Investigation 1 Additional Practice
1. a. The mode is 6. While the data set is a collection of numbers, there is no well-defined notion of the center for this distribution. So the use of mode as a typical number is completely justified.
   b. The dot plot shows 24 students selected numbers, so there are 24 + 2 = 26 students in class.
2. a. 21 b. 5 to 10 c. 8 d. 8
3. a. (Figure 1 and 2) b. 29; This is found by adding up frequencies (found by finding the heights of the bars in the bar graph).
   c. 6 is the median, and the data are bimodal (4 and 6). One way to characterize the typical street length is as 4 or 6 letters in length.
4. Answers will vary.
5. Answers will vary, but because there is an odd number of values, at least one value (the median) must be located at 12.
6. Answers will vary.
7. Answers will vary. The median occurs between 12 and 13, so 7 values need to be 12 or less (down to 7) and 7 values need to be 14 or greater (up to 17).
8. a. (Figure 3 on page 32, top) b. 27 c. blue (i.e., the mode)
9. a. 6, 7, 8, and 9 b. 26; found by counting the data points c. 4 to 12 d. The median must lie between the two middle data points, which are both 8.
   e. The distribution would probably not look exactly the same. The measures of center might be very close, but the data points themselves would likely vary.
12. a. 13 b. 6
13. a. 23 b. 2, 20
14. 75 80 85 90 95 100

Skill: Dot Plots
1. a student 2. 3 students
3. 13 students 4. 80 and 85, 75 and 90
5. time spent on homework last night 6. 24 students
7. 9 students 8. 15 to 40 minutes
9a. 4 to 74 pounds 9b. 12 dogs
Investigation 2 Additional Practice

1. $2.37; (3 \times 0.79)$
2. a. 54
   b. i. 8  ii. 7.66  iii. 7  iv. Answers will vary.
   c. i. 6.66
      ii. Students' answers will vary, but should provide 9 whole numbers in the range of 2 to 12 that total 60.
3. a. 30  b. 7  c. 7
   d. Possible answer: The median because half the answers are above and half are below 7.
4. a. $25 \times 16 = 400$
   b. $300 \times 16 = 4,800$
5. a. 25
   b. 1.92
   c. 1
   d. 38
   e. 37
6. a. Possible answer: Figure 1
   b. The Cycle Shoppe: $140
      Biker's Haven: $143
   c. The Cycle Shoppe: $135
      Biker's Haven: $145
   d. Possible answer: The Cycle Shoppe could use either, since the median and mean are both between the middle two values. Biker's Haven I would say the mean because the bikes that are less expensive are closest to the low end, not the middle.

7. A
8. J
9. a. 10  b. 11  c. 10
10. true, true, false

Skill: Mean, Median, and Mode

1. 10,470 feet
2. 9,705 feet
3. no mode
4. 23 students
5. at least 12 students; up to 11 students
6. mean: 306, median: 300, mode: 200
7. Yes, 750
8. raise
9. Possible answer: Because the outlier will make the mean greater than most of the data, the median or mode would be better choices.
Investigation 3 Additional Practice

1. a. $4.85
   b. $13.10
   c. They will each receive more because Tucker’s amount is greater than the mean.

2. Other members probably brought in less money than Tucker, since the average of their ticket sales was only $9.69.

3. a.

 b. Kiaya: median = 4.9, IQR = 0.15
    Kendrick: median = 4.8, IQR = 0.45

 c. Kiaya: mean = 4.85, MAD = 0.1375
    Kendrick: mean = 4.75, MAD = 0.3125

d. Kiaya is more likely to jump 4.8 meters. Her mean and median distances are both greater than or equal to 4.8 meters, and her IQR and MAD show that her distances are more consistent.

4. a. Ben’s mean = 2.8
    Bob’s mean = 2.7
    b. Ben’s MAD = 1.24
       Bob’s MAD = 1.3

c. Because Bob’s MAD is greater, his data vary more from the mean.

 d. i. 

   ii. Mean = 4.1, MAD = 0.74
   iii. Sample answer: Ben and Bob have similar MADs, and Brian’s is much less. So, Ben and Bob’s data have similar variation, and Ben’s has less variation.

   iv. 

