9-5 Histograms

CONTENT STANDARDS
6.SP.4, 6.SP.5, 6.SP.5.b, 6.SP.5.c

What You'll Learn

To construct and interpret a histogram

New Vocabulary histogram

Why Learn This?

You can obtain an overall impression of data from a data display such as a histogram. An online shopping site may view patterns of data to determine how much time most people spend shopping at online sites.

A **histogram** is a type of bar graph that shows the frequency of data within given intervals. The height of each bar shows the frequency within that interval. There is no space between the bars of a histogram.

EXAMPLE Interpreting a Histogram

1 Shopping Online A department store survey asked customers the number of minutes in an hour they would typically spend shopping online. The results are in the frequency table.

Time (in Minutes) Spent Shopping Online						
Interval	0–9	10–19	20–29	30–39	40–49	50–59
Frequency	10	12	13	4	9	2

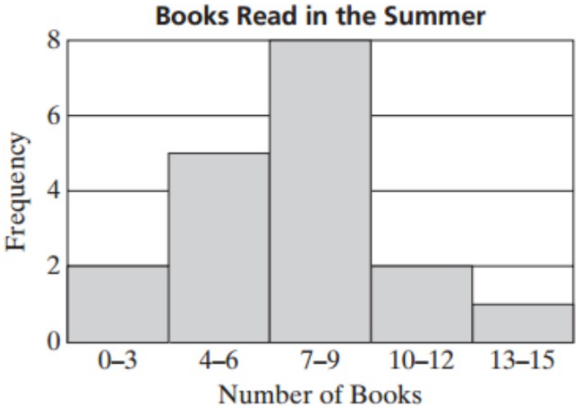
The interval tells how the data are grouped.

The frequency is the number of people whose answers fell within each interval.

Example

1 Interpreting a Histogram The frequency table shows the number of books students read during the summer.

Number of Books Read					
Interval	0–3	4–6	7–9	10–12	13–15
Frequency	2	5	8	2	1



The interval tells how the data are grouped.

There are [5] intervals for this data.

The [frequency] tells the number of students whose answers were in each interval.

Add the frequencies to find the total number of observations of students.

2 + 5 [+ 8 + 2 + 1 = 18]

The number of students who reported that they read fewer than 7 books is [7].

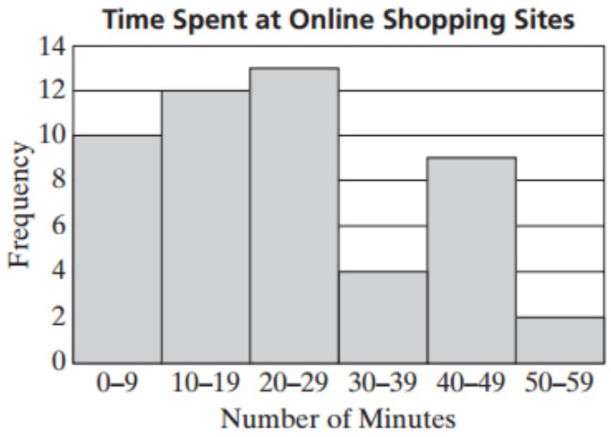
The fewest students reported that they read [13, 14, or 15] books.

Quick Check

1. Interpret the histogram to answer.

a. Which interval had the greatest number of customer responses?

b. Did most customers spend less than 30 minutes or more than 30 minutes on shopping sites?

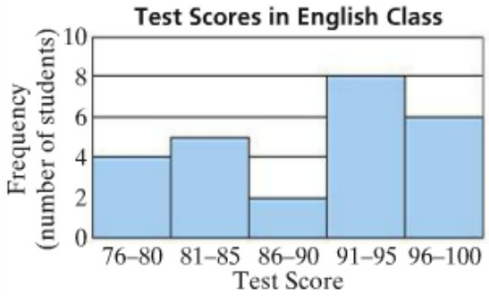


Interval	Frequency
76–80	4
81–85	5
86–90	2
91–95	8
96–100	6

EXAMPLE 2 Constructing a Histogram

The frequency table shows the scores for a test that Mr. Warren gave his English class. Construct a histogram to display the data.

- Label the intervals on the horizontal axis.
- Find the range of the data. Choose an appropriate scale for the vertical axis. The frequencies vary from 2 to 8. Use 0 to 10 for the vertical scale.
- Draw a bar for each interval. The bar heights should correspond to the frequencies, and the bars should have no spaces between them.



Example

❷ **Constructing a Histogram** Charlie asked his friends and relatives the value of the loose change they had in their pockets or purse. The frequency table shows the result.

