

Just In Time Quick Check
Standard of Learning (SOL) 4.14b

Strand: Probability and Statistics

Standard of Learning (SOL) 4.14b

The student will interpret data represented in bar graphs and line graphs.

Grade Level Skills:

- Interpret data by making observations from bar graphs and line graphs by describing the characteristics of the data and the data as a whole (e.g., the time period when the temperature increased the most, the category with the greatest/least, categories with the same number of responses, similarities and differences, the total number). One set of data will be represented on a graph.
- Interpret data by making inferences from bar graphs and line graphs.
- Interpret the data to answer the question posed, and compare the answer to the prediction (e.g., “The summer sport preferred by most is swimming, which is what I predicted before collecting the data.”).
- Write at least one sentence to describe the analysis and interpretation of the data, identifying parts of the data that have special characteristics, including categories with the greatest, the least, or the same.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

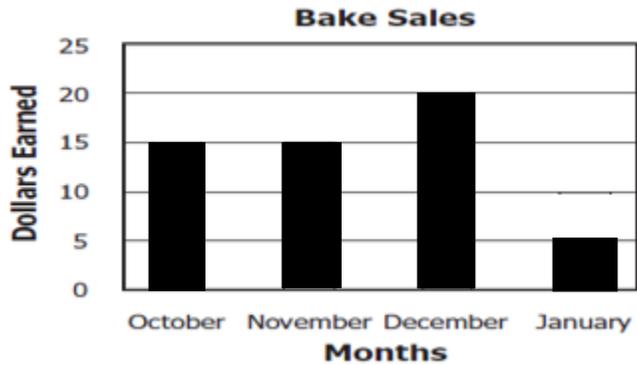
Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [4.14abc - Analyzing Temperature Data](#) (Word) / [\(PDF\)](#)
 - [4.14abc - Statistics: Sandwich Data](#) (Word) / [\(PDF\)](#)
- VDOE Word Wall Cards: Grade 4 [\(Word\)](#) / [\(PDF\)](#)
 - Bar Graph
 - Line Graph
- VDOE Algebra Readiness Remediation Plans
 - [4.14ab](#) (Word) / [PDF](#)

Supporting and Prerequisite SOL: [4.14a](#), [3.15b](#), [2.15b](#)

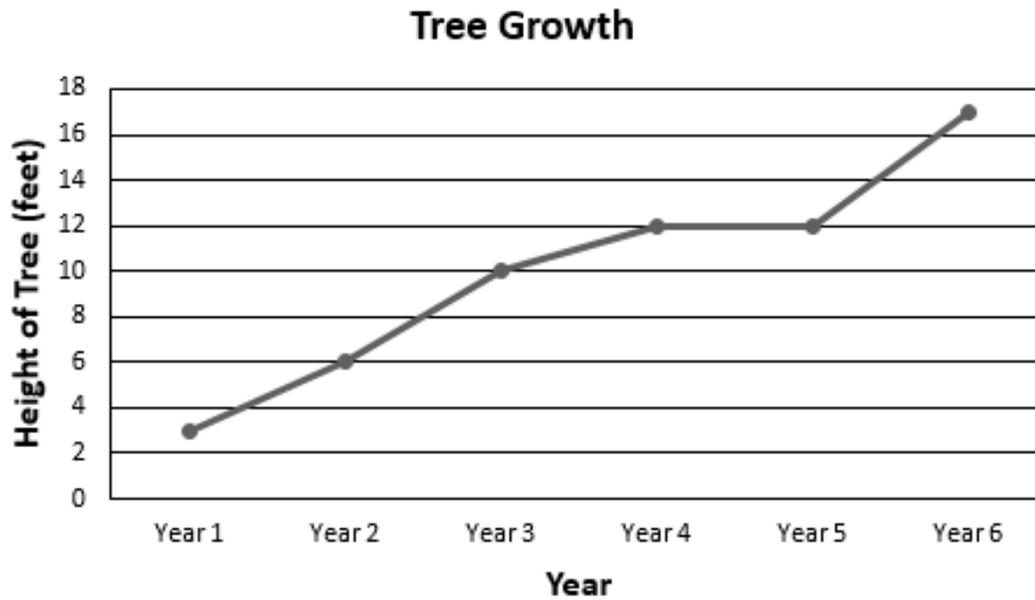
SOL 4.14b - Just in Time Quick Check

The bar graph shows the amount of money Hope earned for her basketball team through bake sales during the months of October, November, December, and January. Use the bar graph to answer questions 1-3.



1. During which two months did Hope earn the same amount money?
2. During which two months did Hope earn a combined total of \$25.00?
3. There will be one more bake sale in February. Hope wants to earn a total of \$100 for her basketball team through bake sales. How much more money does Hope need to earn from the bake sale in February to reach her goal of \$100?

Mr. Shelton measured the growth of a tree each year for 6 years. He recorded his information in this graph. Use the graph to answer questions 4-6.



4. Between which two years did the tree's growth increase the most?

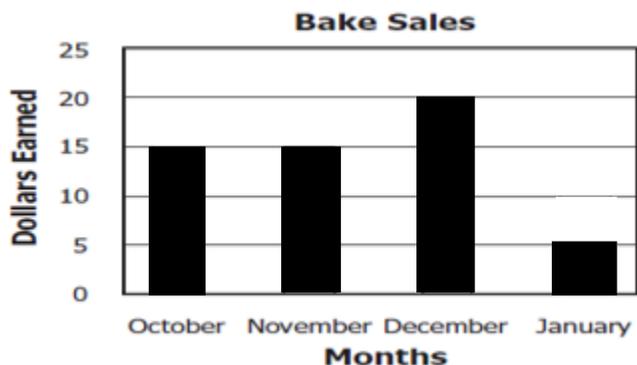
5. Between which two years did the tree grow the least amount?

