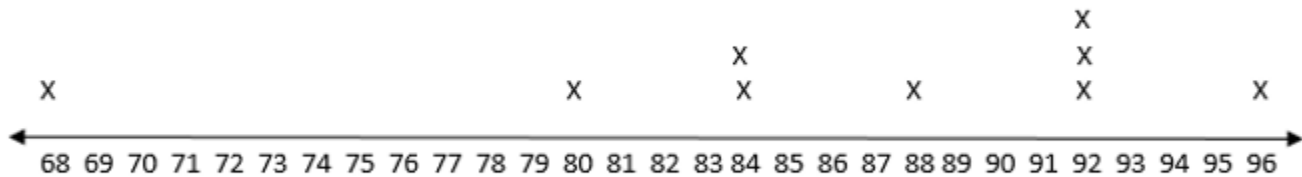
SOL 5.16b - Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

Use the line plot shown for questions 1 – 4.

Lenore received one grade per week during the first quarter of school in her math class. Her grades are displayed in the line plot below.

Lenore's First Quarter Math Grades



Each X represents one math grade.

- 1) According to this line plot, how many grades did Lenore receive during the first quarter in her math class?

A common error some students may have is to use the highest grade received to answer the question. This may indicate that a student interprets the highest grade as the total number of grades received instead of counting the number of X's in the line plot. Other students may only count 84 and 92 once each. Students would benefit from an explanation of what each X represents in the line plot, and what it means when an X appears multiple times with a number. Some students may also benefit from organizing the data in another format, such as a table, in order to gain a better understanding of the data if these common errors occur.

- 2) What grade did she receive the most often?

Some students may think the answer is 84. If students make this error, they understand that the X represents that a grade is occurring more than once, but chose the first number that occurred multiple times. It is important to remind students they must read the entire line plot before answering the question.

Some students may answer 96 thinking of the highest number graphed on the line plot. If this misconception occurs, it may be helpful to have student create their own line plot with a small set of data. Provide students with a data set that has numbers that repeat. Ask questions like "How would you graph the number that occurs more than one time?"

- 3) How many grades did Lenore receive that were greater than 80?

A common misconception that some students may make is to include the data point of 80. This may indicate a student has incorrectly interpreted greater than as greater than or equal to 80. One possible strategy to address this misconception is for students to draw a line through 80 on the line plot and include an arrow that points to the right indicating numbers that are greater than 80. If a question asked greater than or equal to 80, then have the student circle the number 80 and include an arrow that points to the right. Provide students the opportunity to practice with different scenarios of less than, less than or equal to, greater than, and greater than or equal to. Ask questions like "How are the answers different? What makes the answer different? Why?"

- 4) What do you notice about the data point of 68 as compared to the others? What could be a reason for this?

A common response some students may make is to state that 68 is the lowest grade received but without any reasonable explanation. This may indicate that some students do not see the grade of 68 as an outlier and it creates a spread in the data when compared to the overall grades received in her math class. Possible answers for a reason might include not studying, not spending enough time studying, or not understanding the content. Encourage a student to elaborate on their interpretation for why Lenore received a grade of 68 and what 68 means in relation to the other data points.

Use the stem-and-plot shown for questions 5 – 8.

Mrs. Yi recorded the total number of minutes each student in her class read during a four-day period. The stem-and-leaf plot shows the total number of minutes each student read during the four-day period.

Minutes Read Per Student

Stem	Leaf
4	0 4
5	2 4 8
6	
7	5 8 8 9 9
8	0 0 0 0 1 2 5 6
9	8 9

KEY

4 | 1 means 41 minutes

- 5) How many students are in Mrs. Yi's class?

Students may answer based on a number in the stem-and-leaf plot or the key rather than counting the leaves. Similar to the X's in the line plot, students need to know what each leaf stands for in order to interpret the data. As students begin using stem-and-leaf plots, ensure that students have practice creating them so they can see the connection as shown in the key. It is also helpful to have students practice listing all data points from a stem-and-leaf plot in ascending or descending order.

- 6) How many students read between 75 and 80 minutes?

A common misconception that some students may have is to include students who read exactly 75 and 80 minutes. This may indicate that a student does not understand the meaning of "between" two numbers. Students with this misconception may benefit from using a number line. Have students shade "less than" "between" and "greater than" a given number on a number line. This will provide them a visual representation of the vocabulary terms. Be sure to also include practice with "greater than or equal to" and "less than or equal to." Using the Word Wall cards as an anchor chart will also benefit some students.

- 7) What is the longest amount of time a student spent reading during the four-day period?

A common misconception some students may have is to state that 86 is the longest amount of time-spent reading. This might indicate that a student based their decision on the data point that is the farthest away from the stem. Some students may answer "9" as the longest amount of time, thinking of the largest stem or the largest leaf. These students have not conceptualized what the stem and leaves are representing in the plot. Students may benefit from experiences of creating their own stem-and-leaf plot given a set of data. Once they understand the concept that each leaf represents a data point, they will then be able to interpret and think about the largest data point.

- 8) Based on the data in this stem-and-leaf plot, what inference can you make about the approximate number of minutes students read each night during the four-day period in Mrs. Yi's class?

A common error some students may make is to answer 80 minutes as the number of minutes expected to read each night since 80 occurs most frequently in the stem-and-leaf plot. It would be beneficial to discuss with students the number of days that were involved and that each leaf represents the total number of minutes each student read during the four days. One strategy that may benefit some students is have students write "Day 1," "Day 2," "Day 3," and "Day 4" when determining the approximate number of minutes that a student read each night during the four-day period. Ask questions like "If a student read xx minutes total for four days, how could we determine how many minutes the student read each night?" Have students discuss different strategies on how they would approach solving this problem.