LESSON 10.4
Notes

GOAL
Make a stem-and-leaf plot

Vocabulary

A **stem-and-leaf plot** is a data display that organizes data based on their digits. Each value is separated into a *stem* (the leading digit(s)) and a *leaf* (the last digit).

The **frequency** of an interval is the number of data values in that interval.

A **frequency table** is used to group data values into equal intervals, with no gaps between intervals and no intervals overlapping.

A **histogram** is a bar graph that displays data from a frequency table. Each bar represents an interval.

Key Concept

Two ways to display and organize data are stem-and-leaf plots and histograms. Stem-and-leaf plots and
histograms organize data by intervals

Common Student Errors

• Confusing a bar graph with a histogram

Tip Stress to students that a histogram is a type of bar graph in which the bars touch and the data represented by the graph are grouped into intervals and show the frequency of each interval. A bar graph is used to represent data that fall into distinct categories.

To help students understand the differences between a bar graph and a histogram, consider the following key questions for each graph.

Bar graph: What is the measurement for each category?

Histogram: What is the frequency of measurements for each interval?

EXAMPLE 1
Make a stem-and-leaf plot

Summer Reading The number of books read by students for a summer reading program are listed below. Make a stem-and-leaf plot of the data.

15, 21, 9, 11, 8, 9, 17, 23, 31, 25, 22, 14, 15, 5 ,19, 22, 32, 35, 10, 12

Solution

STEP 1 Separate the data into Stems and leaves.

Books Read

Steam	Leaves
0	9 8 9 5
1	5 1 7 4 5 9 0 2
2	1 3 5 2 2
3	1 2 5

Key: 1 | 2 = 12 books read

STEP 2 Write the leaves in increasing order.

Books Read

Steam	Leaves
0	5 8 9 9
1	0 1 2 4 5 5 7 9
2	1 2 2 3 5
3	1 2 5

Key: 1 | 2 = 12 books read

Exercises for Example 1

1. **TV Viewing** The hours of TV viewing, on one weekend, for 30 school age children are listed below. Make a stem-and-leaf plot of the data.

   3.6, 2.7, 1.5, 2.8, 5.1, 5.3, 4.6, 2.8, 3.3, 3.4, 3.5, 4.2, 3.7, 5.0, 0.5, 1.8, 2.6, 3.0, 3.2, 0.8, 1.9, 5.1, 4.1, 1.5, 2.5, 4.0, 3.4, 2.9, 4.8, 2.3

2. **Reasoning** In Exercise 1, describe the distribution of the data on the intervals represented by the stems. Are the data clustered together in a noticeable way? *Explain*.

EXAMPLE 2

Make a histogram

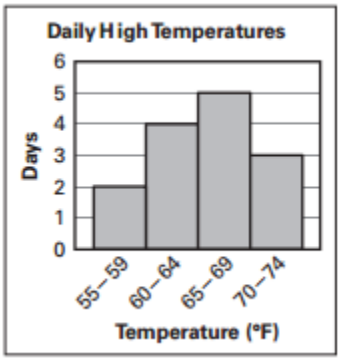
High Temperatures The average high water temperatures (°F) in Lake Erie each day for two weeks are 57, 58, 60, 62, 63, 65, 67, 71, 69, 63, 66, 68, 72, 73. Make a histogram of the data.

Solution

STEP 1 Choose intervals of equal size that cover all of the data values. Organize the data using a frequency table.

Temperature (°F)	Days
55-59	2
60-64	4
65-69	5
70-74	3

STEP 2 Draw the bars of the histogram using the intervals from the frequency table.



Exercise for Example 2

1. **Weights** The weights (in pounds) of a group of preschoolers are listed. Make a histogram of the data.

31, 28, 32, 36, 41, 40, 52, 49, 27, 33, 38, 45, 47, 53, 34, 42, 39, 37, 35, 43