do not add up to 100%. This is not the proper use of a circle graph. This sort of information should be presented as a bar graph.

Margin exercise answers

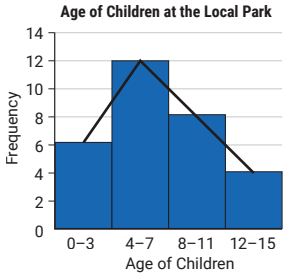
1. a. Pennsylvania; **b.** 4 more institutions

3.

Number of Jobs Applied For	Frequency
6–11	3
12–17	4
18–23	11
24–29	7
30–35	9
36–41	2
42–47	2
48–53	4

4. a. Approximately 500 people surveyed; **b.** 340 people used between 5 and 16 gigabytes of data; **c.** 225 people use 8 gigabytes of data or less.

5.



6.

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

2.

Number of Jobs Applied For	Frequency
6	1
10	2
12	2
15	2
18	2
20	2
21	2
22	5
24	2
25	1
27	2
28	1
29	1
30	1
32	3
34	3
35	1
36	1
37	1
45	3
48	3
50	1

10.2 Exercises

Concept Check

Fill-in-the-blank. Complete the sentences using information found in this section.

1. A _____ _____ is the simplest way to view each observed data value and how often it appears in a set of data.

2. A grouped frequency distribution is created by splitting a frequency distribution into _____.

3. In a grouped frequency distribution, the number of data points in a class is called the _____ _____

4. In a grouped frequency distribution, it's important that the data is split so that all the classes are the _____ _____.

5. A _____ is a special form of a bar graph that is used to display the frequency distribution of numerical classes.

6. A _____ _____ can be constructed from a histogram.

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

7. In a grouped frequency distribution, classes may overlap.

8. In a histogram, the bars do not touch similar to a bar graph.

9. A frequency distribution is a table in its simplest form that indicates the number of times a data value occurs.

10. In a grouped frequency distribution or histogram, all the individual data values are able to be seen.

Practice

1. The following frequency distribution shows the most common majors in the College of Arts and Sciences at a local university. Use the frequency distribution to answer the questions below.

Major	Frequency
Biology	80
Chemistry	65
Communication	55
Psychology	45
Pre-Law	40

   a. What is the most common major?

   b. How many more biology majors are there than chemistry majors?

2. Students at a local middle school were surveyed as to what is their favorite pet. Use the frequency distribution to answer the questions below.

Favorite Pet	Frequency
Cat	6
Dog	8
Fish	5
Hamster	5
Rabbit	2

   a. What was the favorite pet of students?

   b. How many students were surveyed?

   c. How many students prefer dogs to cats?

3. Students at a local elementary school were surveyed as to what is their birth month. Use the frequency distribution to answer the questions below.

Birth Month	Frequency
January	8
February	12
March	10
May	9
August	5
November	6

a. What was the most popular birth month?

b. How many students were surveyed?

c. How many more students were born in March than November?

4. The following grouped frequency distribution shows the number of cell phones sold in a week by local salespeople. Use the grouped frequency distribution to answer the questions below.

Number of Cell Phones Sold	Frequency
1–10	30
11–20	40
21–30	25
31–40	20
41–50	25
51–60	15

a. Data were collected from how many salespeople?

b. How many salespeople sold 30 or fewer cell phones in a week?

c. How many salespeople sold more than 40 cell phones in a week?

5. The following grouped frequency distribution shows the number miles ran by running club members in a week. Use the grouped frequency distribution to answer the questions below.

Number of Miles Ran	Frequency
1–12	6
13–24	12
25–36	10
37–49	4

a. How many members are there in the running club?

b. How many members ran 36 miles or fewer in a week?

c. How many members ran 25 or more miles in a week?

6. A group of students at a local elementary school were surveyed as to how many pets they had in their house. Construct a frequency distribution of the data collected.

0 2 1 0 0 2 2 1 3 4 1 2 5 0

0 1 2 1 2 0 2 3 1 3 1 4 5 1

7. A group of teachers at a local school were surveyed as to how many cups of coffee they drank each day. Construct a frequency distribution of the data collected.

6 2 0 1 0 3 1 1 3 1 4 2 4 2 6 5

2 4 3 1 3 0 5 3 2 4 2 4 2 5 2 3

8. The weights of newborn babies were gathered from a local hospital. Construct a grouped frequency distribution of the data collected with a starting class of 1–3.

