Name_____ Date _____
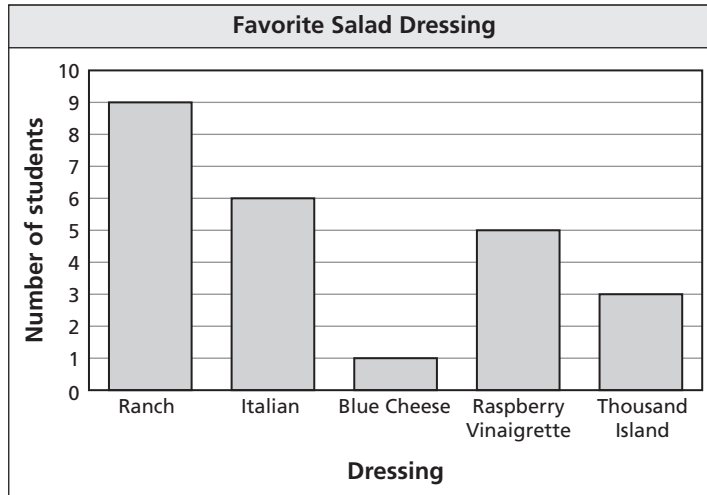
Fair Game Review

The bar graph shows the favorite types of salad dressings of the students in a class.

Favorite Salad Dressing

1. What salad dressing was chosen the most?

2. How many students said Raspberry Vinaigrette or Thousand Island is their favorite salad dressing?

3. How many students did *not* choose Italian as their favorite salad dressing?

4. How many students are in the class?

Name _____ Date _____

**The circle graph shows the results from a class survey on favorite juice.
There are 30 students in the class.**
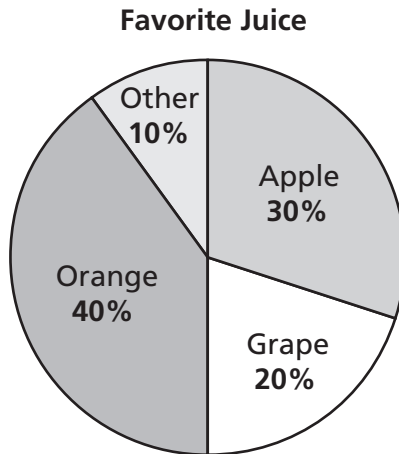
Favorite Juice

5. How many students said their favorite juice is apple?

6. How many students said their favorite juice is orange?

7. How many students said their favorite juice is grape?

Name_____ Date _____

10.1 Stem-and-Leaf Plots
For use with Activity 10.1

Essential Question   How can you place values to represent data graphically?

1   ACTIVITY: Making a Data Display

Work with a partner. The list below gives the ages of these women when they became first ladies of the United States.

THE WHITE HOUSE
WASHINGTON

Frances Cleveland – 21   Mamie Eisenhower – 56
Caroline Harrison – 56   Jacqueline Kennedy – 31
Ida McKinley – 49   Claudia Johnson – 50
Edith Roosevelt – 40   Patricia Nixon – 56
Helen Taft – 48   Elizabeth Ford – 56
Ellen Wilson – 52   Rosalynn Carter – 49
Florence Harding – 60   Nancy Reagan – 59
Grace Coolidge – 44   Barbara Bush – 63
Lou Hoover – 54   Hillary Clinton – 45
Eleanor Roosevelt – 48   Laura Bush – 54
Elizabeth Truman – 60   Michelle Obama – 45

a. The incomplete data display shows the ages of the first ladies in the left column of the list above.

Ages of First Ladies

2	1
3	
4	0 4 8 8 9
5	2 4 6
6	0 0

What do the numbers to the left of the line represent? What do the numbers to the right of the line represent?

10.1 **Stem-and-Leaf Plots** (continued)

b. This data display is called a *stem-and-leaf plot*. What numbers do you think represent the *stems*? *leaves*? Explain your reasoning.

c. Complete the stem-and-leaf plot on the previous page using the remaining ages in the right column. Order the numbers to the right of the line in numerical order.

d. Write a question about the ages of first ladies that would be easier to answer using a stem-and-leaf plot than a dot plot.

