

# What Does the Data Tell Us?

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**Strand:** Probability and Statistics

**Topic:** Data collection, graphing

**Primary SOL:** 2.15 The student will

- a) collect, organize, and represent data in pictograph and graphs; and
- b) read and interpret data represented in pictographs and bar graphs.

## Materials

- One-inch grid paper
- Crayons, markers, pencils
- Notebook or plain white paper
- Journal/Writing Prompt (attached)

## Vocabulary

*bar graph, data, key, pictograph, table, tally mark*

## Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. This lesson is meant for application of skills taught. Review the expectations for the components of pictographs and bar graphs:
  - Title
  - Labels for the horizontal and vertical axes
  - Defined categories (limited to four)
  - Equal, labeled increments for the vertical axis (multiples of 1, 2, or 5)
  - A space between the vertical axis and first category, equal spaces between the categories, and an equal space after the last category
  - A key is provided in the graph to assist with analysis
2. Distribute sheets of one-inch grid paper, crayons, markers, and pencils. Have each student create a survey to gather data about some everyday subject that can be quantified. After students decide on their data questions, have them collect data by asking the questions of at least 16 other students in the class. Direct them to record their collected data in a table, using tally marks. Model this process for the students, if needed.
3. Have students use the data from their tables to create a pictograph and a bar graph on the grid paper.
4. Explain to students that they will now develop statements about their graphs. Give examples of appropriate types of statements to write (e.g., “This graph shows our class’s favorite colors. The greatest number of students liked blue. More people like green than yellow. Black was the least liked color. We predict a new student’s favorite color would be blue.”) The students must write at least five statements about their graphs. Allow

students to create their statements. Circulate to help those who are unclear about the assignment.

5. Review and summarize with the class what students did and learned in the activity.

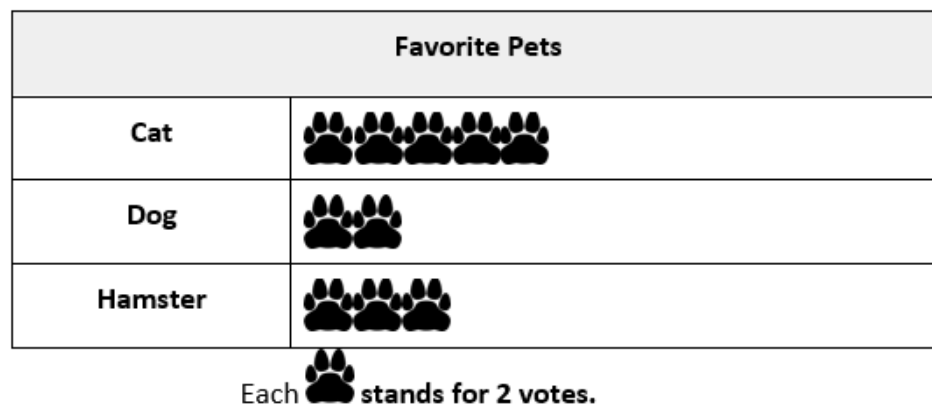
### Assessment

- **Questions**

- What are some ways to read and interpret data from your data collection?
- Today we used tally marks when collecting data. What are other ways to collect and organize data?
- How are pictographs similar to bar graphs? How are they different?
- What are some problems with reading pictographs that do not occur with reading bar graphs?

- **Journal/Writing prompts**

- Eric wants to survey his friends to find out which sport—basketball, football, or soccer—is the most popular. Explain to Eric what he needs to do to collect and organize his information.
- Celia’s class voted for their favorite pet. The following pictograph shows how the class voted.



Using the data in the pictograph, write two statements about the data in the pictograph. (See handout.)

- **Other Assessments**

- Collect completed graphs and questions to check for students’ understanding of creating graphs and interpretations of graphs.
- Check to be sure that all components of the pictographs and bar graphs are present and correct.
- Have the class complete a “3-2-1.” Have students write (or tell orally) three things they learned, two ways they can use what they learned in the future, and one unresolved problem.

**Extensions and Connections (for all students)**

- Have students collect information and create graphs related to topics in reading (e.g., favorite character in a story), social studies (e.g., favorite famous American, distance from Virginia to China, England, Mexico, and Egypt), and science (e.g., height of a plant as it grows from a seed, daily temperature).
- Distribute graphs from everyday life (e.g., from a newspaper, a soup can label, a weather report, a news article). Have students write at least one statement that describes the categories of data and the data as a whole and identifies the parts of the data that have special characteristics (greatest, least, same).

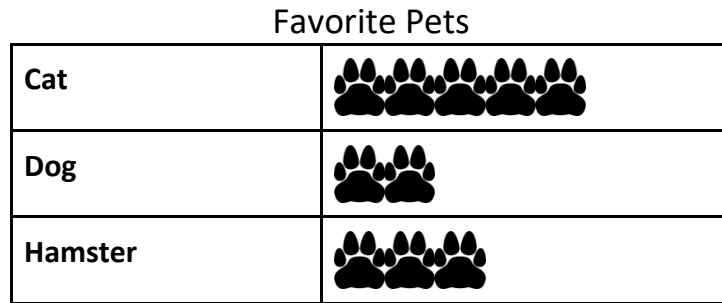
**Strategies for Differentiation**

- Allow students who have difficulty drawing to use stickers or stamps when creating pictographs, rather than drawing symbols.
- Provide students with predrawn data tables and grid paper with predrawn axes, as needed.
- Guide students in creating headings, labels, and scale calibrations, as needed.
- Redirection and corrective feedback should be given throughout lesson.
- Provide some topics for collecting quantitative data.
- Pair students, if needed.

**Note: The following pages are intended for classroom use for students as a visual aid to learning.**

## Journal/Writing Prompt

Celia’s class voted for their favorite pet. The following pictograph shows how the class voted.



Each  stands for 2 votes.

Using the data in the pictograph, write two statements about the data in the pictograph.

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_