

### 3 Stem-and-Leaf Plots and Histograms

In Lesson 2-4, you created and analyzed data in a stem-and-leaf plot. In a stem-and-leaf plot, the data are ordered from least to greatest and organized by place value. In Looking Ahead Lesson 6, you learned that a histogram is a type of bar graph used to display numerical data. The data are organized into equal intervals.

#### EXAMPLE Stem-and-Leaf Plots and Histograms

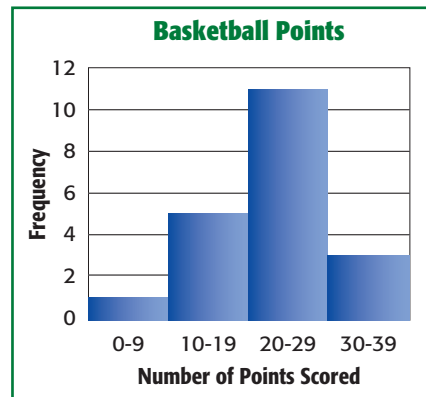
**1** The stem-and-leaf plot shows the number of points scored by a college basketball player. Display the data in a histogram.

The data ranges from 2 to 31. The data can be grouped into intervals of 10.

- STEP 1** Draw and label a horizontal and vertical axis. Include a title.
- STEP 2** Show the intervals on the horizontal axis. Label the vertical axis to show the frequencies.
- STEP 3** For each interval, count the number of data values from the stem-and-leaf plot. Draw a bar with a height of the number of data values in that interval.

Basketball Points	
Stem	Leaf
0	2
1	2 2 3 5 8
2	0 0 1 1 3 4 6 6 6 8 9
3	0 0 1

*1|2 = 12 points*

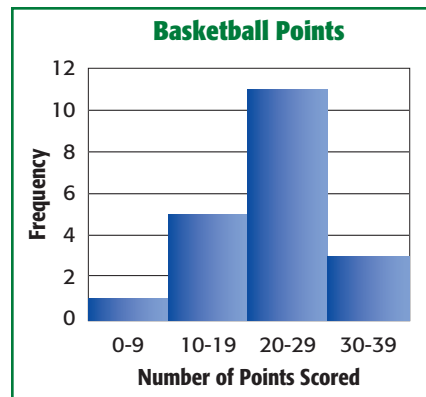


In the stem-and-leaf plot in Example 1, the stems represent the tens place of each data value. The histogram created in Example 1 also has intervals of ten. This allows for the relationship between the stem-and-leaf plot and the histogram to be easily shown. The interval in the histogram with the greatest frequency, 20–29, is also the stem in the stem-and-leaf plot with the greatest number of values.

If you turn a stem-and-leaf plot on its side, you can more easily see the relationship between the stem-and-leaf plot and its corresponding histogram. The number of leaves is equivalent to the bar height for each interval.

Basketball Points	
Stem	Leaf
0	2
1	2 2 3 5 8
2	0 0 1 1 3 4 6 6 6 8 9
3	0 0 1

*1|2 = 12 points*



## Exercises

**DVDs** In Exercises 1–6, use the stem-and-leaf plot at the right that shows the costs of various DVD players at an electronics store.

- Which stem has the greatest number of data values?
- What is the range of the prices?
- How many intervals of ten does the stem-and-leaf plot show?
- Rotate the stem-and-leaf plot  $90^\circ$  counterclockwise. Without drawing a histogram, predict the heights of each interval of the histogram that would display the same data.
- Draw a histogram to represent the data.
- How are the stem-and-leaf plot and histogram similar?

Stem	Leaf
8	2 5 5
9	9 9
10	0 0 2 5 6 8
11	0 0 5 5 5 9 9
12	5 7 7

$11|5 = \$115$

**RIBBON** In Exercises 7–11, use the stem-and-leaf plot at the right that shows the lengths of several pieces of cut ribbon.

- Which data value occurs most often?
- For which interval of ten are there no data values?
- Rotate the stem-and-leaf plot  $90^\circ$  counterclockwise. Without drawing a histogram, predict the heights of each interval of the histogram that would display the same data.
- Draw a histogram to represent the data.
- How are the stem-and-leaf plot and histogram similar?

Stem	Leaf
2	6 6 9
3	
4	6
5	3 6

$2|6 = 26 \text{ in.}$

**HISTORY** In Exercises 12–17, refer to the stem-and-leaf plot at the right.

- How many people signed the Declaration of Independence?
- What is the range of the ages of the signers?
- Based on the data, can you conclude that the majority of the signers were 30–49 years old? Explain your reasoning.
- Rotate the stem-and-leaf plot  $90^\circ$  counterclockwise. Without drawing a histogram, predict the heights of each interval of the histogram that would display the same data.
- Draw a histogram to represent the data.
- Compare the stem-and-leaf plot and histogram.

Stem	Leaf
2	6 6 9
3	0 1 3 3 3 4 4 5 5 5 5 7 7 8 8 9 9
4	0 1 1 1 2 2 2 4 5 5 5 5 6 6 6 6 7 8 9
5	0 0 0 0 2 2 3 3 5 7
6	0 0 2 3 5 6
7	0

$3|1 = 31 \text{ years}$