2 **ACTIVITY:** Making a Back-to-Back Stem-and-Leaf Plot

Work with a partner. The table below shows the ages of presidents of the United States from 1885 to 2009 on their first inauguration day.

Ages of Presidents										
47	55	54	42	51	56	55	51	54	51	60
62	43	55	56	61	52	69	64	46	54	47

a. On your stem-and-leaf plot from Activity 1(c), draw a vertical line to the left of the display. Represent the ages of the presidents by including numbers to the left of the line.

b. Find the median ages of both the first ladies and presidents of the United States.

c. Compare the distribution of each data set.

Name_____ Date_____

3 **ACTIVITY:** Conducting an Experiment

Work with a partner. Use two number cubes to conduct the following experiment.

- Toss the cubes and find the product of the resulting numbers.

- Repeat this process 30 times. Record your results.

Toss	1	2	3	4	5	6	7	8	9	10
Product										
Toss	11	12	13	14	15	16	17	18	19	20
Product										
Toss	21	22	23	24	25	26	27	28	29	30
Product										

    a. Use a stem-and-leaf plot to organize your results.

    b. Describe the distribution of the data.

What Is Your Answer?

    4. **IN YOUR OWN WORDS** How can you use place values to represent data graphically?

    5. How can you display data in a stem-and-leaf plot whose values range from 82 through 129?

Name _____ Date _____

Make a stem-and-leaf plot of the data.

1.

Class Sizes			
12	10	21	28
9	16	19	16
25	32	14	21

2.

Minutes Spent on Homework			
75	82	91	68
92	86	79	76
75	81	88	60

3. The number of text messages from eight phones are 8, 11, 14, 22, 5, 15, 7, and 20. Make a stem-and-leaf plot of the data. Describe the distribution of the data.

4. The number of minutes seven members spent at band practice are 57, 49, 55, 62, 78, 72, and 75. Make a stem-and-leaf plot of the data. Describe the distribution of the data.

5. The stem-and-leaf plot shows the numbers of miles students travel to get to school.

   a. How many students travel more than 15 miles?

   b. Find the mean, median, mode, range, and interquartile range of the data.

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

Key: 1 | 4 = 14 miles

10.2 Histograms
For use with Activity 10.2

Essential Question How can you use intervals, tables, and graphs to help organize data?

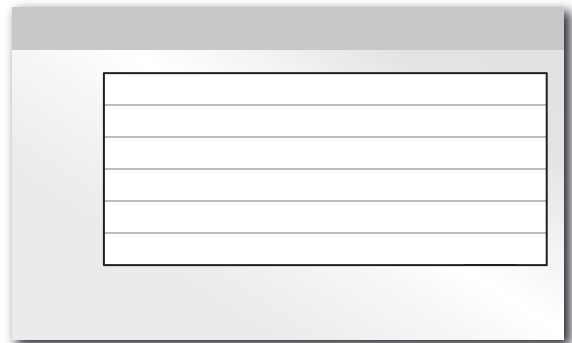**1 ACTIVITY:** Conducting an Experiment

Work with a partner.

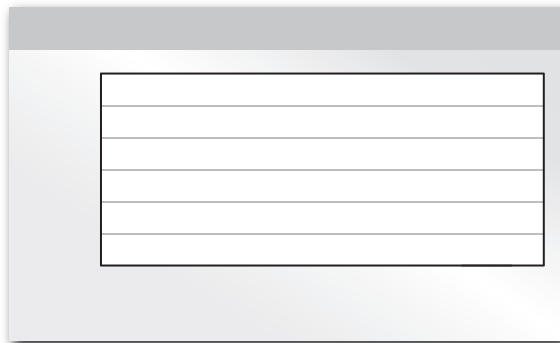a. Roll a number cube 20 times. Record your results in a tally chart.

