Pg. 394 #1 – 11 odd, 13, 16, 17, 18, 22, 28
<u>AND</u> Pg. 400-401 #2, 3, 5, 7, 13, 14, 17

1. A statistical question is one for which you don't expect to get a single answer. Instead, you expect a variety of answers, and you are interested in the distribution and tendency of those answers. *Sample question:* How old are the teachers in middle school?

3. yes; There are many different answers.

5. *Sample answer:* 2 pets; no

7. 100 senators; yes

9. not statistical; There is only one answer.

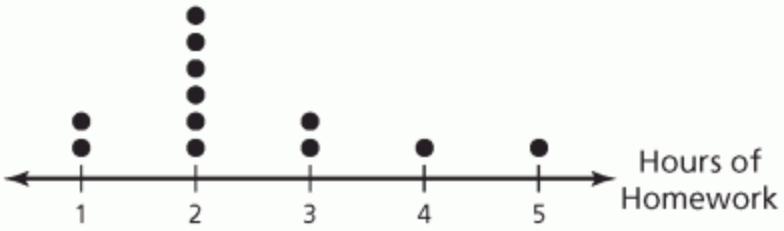
11. statistical; There are many different answers.

13. 

Most of the registrations are in a cluster from 21 to 26. The peak is 25. There is a gap between 16 and 21.

16. **a.** yes; It is a statistical question because you would anticipate variability in the hours spent on homework each night by students.

b.



Most of the hours cluster around 2. The peak is 2. There is no gap.

c. Most students spend about 2 hours on homework during a school night.

17. **a.** 21 earthworms

b. *Sample answer:* Use a centimeter ruler. The units are centimeters.

c. *Sample answer:* "What is the length of an earthworm?"; The lengths are spread out pretty evenly from 15 centimeters to 28 centimeters.

18. **a.** 18 players

b. *Sample answer:* Use a tape measure. The units are inches.

c. *Sample answer:* "What are the heights of players on an NBA championship team?"; The heights are spread out, but most of the heights (in inches) are in the mid-to-low 80s.

22. *Sample answer:* 45 mi/h; Most of the data cluster around 45 and 45 miles per hour is a common speed limit.

28. yes

2. No; Dividing the sum of the data by the number of data values to find the mean does not necessarily result in one of the data values.

3. yes; Because of the variability of the answers to a statistical question, the mean gives an average of the answers. That way, you can use only one value, the mean, to answer the statistical question.

5. 1 movie seen this week; Find the total number of movies and divide by the number of people.

7. 3 brothers and sisters

13. *Sample answer:*
20, 21, 21, 21, 21, 22
20, 20.5, 20.5, 21.5, 21.5, 22

14. **a.** The 288 minutes used in September is much less than the other values, so it is an outlier.

b. With outlier: 488.4
Without outlier: 538.5
The outlier caused the mean to be about
50 minutes less.

c. *Sample answer:* School could have caused you to spend less time talking on your cell phone.

17. See *Taking Math Deeper.*

Pg. 407-408 #3, 4, 7, 9, 11, 13, 21, 23, 29, 37

3. outlier; The other three are measures of center.

4. The number 8 must be in the data set at least twice, because the mode is the data value that occurs most often.

7. median: 7; mode: 3

9. median: 92.5; mode: 94

11. median: 17; mode: 12

13. The data were not ordered from least to greatest;
The median is 55.
49, 50, 51, 55, 58, 59, 63

21.

With Outlier	*Without Outlier*
mean: 48.5	mean: 53
median: 53	median: 54
mode: none	mode: none

The outlier reduces the median slightly, but reduces the mean more. There is no mode with or without the outlier.

23. mean: 7.61; median: 7.42; no mode

29. See *Taking Math Deeper.*

37. D

Pg. 416 #1, 4-10, 11, 13, 18, 19

1. A measure of center represents the center of a data set, but a measure of variation describes the distribution of a data set.

4. median = 7, median of lower half = 5.5, median of upper half = 9; The data are close together.

5. median = 81.5; median of lower half = 67; median of upper half = 92; The data are spread out.

6. 12

7. 23

8. 57

9. 7.3

10. The data were not ordered from least to greatest; 35, 38, 41, 44, 48, 49, 51; The range is 16.

11. median = 37; $Q_1 = 33.5$; $Q_3 = 40.5$; IQR = 7

13. median = 133.5; $Q_1 = 128$; $Q_3 = 139$; IQR = 11

18. *Sample answer:* An outlier increases the range of a data set because there is a wider spread between the greatest and least values.

19. **a.** range = 172 points; IQR = 42 points

    b. The outlier is 193 points; range = 101; IQR = 34; range

Pg. 438-439 #5-11 odd, 10, 12-15 AND
Pg. 445-446 #1, 5, 7, 9, 10, 14, 15, 22

5. Hours Online

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

Key: 2 | 1 = 21 hours

7. Points Scored

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

Key: 3 | 8 = 38 points

9. Minutes in Line

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

Key: 4 | 0 = 4.0 minutes

10. Stems that fall in the range should still be shown even if there are no leaves for that stem.

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

Key: 4 | 2 = 42

11. **Weights**

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

Key: 2 | 4 = 24 pounds

Most of the weights are in the middle.

