

# Lesson 12-2 Frequency and Histograms

**Essential Understanding** There are many ways to organize and visually display data. Sometimes it is helpful to organize numerical data into intervals.

The **frequency** of an interval is the number of data values in that interval. A **frequency table** groups a set of data values into intervals and shows the frequency for each interval. Intervals in frequency tables do not overlap, do not have any gaps, and are usually of equal size.

## Problem 1 Making a Frequency Table

**Baseball** The numbers of home runs by the batters in a local home run derby are listed below. What is a frequency table that represents the data?

7 17 14 2 7 9 5 12 3 10 4 12 7 15

Home Run Results

Home Runs	Frequency

A **histogram** is a graph that can display data from a frequency table. A histogram has one bar for each interval. The height of each bar shows the frequency of data in the interval it represents. There are no gaps between bars. The bars are usually of equal width.

## Problem 2 Making a Histogram

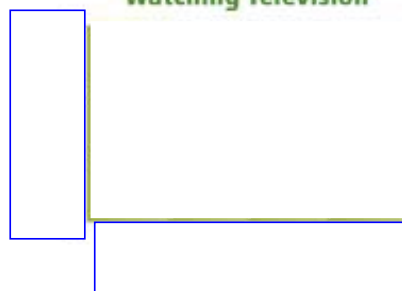
**Television** The data below are the numbers of hours per week a group of students spent watching television. What is a histogram that represents the data?

7 10 1 5 14 22 6 8 0 11 13 3 4 14 5

Watching Television

Hours	Frequency

Watching Television



A **cumulative frequency table** shows the number of data values that lie in or below a given interval. For example, if the cumulative frequency for the interval 70–79 is 20, then there are 20 data values less than or equal to 79.

**Problem 4 Making a Cumulative Frequency Table**

**Text Messaging** The numbers of text messages sent on one day by different students are shown below. What is a cumulative frequency table that represents the data?

17 3 1 30 11 7 1 5 2 39 22 13 2 0 21 1 49 41 27 2 0

**Daily Text Messaging**

Number of Text Messages	Frequency	Cumulative Frequency
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

**Practice Exercises:**

Use the data to make a frequency table.

7. wing spans (cm): 150 126 139 144 125 149 133 140 142 149 150 127 130

9. top speeds (mi/h): 108 90 96 150 120 115 135 126 165 155 130 125 100

**Use the data to make a histogram.**

**10.** costs of items: \$11 \$30 \$22 \$8 \$15 \$28 \$17 \$17 \$1 \$19 \$29 \$21 \$12 \$25

**12.** restaurant waiting times (min): 20 35 15 25 5 10 40 30 10 50 20 60 10 8

**Use the data to make a cumulative frequency table.**

**18.** trail lengths (mi): 4 1 5 2 1 3 7 12 6 3 11 9 2 1 3 4 1 2 5 3 1 1