

GRAPHICAL REPRESENTATIONS OF DATA**1.1.4**

Students represent distributions of single-variable data numerical data using dot plots, stem-and-leaf plots, box plots, and histograms. They represent categorical one-variable data on bar graphs. Each representation communicates information in a slightly different way.

HISTOGRAMS AND BAR GRAPHS

Histograms and bar graphs are visual ways to represent data. Both consist of vertical bars (called bins) with heights that represent the number of data points (called the frequency) in each bin.

Histograms are for displaying distributions of numerical data. In a histogram each bar represents the number of data elements within a certain range of values. All the bars touch each other. Values at the left side of a bin's range are included in that bin. Each range of values should have the same width.

Bar graphs are for displaying categorical data. In a bar graph each bar represents the number of data elements in a certain category. All the bars are the same width and are separated from each other.

For additional information and examples, see the Math Notes boxes in Lessons 2.1.2 and 2.2.1 of the *Core Connections, Course 1* text. For additional examples and practice, see the *Core Connections, Course 1* Checkpoint 9A materials at the back of the text.

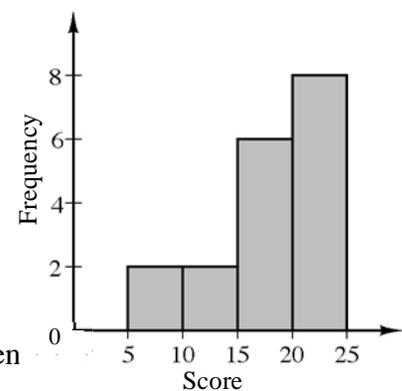
Example 1

The scores for a 25-point quiz are listed below arranged from least to greatest.

7, 7, 12, 13, 15, 16, 16, 16, 18, 19, 20, 20, 20, 21, 21, 22, 23, 24

Using intervals of five points, create a histogram for the class.

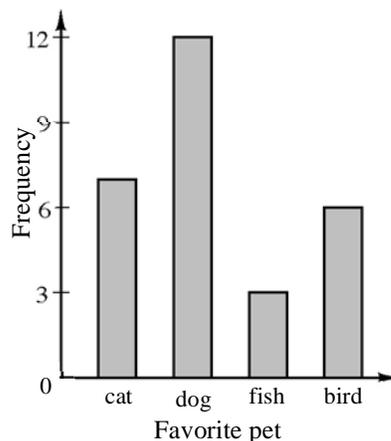
See histogram at right. Scores on the right end of the interval are included in the next interval. The interval between 10 and 15 only includes the two scores of 12 and 13. The interval between six scores of 15, 16, 16, 16, 18, and 19.



Example 2

Ms. Lim asked each of her students about their favorite kind of pet. Based on their responses, she drew the bar graph at right. Use the bar graph to answer each question.

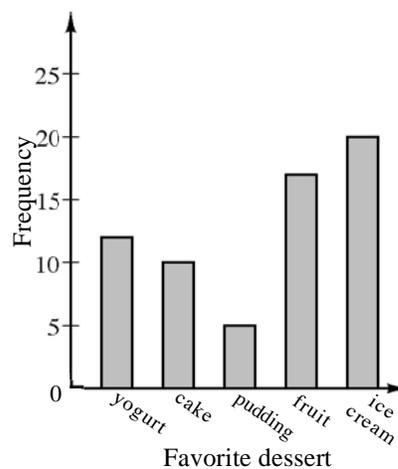
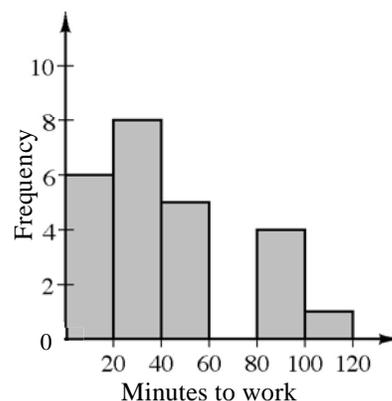
- What is the favorite pet?
- How many students chose a bird as their favorite pet?
- What was the least favorite pet?
- If every student voted once, how many students are in the class?



Answers: a. dog b. 6 c. fish d. 28

Problems

- Mr. Diaz surveyed his employees about the time it takes them to get to work. The results are shown in the histogram at right.
 - How many employees completed the survey?
 - How many employees get to work in less than 20 minutes?
 - How many employees get to work in less than 40 minutes?
 - How many employees take 60 minutes to get to work?
- The two sixth grade classes at Vista Middle School voted for their favorite dessert. The results are shown in the bar graph at right for the five favorite choices.
 - What was the favorite dessert and how many students made that choice?
 - How many students selected cake as their favorite dessert?
 - How many students selected yogurt as their favorite?
 - How many more students selected ice cream than pudding?



3. Mr. Fernandez asked 30 people at work how many pets they owned. The results are shown at right. Make a histogram to display this data. Use intervals of one pet.

0 pets	5 people
1 pet	8 people
2 pets	10 people
3 pets	3 people
4 pets	2 people
5 pets	1 person
9 pets	1 person

4. During the first week of school Ms. Chan asked her students to name the country where they were born. There were so many different countries she grouped them by continent:

North America: 14 students, South America: 2 students,
Europe: 3 students, Asia: 10 students, Africa: 1 student, Australia: 0 students.

Make a bar graph to display this information.

5. Three coins were tossed 20 times and the number of results that were “heads” each time is shown below:

1, 1, 2, 0, 2, 3, 1, 2, 1, 2, 2, 1, 3, 2, 0, 1, 2, 0, 2, 1

Make a histogram to show the results.

6. The physical education teacher at West Middle School asked the class about their favorite winter activity. Here were the results:

reading: 8 students, ice skating: 4 students, skiing: 6 student,
snowboarding: 11 students, computer activities: 14 students.

Make a bar graph to show the results.