12. 6 players

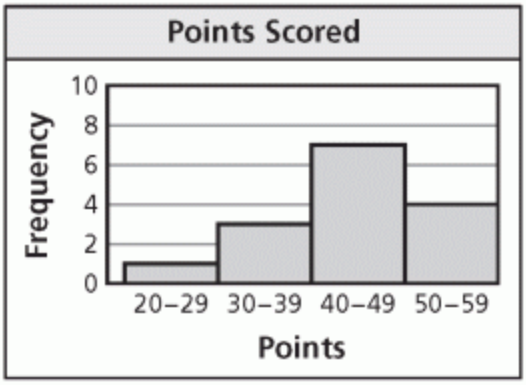
13. mean: 56.6; median: 53; modes: 41, 43, 63;
range: 56; IQR = 20

14. Most of the data are in the 40s, 50s, and 60s.

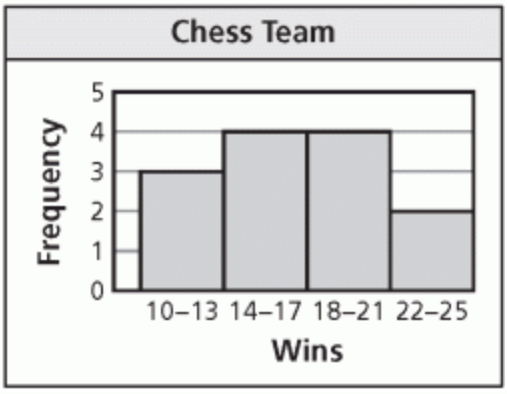
1. The *Test Scores* graph is a histogram because the number of students (frequency) achieving the test scores are shown in intervals of the same size (20).

5. *Sample answer:*

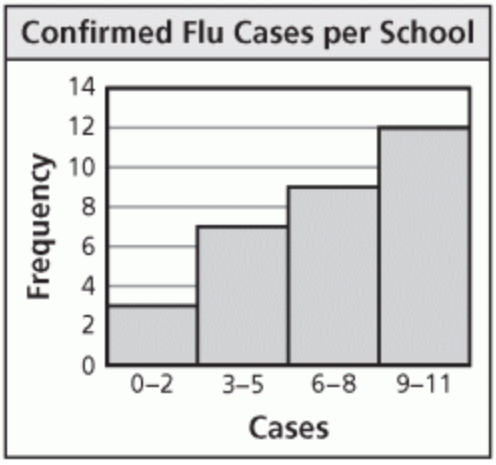
Interval	Tally	Total
20–29	I	1
30–39	III	3
40–49	𝍸 II	7
50–59	IIII	4



7.



9. There should not be space between the bars of the histogram.



10. **a.** 4–5

b. 20 students

c. 85%

d. no; You only know what interval each of the data values falls into, not the specific data values.

14. stem-and-leaf plot; You need to know the specific data values, the intervals in the histogram do not give enough information.

15. **a.** yes; The stem-and-leaf plot shows that 10 pounds is a data value.

b. no; Both displays show that 11 residents produced between 20 and 29 pounds of garbage.

22. 51.2

Pg. 454-455 #1, 2, 3, 5, 9, 10, 13

1. The shape of a skewed distribution will have a tail on one side. The shape of a symmetric distribution is when the data on the left are a mirror image of the data on the right.

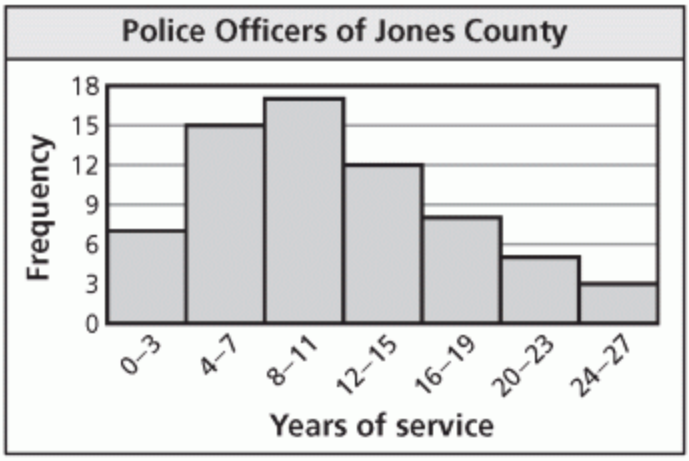
2. to the right; on the left

3. 