7 9 2 3 4 8 10 6 5

1 7 8 4 1 9 10 5 12

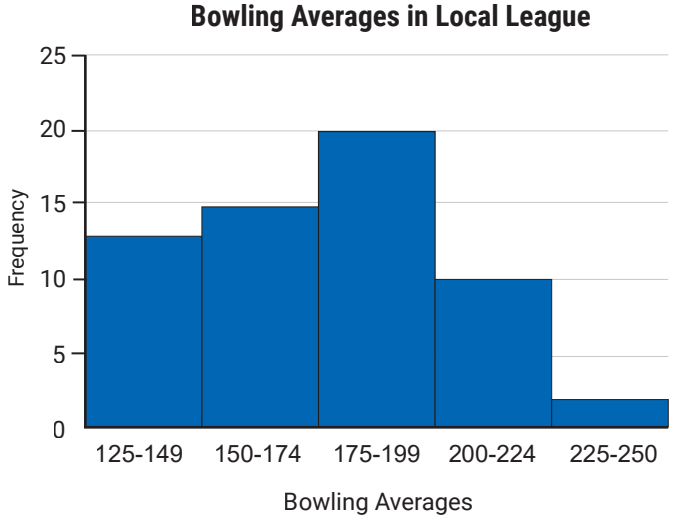
9. The grades from a recent statistics exam were collected. Construct a grouped frequency distribution of the data collected with a starting class of 51–60.

51 94 95 53 55 61 84 91 85 63 65

67 71 74 75 80 81 81 71 72 83 86 87

89 90 91 73 74 91 92 93 94 96 82

10. The following histogram displays data collected from a local bowling league and shows the average of the bowlers. Use the histogram to answer the following questions.

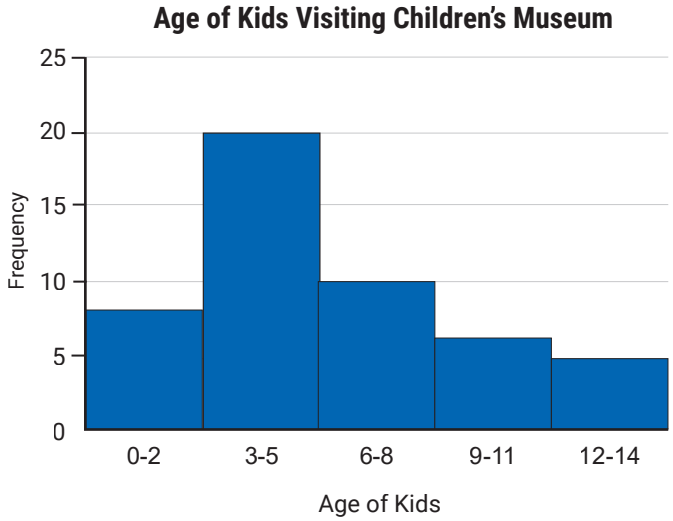


a. How many bowlers are in the local league?

b. How many bowlers have an average greater than or equal to 200?

c. How many bowlers have an average less than 175?

11. The following histogram displays the age range of kids at a local children's museum on a Saturday. Use the histogram to answer the following questions.

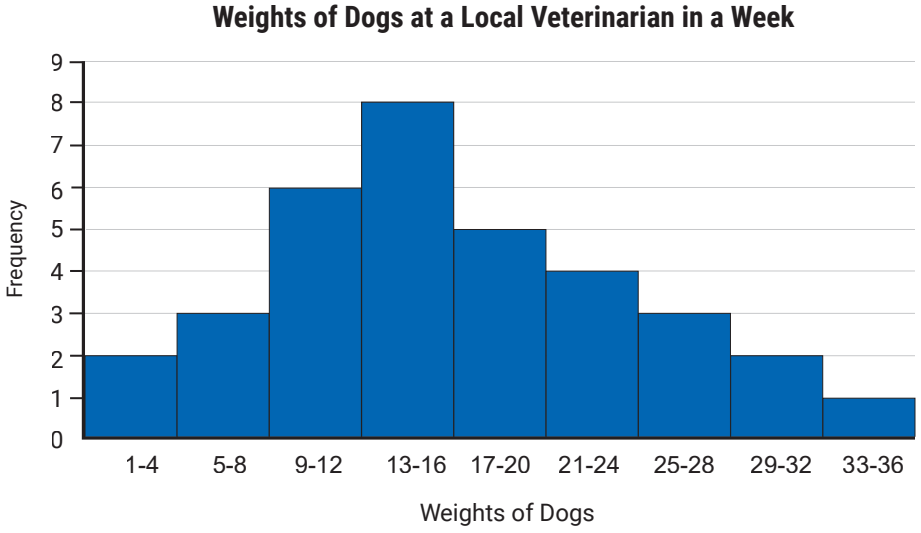


a. How many kids visited the children's museum?

