1-1 Exercises, pp. 6–7

1. Population: all humpback whales; sample: the pod of humpback whales being studied
2. Population: all seventh-grade students; sample: the 25 students who are asked their ideas
3. Not random; the owner used only customers who shopped at a particular time.
4. Random; the owner used a list of all customers.
5. Population: all wild moose; sample: the 50 moose that are tagged
6. Population: all listeners; sample: the 10 listeners who called in
7. Population: all voters; sample: the voters who are polled
8. Random; all members of the community have an equal chance of being chosen.
9. Not random; families without children have no chance of being chosen.
10. Survey the population because the population is not too large to survey.
11. Use a sample because the population is too large to survey.
12. Use a sample because the population is too large to survey.
13. Survey the population because the population is not too large to survey.
14. Unlisted people cannot be chosen.

1-1 Exercises, pp. 6–7 (continued)

15. Possible answer: Customers who use one of the other entrances will not have the chance of being chosen.
16. Some people do not have access to the Internet.
17. a. Students in Grade 7 at your school who watch TV or who use a computer
    b. Possible answer: Give a questionnaire to 25 students whose names were randomly chosen from a list of all seventh graders.
18. All students in the school who use calculators and who are in both a math and a science class.
19. This sampling method is not random. Items 1–99, 101–199, etc., have no chance of being tested.
20. Possible answers: Ask all students who buy sodas at lunch which brand they prefer. Survey the population.
21. For a survey to be completely accurate, every member of the population must be questioned.
22. The question describes rock music in unfavorable terms and classical music in favorable terms.
23. 88
24. 196
25. 63
26. 90
27. 11
28. 28

1-1 Exercises, pp. 6–7 (continued)

29. 7
30. 9
31. B

1-2 Exercises, pp. 12–13

1. 20; 20; 5 and 20; 30
2. 55; 54; 48; 24
3. 12; Adding the outlier increased the mean by 1. The median and the mode did not change.
4. 66; 67; 68; 7
5. 14; 11; 11; 14
6. 5; Adding the outlier decreased the mean by 1.5 and the median by 1.5. The mode did not change.
7. 151; Adding the outlier increased the mean by 10 and the median by 7.5. The mode did not change because there was no mode.
8. a. 40.3; 41.5; 57; 39
   b. No; The mode in this case simply indicates that the same amount of snow occurred in two of the ten years.
9. $791; $1,822; $1,793
10. a. 22.5; 23.5; 14
    b. Possible answer: The mean or the median, since most of the participants were in their twenties
11. 9; 8; 12; Adding the outlier increased the mean by 1.
12. 67 in.
13. Answer: What is the median of the data set?
14. Possible answer: The mean is most often affected by including an outlier. Often the median and mode will not change, but the mean will always change.

1-2 Exercises, pp. 12–13 (continued)

15. a. Possible answer: Median; Use the median to describe the middle of a data set when there are outliers that may distort the data.

b. Mode; Possible answer: Use the mode when the data are not numerical or when choosing the most popular item.

c. Possible answer: Mean; Use the mean when there are no outliers to distort the data.

16. 50

17. 100

18. 80

19. 820

20. 200

21. 1,000

22. 1,700

23. 6,100

24. B

1-3 Exercises, pp. 16–17

1.

Ages of American Presidents		
Age	Frequency	Cumulative Frequency
40–49	3	3
50–59	10	13
60–69	5	18

2. Ages of American Presidents

Stems	Leaves
4	6 8 9
5	0 1 2 4 6 7 7 7 7 8
6	1 1 4 5 8

Key: 5|2 means 52

3.

States with Drive-ins in 2000		
Drive-ins	Frequency	Cumulative Frequency
20–29	6	6
30–39	1	7
40–49	1	8
50–59	3	11

4. States with Drive-ins in 2000

Stems	Leaves
2	0 0 1 1 4 9
3	4
4	8
5	2 5 9

Key: 5|2 means 52

5. 4; 31; 27

6. 15; 16.5; 18

7. b

8.

	Frequency	Cumulative Frequency
0–9	4	4
10–19	5	9
20–29	2	11
30–39	1	12

9. Chile and Suriname; Brazil

1-3 Exercises, pp. 16–17 (continued)

10. 7

Endangered Species in Each Country of South America		
Species	Frequency	Cumulative Frequency
0–9	5	5
10–19	2	7
20–29	4	11
30–39	1	12
40–49	0	12
50–59	0	12
60–69	1	13

11. 6

Endangered Species in Each Country of South America

Stems	Leaves
0	5 5 6 6 6
1	1 3
2	0 1 3 4
3	5
4	
5	
6	4

Key: 2|3 means 23

12. 18.4; 13

13. 64; adding the outlier increases the mean by approximately 3.8.

14. Possible answer: By making the intervals in the table smaller, I might be able to see better where the numbers are grouped.