	1	2	3	4	5	6
Tally						

Key: | = 1   ⧚ = 5

b. Make a bar graph of the totals.

c. Go to the board and enter your totals in the class tally chart.

d. Make a second bar graph showing the class totals. Compare and contrast the two bar graphs.
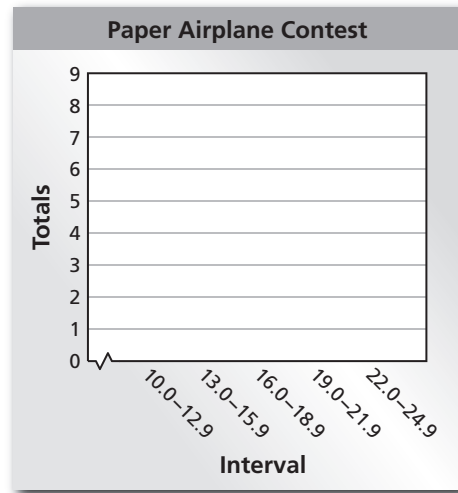
10.2 **Histograms** (continued)

2 **ACTIVITY:** Using Intervals to Organize Data

Work with a partner. You are judging a paper airplane contest. A contestant flies a paper airplane 20 times. You record the following distances:

20.5 ft, 24.5 ft, 18.5 ft, 19.5 ft, 21.0 ft, 14.0 ft, 12.5 ft, 20.5 ft, 17.5 ft, 24.5 ft, 19.5 ft, 17.0 ft, 18.5 ft, 12.0 ft, 21.5 ft, 23.0 ft, 13.5 ft, 19.0 ft, 22.5 ft, 19.0 ft

   a. Complete the tally chart and the bar graph of the distances.

Interval	Tally	Total
10.0–12.9		
13.0–15.9		
16.0–18.9		
19.0–21.9		
22.0–24.9		

Paper Airplane Contest

(Bar graph with y-axis labeled "Totals" from 0 to 9, and x-axis labeled "Interval" with categories: 10.0–12.9, 13.0–15.9, 16.0–18.9, 19.0–21.9, 22.0–24.9)

   b. Make a different tally chart and bar graph of the distances. Use the following intervals:

       10.0–11.9, 12.0–13.9, 14.0–15.9, 16.0–17.9, 18.0–19.9, 20.0–21.9, 22.0–23.9, 24.0–25.9

   c. Which graph do you think represents the distances better? Explain.

10.2 **Histograms** (continued)

3 **ACTIVITY:** Developing an Experiment

Work with a partner.

a. Make the airplane shown in your textbook from a single sheet of $8\frac{1}{2}$-by-11 inch paper. Then design and make your own paper airplane.

b. **PRECISION** Fly each airplane 20 times. Keep track of the distance flown each time.

Flight	1	2	3	4	5	6	7	8	9	10
Plane A										
Plane B										
Flight	11	12	13	14	15	16	17	18	19	20
Plane A										
Plane B										

c. **MODELING** Organize the results of the flights using frequency tables and graphs. Which airplane flies farther? Explain your reasoning.

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you use intervals, tables, and graphs to organize data?

5. What intervals could you use in a graph that displays data whose values range from 40 through 59?

Name _____ Date _____

10.2 Practice
For use after Lesson 10.2

Display the data in a histogram.

1.

Birthdays	
Months	**Frequency**
Jan–Mar	15
Apr–June	9
Jul–Sept	6
Oct–Dec	12

2.

Goals Scored	
Goals	**Frequency**
0–2	6
3–5	8
6–8	2
9–11	1

3.

Height Jumped	
Inches	**Frequency**
0–11	7
12–23	10
24–35	5
36–47	2

4.

Money Spent	
Dollars	**Frequency**
0–19	3
20–39	8
40–59	8
60–79	15

5. The histogram shows the times students ran the mile in gym class.

   a. Which interval contains the fewest data values?

   b. How many students are in the class?

   c. What percent of students ran the mile in 12 minutes or less?