b. How many kids were younger than 6?

c. How many kids were 9 or older?

12. The following histogram displays the weights (in pounds) of dogs at a local veterinarian's office in the past week. Use the histogram to answer the following questions.

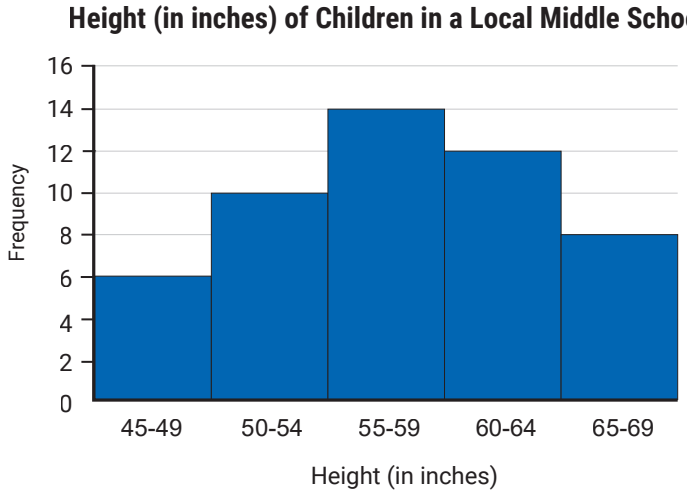


a. How many dogs went to the veterinarian in the past week?

b. How many dogs weigh less than 9 pounds?

c. How many dogs weight 21 pounds or more?

13. The following histogram displays the heights (in inches) of children in a local middle school. Use the histogram to answer the following questions.



a. How many children's heights were recorded?

b. How many children are taller than 54 inches?

c. How many children are 64 inches or shorter?

14. Given the following grouped frequency distribution of batting averages in a local slow-pitch softball league, construct a histogram based on the data.

Batting Average	Frequency
.150–.184	6
.185–.219	10
.220–.254	15
.255–.289	25
.290–.324	30
.325–.359	25

15. Given the following grouped frequency distribution of cars sold in a week by salespeople, construct a histogram based on the data.

Cars Sold	Frequency
1–5	8
6–10	6
11–15	4
16–20	0
21–25	2

16. Given the following grouped frequency distribution of the heights (in inches) of kids in a local basketball league, construct a histogram based on the data.

Height	Frequency
48–51	2
52–55	3
56–59	4
60–63	7
64–67	9
68–71	6

17. Given the following grouped frequency distribution of the weights (in pounds) of luggage on a recent flight, construct a histogram based on the data.

Weight	Frequency
25–30	18
31–36	28
37–42	25
43–48	20
49–54	3

18. Given the following grouped frequency distribution of exam scores, construct a histogram and corresponding frequency polygon on the same set of axes.

Exam Scores	Frequency
42–48	1
49–55	1
56–62	2
63–69	3
70–76	8
77–83	6
84–90	7
91–97	5

19. Given the following grouped frequency distribution of miles rode by a local cycling club, construct a histogram and corresponding frequency polygon on the same set of axes.

Number of Miles Cycled	Frequency
40–59	3
60–79	6
80–99	8
100–119	12
120–139	15
140–159	10

20. Given the following grouped frequency distribution of the number of text messages sent to a group chat by members of the group each week, construct a histogram and corresponding frequency polygon on the same set of axes.