6. What is the difference between the height of the tree in year 2 and year 4?

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Common Errors/Misconceptions and their Possible Indications

The bar graph shows the amount of money Hope earned for her basketball team through bake sales during the months of October, November, December, and January. Use the bar graph to answer questions 1-3.



1. During which two months did Hope earn the same amount money?

A student may have difficulty identifying the two categories that have the same amount of dollars earned. This may indicate that the student lacks the ability to see that the same representation between two or more categories means that the amounts are the same height or there was no change. A good strategy would be to write the amount of dollars earned above the bars for each month. This would help the student to interpret the graphed data.

2. During which two months did Hope earn a combined total of \$25.00?

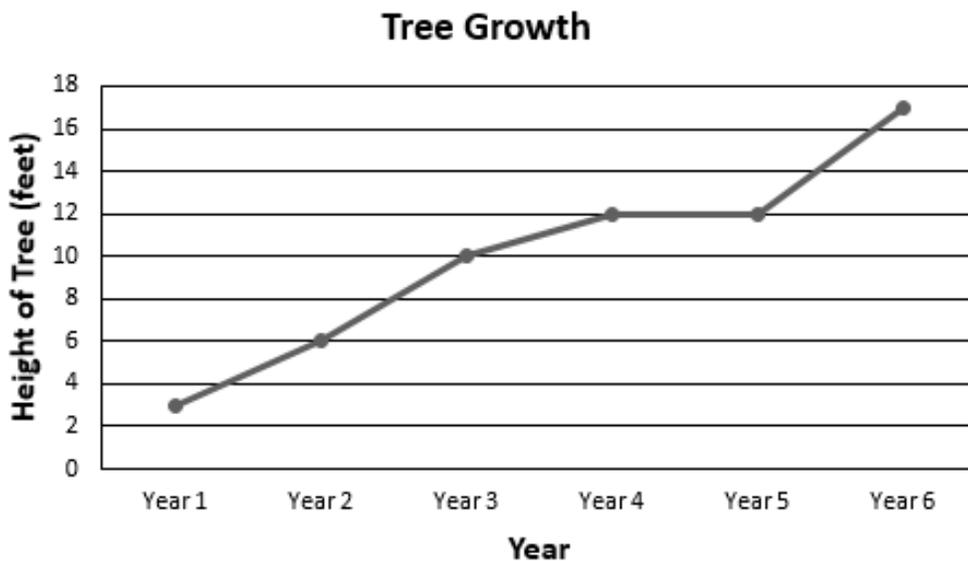
A student may have trouble determining which two months have a combined total of \$25. Encourage students to use a process of elimination to eliminate the months that they know Hope's earnings do not total \$25. Students may also try to look at the graph and solve the problem mentally. It may indicate that some students struggle with reading/interpreting data displayed in bar graph form. It may be helpful for a student to write the values above each bar representing each of the four months. A student may need additional support in understanding how to show their thinking on paper. Encourage a student to write an addition problem for the combination of months that total \$25.

3. There will be one more bake sale in February. Hope wants to earn a total of \$100 for her basketball team through bake sales. How much more money does Hope need to earn from the bake sale in February to reach her goal of \$100?

Some students may struggle with determining how much more money Hope needs to earn to reach her goal of \$100. This may indicate that the students lack the conceptual knowledge needed to find the difference between her goal of \$100 and what has already been made. The students have to understand that this is a two-step problem and they can approach solving it in different ways. One strategy is to find the total money Hope has already earned and then subtract that amount from the goal amount of \$100 to find the difference. Another strategy is to subtract the money earned each previous month from the goal of \$100. It might be helpful to prepare questions ahead of time to ask students who get stuck along the way or only complete the first step in the process. For example, students may stop after they have found the total of what Hope earned from October-January. Ask students to explain their thinking.

Students would benefit from the use of manipulatives, such as money, to demonstrate what is actually occurring, in conjunction with exposure to a variety of problem types. Acting out the problem can help students make sense of what the problem is asking. Another strategy is removing the numbers from the problem and only discussing the graph. This can help students make sense of what data the graph conveys.

Mr. Shelton measured the growth of a tree each year for 6 years. He recorded his information in this graph. Use the graph to answer questions 4-6.



4. Between which two years did the tree's growth increase the most?

A student may not understand how to identify the greatest amount of change by finding the line segment that is showing the steepest incline between any two consecutive years. This may indicate that a student does not understand how to identify the characteristic of increasing between years using the data represented on the line graph. A student would benefit from a review of terms associated with graphing data. A visualization strategy of using different colors to identify the characteristics such as decreasing, increasing, and constant or remaining the same may help the student understand and differentiate between each characteristic. Additionally, a student could be encouraged to write the height associated with each year, and then perform the computation to find the difference between consecutive years to identify the greatest increase.

5. Between which two years did the tree grow the least amount?

A student may not understand how to identify the least amount of change by finding the line segment that is showing little or no amount of change at all between any two consecutive years. The student would benefit from a review of terms associated with graphing data. A visualization strategy of using different colors to identify the characteristics such as decreasing, increasing, and constant or remaining the same may help the student understand and differentiate between each characteristic.

6. What is the difference between the height of the tree in year 2 and year 4?

A common misconception some students may have difficulty finding the difference between two years that are not consecutive. This may indicate that a student lacks conceptual knowledge of determining difference or change between two years. A student may also struggle with interpreting the data for year 2 and year 4 to complete the problem. A student would benefit from finding the height of the tree for both years and then subtracting with the use of manipulatives if needed. It might be beneficial for a student to have additional practice with similar problems in which they have to find the difference of two pieces of graphed data.