Running a Mile

Name_____ Date _____
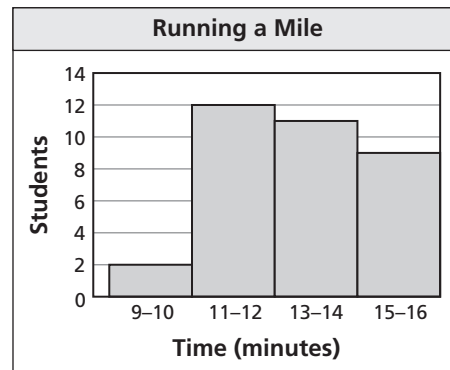
Essential Question How can you describe the shape of the distribution
of a data set?

1 **ACTIVITY:** Describing the Shape of a Distribution

**Work with a partner. The lists at the right show the last
four digits of a set of phone numbers in a phone book.**

  a. Create a list that represents the last digit of each phone
     number shown. Make a dot plot of the data.

  b. In your own words, how would you describe the shape
     of the distribution? What single word do you think you
     can use to identify this type of distribution? Explain
     your reasoning.

-7253	-8678
-7290	-2063
-7200	-2911
-1192	-2103
-1142	-4328
	-7826
-3500	-7957
-2531	-7246
-2079	-2119
-5897	-7845
-5341	-1109
-1392	-9154
-5406	
-7875	
-7335	
-0494	
-9018	
-2184	
-2367	

2 **ACTIVITY:** Describing the Shape of a Distribution

**Work with a partner. The lists at the right show the first
three digits of a set of phone numbers in a phone book.**

  a. Create a list that shows the first digit of each phone
     number shown. Make a dot plot of the data.

538-	664-
438-	664-
664-	538-
761-	855-
868-	664-
	538-
735-	654-
694-	654-
599-	725-
725-	538-
556-	799-
555-	764-
456-	
736-	
664-	
576-	
664-	
664-	
725-	

10.3 **Shapes of Distributions** (continued)

b. In your own words, how would you describe the shape of the distribution? What single word do you think you can use to identify this type of distribution? Explain your reasoning.

c. In your dot plot, draw a vertical line through the middle of the data set. What do you notice?

d. Repeat part (c) for the dot plot you constructed in Activity 1. What do you notice? Compare the distributions from Activities 1 and 2.

---

3 **ACTIVITY:** Describing the Shape of a Distribution

Work with a partner. The table shows the ages of cellular phones owned by a group of students.

a. Make a dot plot of the data.

Ages of Cellular Phones (years)				
0	1	0	6	4
2	3	5	1	1
0	1	2	3	1
0	0	1	1	1
7	1	4	2	2
0	2	0	1	2

b. In your own words, how would you describe the shape of the distribution? Compare it to the distributions in Activities 1 and 2.

10.3 **Shapes of Distributions** (continued)

    c. Why do you think this type of distribution is called a *skewed distribution*?

4 **ACTIVITY:** Finding Measures of Center

Work with a partner.

    a. Find the mean and median of the data sets in Activities 1−3.

    b. What do you notice about the means and medians of the data sets and the shapes of the distributions? Explain.

    c. Which measure of center do you think best describes the data set in Activity 2? in Activity 3? Explain your reasoning.

    d. Using your answers to part (c), decide which measure of variation you think best describes the data set in Activity 2. Which measure of variation do you think best describes the data set in Activity 3? Explain your reasoning.

What Is Your Answer?
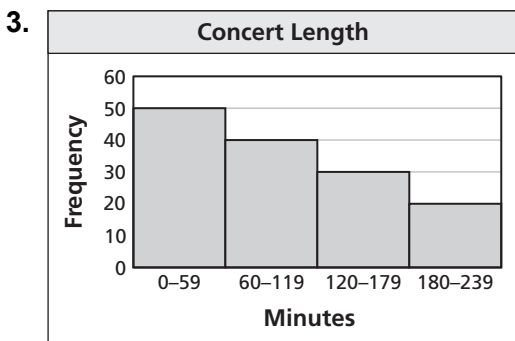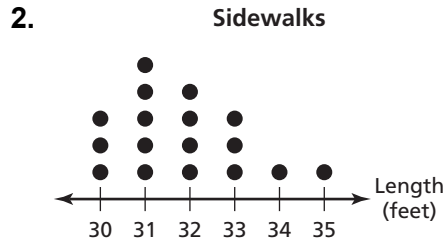
    5. **IN YOUR OWN WORDS** How can you describe the shape of the distribution of a data set?