Number of Messages Sent	Frequency
1–9	3
10–18	8
19–27	12
28–36	10
37–45	16
46–54	9
55–63	4

21. Use the following exam scores from a recent psychology exam to create a stem-and-leaf plot.

94 70 90 91 71 72 80 80 82 84 88 94

89 89 90 72 83 84 74 91 92 92 93 75

22. Use the following resting pulse rates to create a stem-and-leaf plot.

48 49 62 64 49 80 69 70 84 50 51 52 52 53

55 58 62 72 67 81 82 68 71 83 84 71 72 65

23. Use the following ages in a local running club to create a stem-and-leaf plot.

24 31 28 42 54 56 58 41 23 27 29 34 36 45

26 33 43 29 30 25 38 32 37 48 62 68 59 68

24. The following stem-and-leaf plot contains mileage ran by a local running club during a week. Use the plot to answer the questions below.

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

a. How many runners ran 25 miles for the week?

b. How many runners ran 30 or more miles during the week?

c. How many runners are in the local running club?

25. The following stem-and-leaf plot contains scores from a recent chemistry exam. Use the plot to answer the questions below.

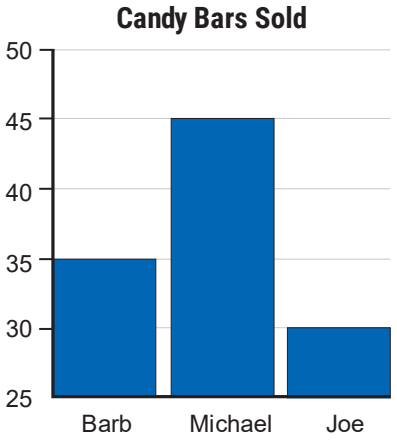
Stem	Leaf
5	2 2 8
6	0 1 1 5 7 8
7	0 2 3 3 5 6 8 8 8 9
8	1 2 4 5 6 6 8 9
9	0 2 6 8 9

a. How many students scored 78?

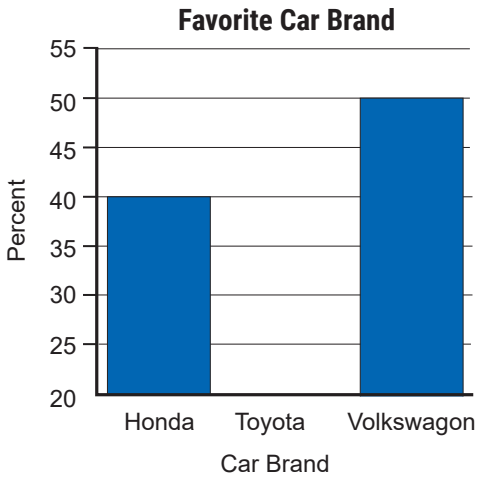
b. How many students scored 82 or more?

c. How many students took the exam?

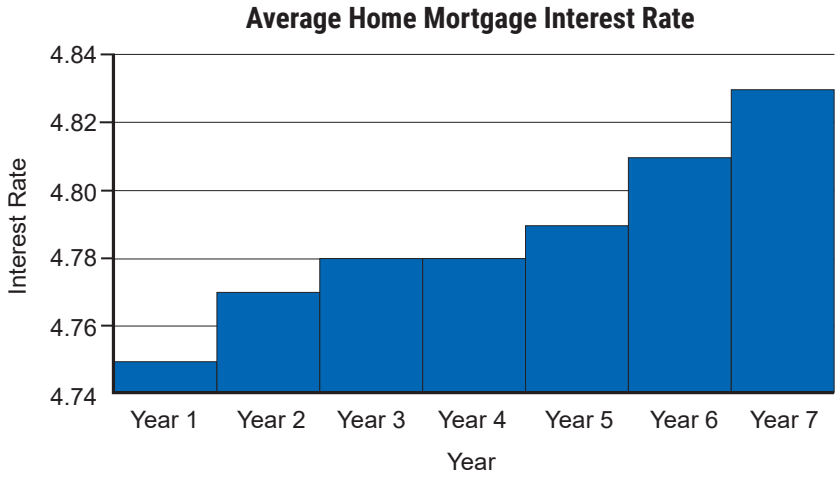
26. The following bar graph displays the number of candy bars sold by students for a local school fundraiser. In what way is the bar graph misleading?



27. The following bar graph displays the results of a survey where people were asked to identify their favorite car brand. In what way is the bar graph misleading?



28. The following bar graph displays the average home mortgage interest rate over a seven year period. In what way is the bar graph misleading?



Writing & Thinking

29. Explain how to convert a frequency distribution to a grouped frequency distribution.

30. Describe a stem-and-leaf plot in your own words.