

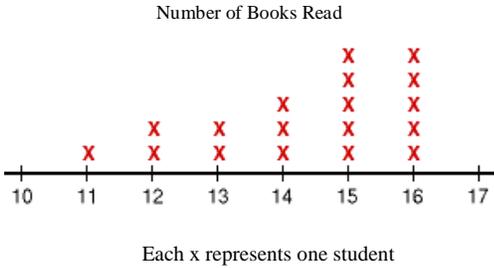
3.17 The student will

- a) collect and organize data, using observations, measurements, surveys, or experiments;
- b) construct a line plot, a picture graph, or a bar graph to represent the data; and
- c) read and interpret the data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.

UNDERSTANDING THE STANDARD (Background Information for Instructor Use Only)	ESSENTIAL UNDERSTANDINGS	ESSENTIAL KNOWLEDGE AND SKILLS
<ul style="list-style-type: none"> • Investigations involving data should occur frequently and relate to students' experiences, interests, and environment. • Formulating questions for investigations is student-generated at this level. For example: What is the cafeteria lunch preferred by students in the class when four lunch menus are offered? • The purpose of a graph is to represent data gathered to answer a question. • Bar graphs are used to compare counts of different categories (categorical data). Using grid paper ensures more accurate graphs. <ul style="list-style-type: none"> – A bar graph uses parallel, horizontal or vertical bars to represent counts for categories. One bar is used for each category, with the length of the bar representing the count for that category. – There is space before, between, and after the bars. – The axis displaying the scale representing the count for the categories should extend one increment above the greatest recorded piece of data. Third grade students should collect data that are recorded in increments of whole numbers, usually multiples of 1, 2, 5, or 10. – Each axis should be labeled, and the graph should be given a title. – Statements representing an analysis and interpretation of the characteristics of the data in the graph (e.g., similarities and differences, 	<p>All students should</p> <ul style="list-style-type: none"> • Understand how data can be collected and organized. • Understand that data can be displayed in different types of graphs depending on the data. • Understand how to construct a line plot, picture graph, or bar graph. • Understand that data sets can be interpreted and analyzed to draw conclusions. 	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Formulate questions to investigate. • Design data investigations to answer formulated questions, limiting the number of categories for data collection to four. • Collect data, using surveys, polls, questionnaires, scientific experiments, and observations. • Organize data and construct a bar graph on grid paper representing 16 or fewer data points for no more than four categories. • Construct a line plot with no more than 30 data points. • Read, interpret and analyze information from line plots by writing at least one statement. • Label each axis on a bar graph and give the bar graph a title. Limit increments on the numerical axis to whole numbers representing multiples of 1, 2, 5, or 10. • Read the information presented on a simple bar or picture graph (e.g., the title, the categories, the description of the two axes). • Analyze and interpret information from picture and bar graphs, with up to 30 data points and up to 8 categories, by writing at least one sentence.

3.17 The student will

- collect and organize data, using observations, measurements, surveys, or experiments;
- construct a line plot, a picture graph, or a bar graph to represent the data; and
- read and interpret the data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.

UNDERSTANDING THE STANDARD (Background Information for Instructor Use Only)	ESSENTIAL UNDERSTANDINGS	ESSENTIAL KNOWLEDGE AND SKILLS
<p>least and greatest, the categories, and total number of responses) should be written.</p> <ul style="list-style-type: none"> A line plot shows the frequency of data on a number line. Line plots are used to show the spread of the data and quickly identify the range, mode, and any outliers. <p style="text-align: center;">Number of Books Read</p>  <p style="text-align: center;">Each x represents one student</p> <ul style="list-style-type: none"> When data are displayed in an organized manner, the results of the investigations can be described and the posed question answered. Recognition of appropriate and inappropriate statements begins at this level with graph interpretations. 		<ul style="list-style-type: none"> Describe the categories of data and the data as a whole (e.g., data were collected on four ways to cook or prepare eggs — scrambled, fried, hard boiled, and egg salad — eaten by students). Identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same (e.g., most students prefer scrambled eggs). Select a correct interpretation of a graph from a set of interpretations of the graph, where one is correct and the remaining are incorrect. For example, a bar graph containing data on four ways to cook or prepare eggs — eaten by students show that more students prefer scrambled eggs. A correct answer response, if given, would be that more students prefer scrambled eggs than any other way to cook or prepare eggs.