Data Analysis

Activity Lab

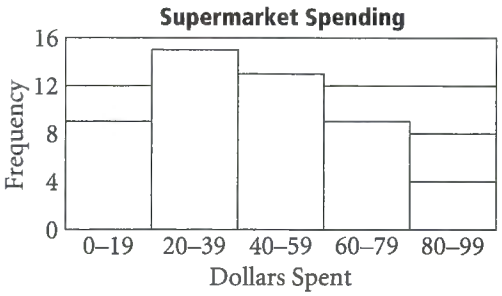
NY **A.S.9:** Analyze and interpret a frequency distribution table or histogram, a cumulative frequency distribution table or histogram, or a box-and-whisker plot.

Histograms

A histogram is a special type of bar graph that shows the frequency a data item occurs. Histograms often combine data into intervals of equal size. The intervals do not overlap.

ACTIVITY

The histogram shows the amount of money that 50 customers spent in a supermarket.



1. Based on the intervals, what is the greatest amount of money that any customer spent?
2. Which interval represents the greatest number of customers?
3. How many customers spent less than $20?
4. **Writing** Summarize the spending of the 50 customers represented in the histogram.

2 ACTIVITY

The data below shows the number of winning points scored at 15 NCAA Division I Women's Basketball Championship games from 1991 to 2005.

Winning Points Scored				
84	70	73	82	68
71	62	93	68	83
70	60	84	78	70

Number of Winning Points

Winning	Tally	Frequency
59–64		
65–70		
71–76		
77–82		
83–88		
89–94		

5. **a.** Copy the frequency table at the right.
   b. Make a tally mark for each score in the appropriate interval.
   c. After you have tallied all the scores, record the frequency in the third column.
6. Use the intervals and the frequencies to construct a histogram.
7. What interval do most of the scores fall into?
8. **Critical Thinking** How would a histogram with 5-point intervals differ from the one you made with 6-point intervals?

Histograms

A histogram is a bar graph that shows the frequency, or number of times, a data item occurs. Histograms often combine data into intervals of equal size. The intervals do not overlap.

EXAMPLE

The data at the right show the number of hours of battery life for different brands of batteries used in portable CD players. Use the data to make a histogram.

Hours of Battery Life

12	9	10	14	10	11
10	18	21	10	14	22

Step 1 Decide on an interval size.

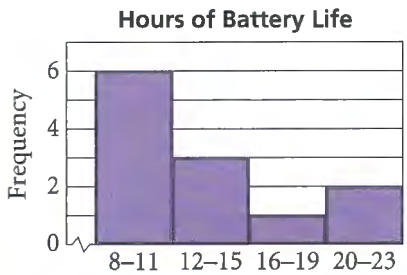
The data start at 9 hours and go to 22 hours. Use equal-sized intervals of 4 hours, beginning with 8 hours. So the first interval will be 8–11.

Step 2 Make a frequency table.

Battery Life

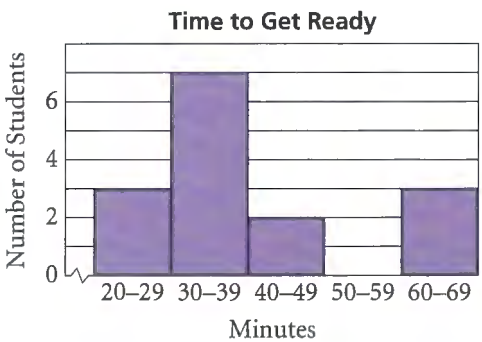
Hours	Tally	Frequency
8–11	𝍸 |	6
12–15	|||	3
16–19	|	1
20–23	||	2

Step 3 Make a histogram.



EXERCISES

1. Students answered a survey question about how long it takes to get ready in the morning. The histogram at the right shows the survey results.



   a. Which interval indicates the answers most students gave?
   b. How many students answered the survey question?
   c. Why might no students have given an answer in the interval 50–59?
   d. **Critical Thinking** With the information you have, could you redraw the histogram with intervals half their current size? Explain why or why not.

2. a. An Internet company surveyed its users. The first 25 people who responded gave the ages shown at the right. What intervals would you use to make a histogram?
   b. Make a frequency table for the data.
   c. Make a histogram.

Age of Internet Users

25, 43, 65, 12, 8, 30, 44, 68, 18, 21, 25, 33, 37, 54, 61, 29, 31, 38, 22, 48, 19, 34, 55, 14, 21

3. a. **Data Collection** Survey your class to find out what day of the month they were born. For example, 12 if a student's birthday is August 12th.
   b. What intervals would you use to make a histogram?
   c. Make a frequency table for the data.
   d. Make a histogram.