15. 15 | 0

16. Yes

17. No

18. No

19. Yes

20. C

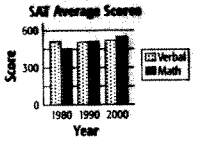
21. J

1-4 Exercises, pp. 22–23

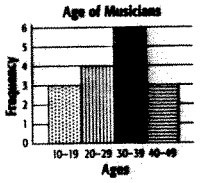
1. Grapes

2. About 15 pounds

3. SAT Average Scores



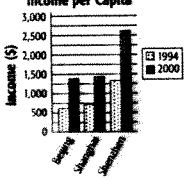
4. Age of Musicians



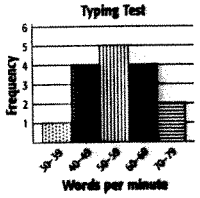
5. Florida

6. About 4 inches

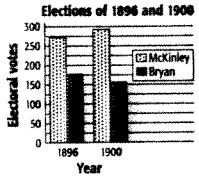
7. Average Annual Income per Capita



8. Typing Test



9. Elections of 1896 and 1900



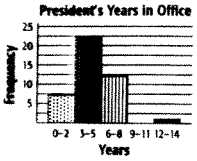
10. 1900

11. About 100

12. 29

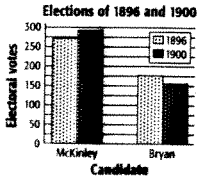
1-4 Exercises, pp. 22–23 (continued)

13.



14. Possible answer: Most presidents spent 3 to 8 years in office.

15.



Possible answer: Describe the trend in electoral votes for the two candidates between 1896 and 1900.

16. >

17. <

18. <

19. 398, 402, 410, 417

20. $0.82, $1.00, $1.41, $2.66

21. 7°F, 8°F, 14°F, 41°F, 78°F

22. B

1-5 Exercises, pp. 26–27

1. Outdoor

2. About 25%

3. About $50,000

4. Bar graph; Each bar would show the length of one river.

5. Circle graph; Each candidate's share of the votes can be shown in comparison to 100% of the votes.

6. Basketball

7. Approximately 30%

8. 5

9. Circle graph; The total number of calories eaten in one day could be 100%.

10. Bar graph; The length of each bar would represent the amount of rain for 1 month.
Circle graph; The total number of inches of rain that fell during the entire year could be 100%.

11. Asia, Africa, North America, South America, Antarctica, Europe, Australia

12. About 30%

13. About 25%

14. Mexico

15. Possible answer; The student matched the labels and sectors incorrectly. The sector for Puerto Rico is larger than the sector for Cuba, so more of the Hispanic population comes from Puerto Rico.

16. Possible answer: Estimation, percentages, fractions, and ordering numbers

1-5 Exercises, pp. 26–27 (continued)

17. About 5,790,000 mi²

18. 5.5

19. 62

20. 779

21. 4

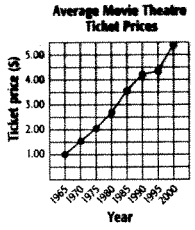
22. 74

23. 423

24. B

1-7 Exercises, pp. 37–38

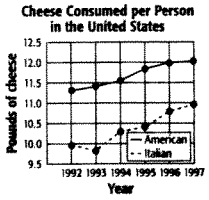
1.



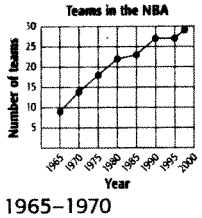
1990–1995

2. about $4.90

3.



4.



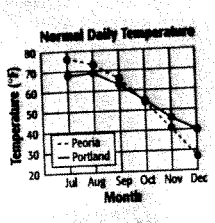
1965–1970

5. 1990–1995

6. 25

1-7 Exercises, pp. 37–38 (continued)

7.



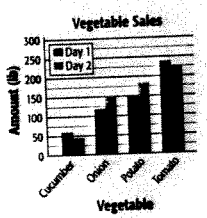
8. **a.** 1996; 2000
b. Possible answer: No, there is no trend.

9. **a.** 0.9 million
b. The number of cars from Japan increased until 1985 and then decreased; the number of cars from Germany was more steady but decreased slightly.

10. Possible answer: In which year were there about the same number of cars imported from Germany and Japan?

11. A double-line graph takes less time to draw and makes it easier to compare data.

12. A double-bar graph shows how the sales for both days compare.



1-7 Exercises, pp. 37–38 (continued)

13. 168

14. 7,379

15. 44,062

16. 300 + 6

17. 5,000 + 40 + 7

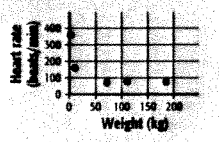
18. 20,000 + 7,000 + 600 + 80 + 4

19. 100,000 + 9,000 + 200 + 40 + 4

20. B

1-8 Exercises, pp. 42–43

1.



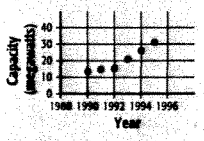
Negative; the heart rate tends to decrease as the size increases.

2. No correlation

3. Positive correlation

4. Negative correlation

5.



The scatter plot shows that the capacity increases with time, a positive correlation.

6. Positive correlation

7. Negative correlation

8. Positive correlation

9. Negative correlation; the higher the elevation of a city, the lower the temperature would be expected to be.

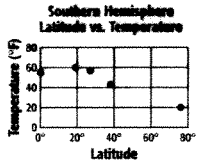
10. No correlation

11. Positive correlation; the greater the latitude, the more snow expected.

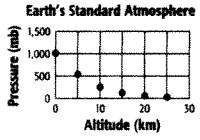
12. No correlation

1-8 Exercises, pp. 42–43 (continued)

13. As latitude increases, temperature decreases.



14. As altitude increases, pressure decreases.



15. Negative correlation; the lower the temperature, the more snow the location receives.

16. 3

17. 3

18. 7

19. 3

20. C

21. F