    6. Name two other ways you can describe the distribution of a data set.

Name _____ Date _____

Describe the shape of each distribution.

1. Gift Bags

Number of bags

13   14   15   16   17

2. Sidewalks

Length (feet)

30   31   32   33   34   35

3. Concert Length

Frequency

0–59   60–119   120–179   180–239

Minutes

4. Heights of Trees

Frequency

0–2   3–5   6–8   9–11   12–14   15–17

Height (feet)
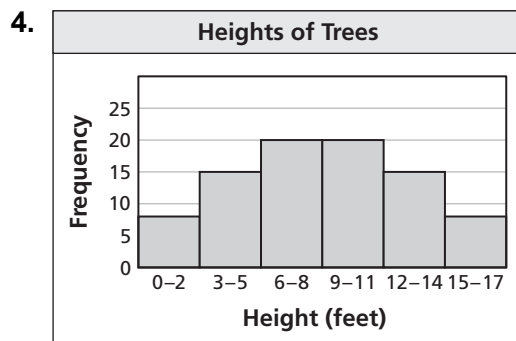
5. The frequency table shows the number of months each person has been a member of a golf league. Display the data in a histogram. Describe the shape of the distribution.

Months as a Member	0–4	5–9	10–14	15–19	20–24	25–29	30–34
Frequency	4	6	8	10	12	12	8

Name_____ Date _____

Extension 10.3 **Practice**
For use after Extension 10.3

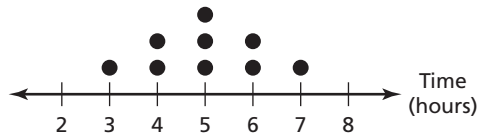**Choose the most appropriate measures to describe the center and the variation. Find the measures you chose.**
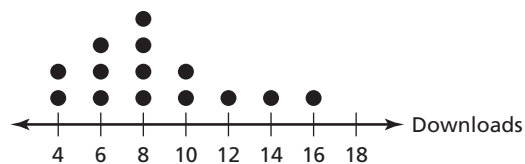
1. **Prices of Shirts**
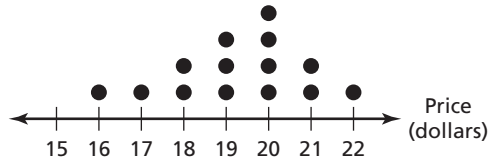
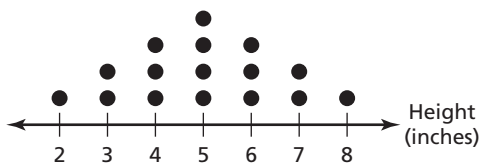**2.** **Weekly Triathlon Training Times**

3. **Number of Game Downloads**

4. **Plant Heights**

**Extension
10.3**   **Practice** (continued)

5. The frequency table shows the number of pages of the science reports
written by each student in the sixth-grade class.

Number of pages	Frequency
2–4	5
5–7	16
8–10	12
11–13	7
14–16	4
17–19	0

a. Display the data in a histogram.

b. What are the most appropriate measures to describe the center
and the variation?

Name_____ Date _____

Essential Question How can you use quartiles to represent data graphically?

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1 ACTIVITY: Drawing a Box-and-Whisker Plot

Work with a partner.

The numbers of pairs of footwear owned by each student in a sixth grade class are shown.

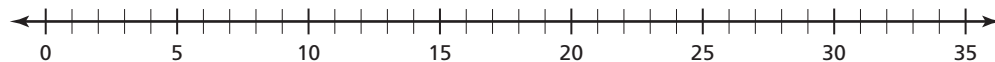**A box-and-whisker plot uses a number line to represent the data visually.**

Numbers of Pairs of Footwear			
2	5	12	3
7	2	4	6
14	10	6	28
5	3	2	4
9	25	4	10
8	15	5	8

a. Order the data set from least to greatest. Then write the data on a strip of grid paper with 24 boxes.

b. Use the strip of grid paper to find the median, the first quartile, and the third quartile. Identify the least value and the greatest value in the data set.

c. Graph the five numbers that you found in part (b) on the number line below.