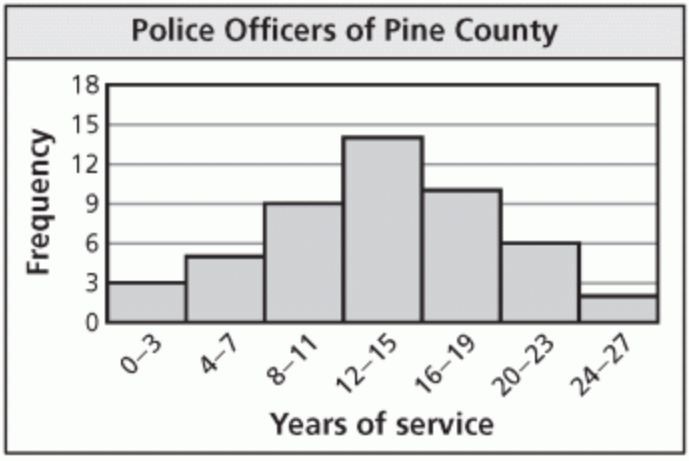
skewed

5. skewed left

9.



skewed right

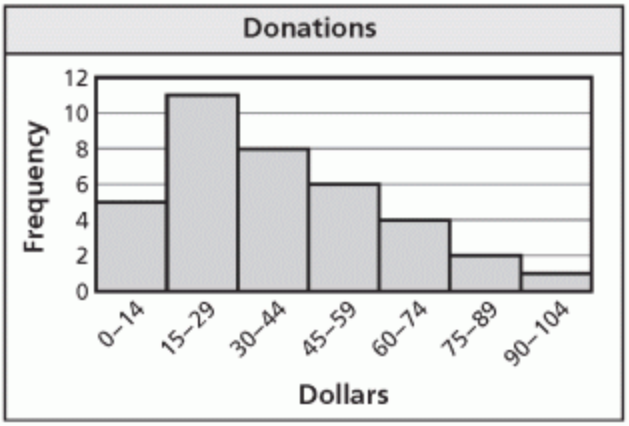


symmetric

Jones County; The distribution of Jones County is skewed right, so most of the data values are on the left.

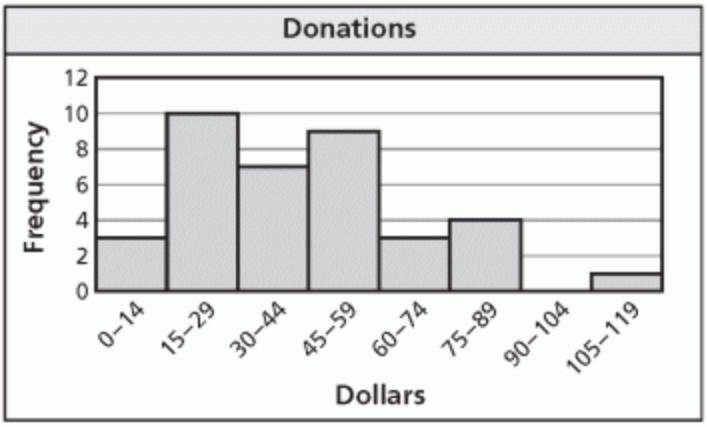
10. symmetric; The data on the left is a mirror image of the data on the right.

13. a.



skewed right

b.

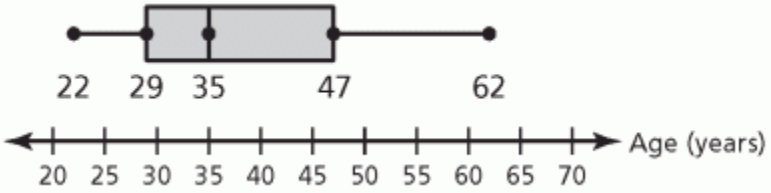


Both distributions are skewed right. The original donation distribution is more skewed right than the distribution when the increases are added to the donations. Some of the data values moved into different intervals when $5 is added to each donation, which is why the distributions are not exactly the same.

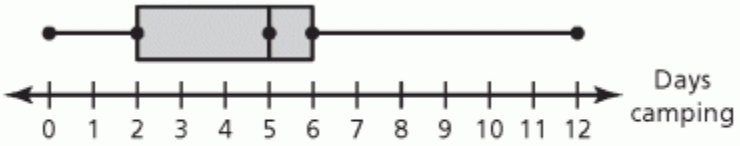
Pg. 463-464 #3, 4, 5, 10, 12, 17

4. *Sample answer:* The attendance for Beach 2 is more spread out than the attendance for Beach 1. Beach 1 seems to be more popular because its daily attendance is higher, on average, than Beach 2.

5.



10.



12

12. **a.** about 75%

b. The right whisker is longer than the left whisker. So there is more variability in the heights above 345 meters than the heights below 261 meters.

c. 84; The middle half of the data varies by no more than 84 meters.

17. **a.** School 1 is skewed left and School 2 is skewed right.

b. School 2; The range for School 2 is a half hour greater than the range for School 1. Also, the IQR of School 2 is greater than the IQR of School 1.

c. School 1; School 1 has more data on the left than School 2. So, School 1 is more likely to have recess before lunch.