5. Town A: IQR = 1, MAD = 1.045
    Town B: IQR = 3, MAD = 1.755
    Town C: IQR = 4, MAD = 1.782

6. Town A has the least variation. Town C has the most variation.

7. Town C has the greatest spread. Town A has the least spread.

8. a.

   b. Player A: Median = 5, IQR = 2
      Player B: Median = 2, IQR = 2
      Player C: Median = 3, IQR = 1

      Sample Statement: Player A scores the most points on average, but Player C is the most consistent. Player C is the most consistent but generally scores fewer points than Player A.

   c. Player A: Mean = 4.7, MAD = 1.66
      Player B: Mean = 1.7, MAD = 0.99
      Player C: Mean = 3.4, MAD = 0.88

      Sample Statement: Player A generally scores the most points but is the least consistent. Player C is the most consistent but generally scores fewer points than Player A.

9. The MAD of Ling’s data set is 1.6. Based on the MAD of the data sets, Sue’s distribution has the least variation from the mean.

10. a. 1.5   b. 2   c. Ingrid’s

11. a. 1.1; 2.4   b. Ahmed’s
Investigation 4 Additional Practice

1. a. [Diagram: Length of Pete's Passes (yd)]

b. The right-hand whisker is much longer. The bottom 25% of the values are within a small range, from 4 to 9.25. The top 25% of the values are within a large range, from 19 to 51. There are several large values that cause the right whisker to be very long.

c. Half of the passes were longer than 13.5 yards and half were shorter than 13.5 yards.

d. About 16.23 yards; the mean is greater than the median. The distribution is skewed to the right because some numbers are significantly greater than the median.

2. a. [Bar graph: Number of Passes vs. Length of Pete's Passes]

b. 14; Look at the height of the second bar.

c. 3; Add the heights of all of the bars to the right of 30.

d. The median falls in the second bar, which is the tallest. It is possible because the bars to the right are much shorter than the bar to the left.

3. a. The histogram is skewed to the right with more bars to the right of the median than to the left. The box-and-whisker plot is also skewed right with the long whisker to the right.

b. The first two bars on the left are tall and correspond to the short whisker.

c. Since the bars to the right are short, there are not many data values in each interval, so the right-hand whisker is long, spread out over several bars.

d. No, you cannot find the mean using either the histogram or the box-and-whisker plot because they do not show individual data values.

e. You cannot find the number of data values by looking at a box-and-whisker plot. You can add the heights of each bar on a histogram to find the total number of data values.

4. [Box plots: Mrs. Booth's Class vs. Mr. Keeler's Class]

Mrs. Booth's class did better because the quartile values are all at least as great as the quartile values for Mr. Keeler's class.

5. a. [Box plots: Girls vs. Boys]
b. The boys did a little better. Their median, third quartile, and maximum values were greater than those for the girls.
c. The data for the girls include outliers. The IQR is 8.5, and 1.5 times the IQR is 12.75. Adding 12.75 to the third quartile value gives 33.75, so the data value of 35 is an outlier. The data for the boys do not include outliers.
d. Sample answer: The presence of an outlier in the girls' data set does not change my answer to question (b), because there is only 1 outlier.

6. a. Sample answers: Title for both “Time Taken to Complete the Puzzle (min)”
   Graph A vertical axis “Number of Minutes” and horizontal axis “Friends.” For Graph B, horizontal axis is “Number of Minutes” and vertical axis is “Number of People.”
b. i. Person B did the puzzle in the shortest time, 6 minutes. Person G took the longest time, 20 minutes.
   ii. Sample answer: I chose Graph A because it shows times for individual people.

c. Graph B shows trends, with 5–10 minutes being the tallest, and therefore, the most typical.
d. Yes, because Graph A tells each person’s time.
e. No, because Graph B does not show the individual times.

7. a. 12        b. 8

8. The median temperature was 26°C. The box plot cannot be used to find the mean temperature.

9. a. 13        b. 10 and 15        c. 10

Skill: Quartiles, Interquartiles, and Ranges

1. \( Q_1 = 37.5, Q_2 = 50, Q_3 = 65 \),
   IQR = 27.5, Range = 65
2. \( Q_1 = 20, Q_2 = 25, Q_3 = 30 \),
   IQR = 10, Range = 25
3. \( Q_1 = 67.5, Q_2 = 80, Q_3 = 87.5 \),
   IQR = 20, Range = 45
4. \( Q_1 = 60, Q_2 = 72.5, Q_3 = 85 \),
   IQR = 25, Range = 50