10.4 **Box-and-Whisker Plots** (continued)

d. The data display shown below is called a *box-and-whisker plot*. Fill in the missing labels and numbers. Explain how the box-and-whisker plot uses quartiles to represent the data.
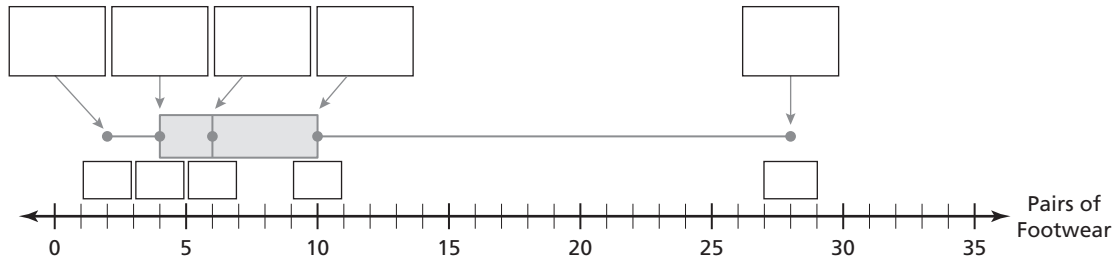
e. Using only the box-and-whisker plot, which measure(s) of center can you find for the data set? Which measure(s) of variation can you find for the data set? Explain your reasoning.

f. Why do you think this type of data display is called a box-and-whisker plot? Explain.

**2** **ACTIVITY:** Conducting a Survey

Have your class conduct a survey. Each student will write on the chalkboard the number of pairs of footwear that he or she owns.

Now, work with a partner to draw a box-and-whisker plot of the data.

10.4 **Box-and-Whisker Plots** (continued)

3 **ACTIVITY:** Reading a Box-and-Whisker Plot

Work with a partner. The box-and-whisker plots show the test score distributions of two sixth grade achievement tests. The same group of students took both tests. The students took one test in the fall and the other in the spring.
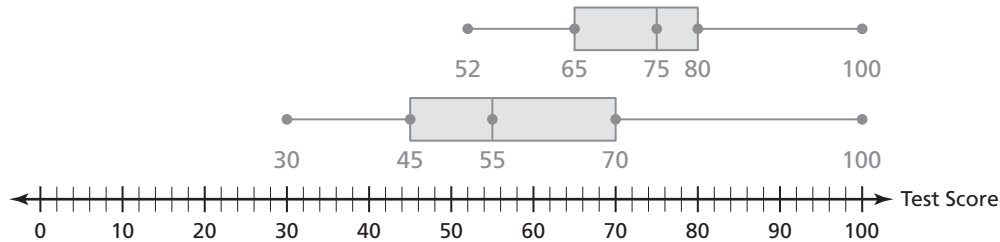
a. Compare and contrast the test results.

b. Decide which box-and-whisker plot represents the results of which test. How did you make your decision?

What Is Your Answer?

4. **IN YOUR OWN WORDS** How can you use quartiles to represent data graphically?

5. Describe who might be interested in test score distributions like those shown in Activity 3. Explain why it is important for such people to know test score distributions.

10.4 Practice

For use after Lesson 10.4

Make a box-and-whisker plot for the data.

1. Test scores: 63, 57, 52, 62, 60, 59, 55, 62, 61, 56

2. Pairs of sunglasses: 1, 3, 1, 2, 4, 5, 3, 6, 7

3. Miles: 18, 12, 25, 22, 15, 30, 28, 21, 27, 22, 16, 23

4. Numbers of photos: 32, 28, 36, 38, 40, 26, 29, 37

5. The numbers of times you woke up in the middle of the night over the past week are 3, 0, 2, 1, 3, 4, and 1. Make a box-and-whisker plot for the data.