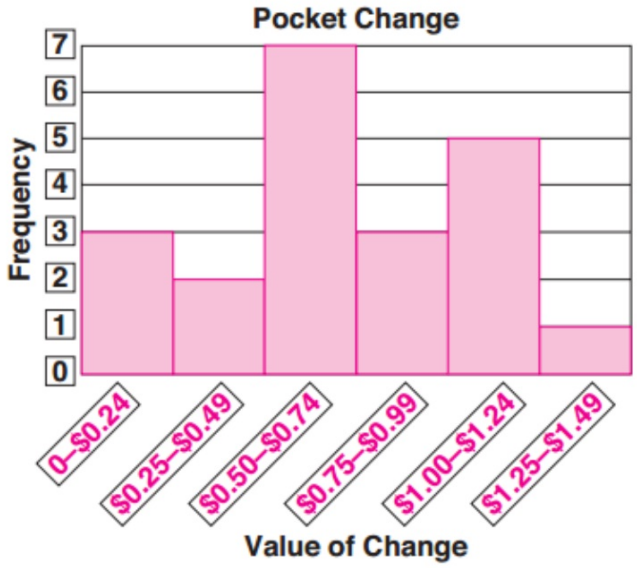
Interval	Frequency
0–$0.24	3
$0.25–$0.49	2
$0.50–$0.74	7
$0.75–$0.99	3
$1.00–$1.24	5
$1.25–$1.49	1

Label the intervals on the x-axis.

Draw a bar for each interval.

The frequencies vary from 1 to 7

Choose a vertical scale from 0 to 7.

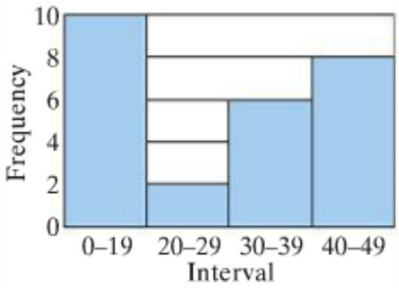


Quick Check

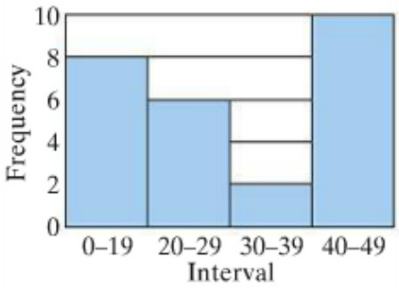
Interval	Frequency
0–19	10
20–29	2
30–39	6
40–49	8

2. Which histogram matches the data in the table?

A.



B.



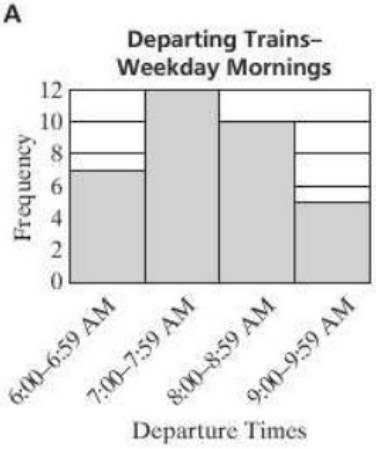
Name _____ Class _____ Date _____

Practice 9-5

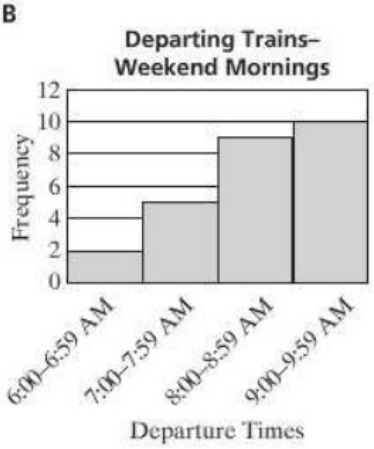
Histograms

The histograms below summarize the number of commuter trains that depart one station on weekday mornings and weekend mornings.

A



B



Use histogram A for Exercises 1–3.

1. What are the intervals in these data sets?

   _____

2. How many observations were made in this data set? _____

3. What do the observations represent?

   _____

Use histogram B for Exercises 4–6.

4. Can the histogram tell you how many trains departed at 6:30 AM? Explain.

   _____

   _____

5. Compare Histograms A and B. Which graph showed more frequent trains between 6 and 10 AM? _____

6. What conclusions can you make? _____

   _____

   _____

7. The frequency table shows the frequency of customers at a snack bar at the train station. Construct a histogram to display the data.

Time (AM)	8:00–8:14	8:15–8:29	8:30–8:44	8:45–8:59
Frequency	20	15	10	15