

CHAPTER 2

1. Step 1: Find the real range. Step 2: Find the interval width. Step 3: Construct the frequency distribution.
2. Grouped data are distributed in intervals; ungrouped data are not.
3. (a) No. (b) Yes.
4. To ensure that a single score cannot be counted in more than one interval.
5. A percentile rank.
6. Ungrouped data sets with only a few different scores, and qualitative or categorical variables.
7. Rule 1: A vertical rectangle represents each interval, and the height of the rectangle equals the frequency recorded for each interval. Rule 2: The base of each rectangle begins and ends at the upper and lower boundaries of each interval. Rule 3: Each rectangle touches adjacent rectangles at the boundaries of each interval.
8. Midpoint; Upper boundary.
9. When the data are discrete. Histograms are only used with continuous data.
10. Discrete/categorical data.
11. (a)

Intervals	$f(x)$
18–22	5
13–17	3
8–12	7
3–7	5

(b) Interval: 8–12.

12. (a)

Classes	$f(x)$
L	9
C	16
R	5

(b) Yes, the rat did press the center lever the most.

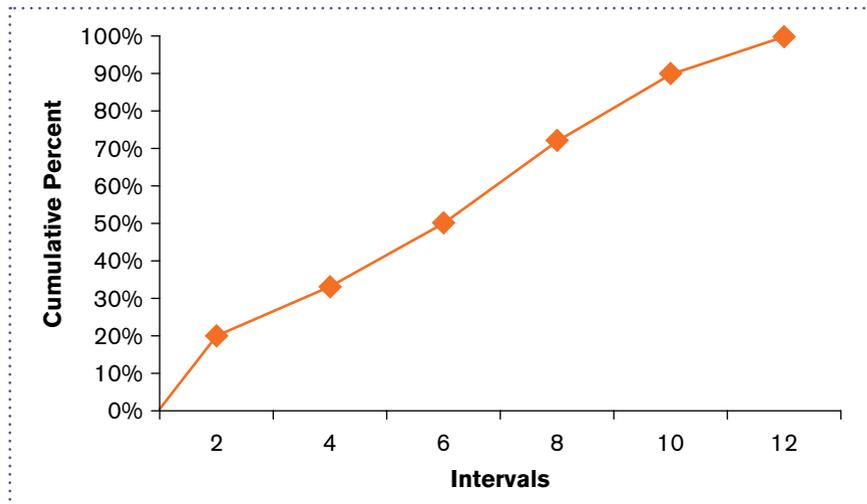
13. The intervals overlap at the upper and lower boundaries, which might lead to some scores being counted in more than one interval.
14. Three errors are (1) the intervals overlap, (2) the class width for each interval is not equal, and (3) the distribution includes an open interval.

- 15. The lower boundaries are 35, 46, 57, and 68.
- 16. The upper boundaries are 3, 6, 9, 12, 15, and 18.
- 17. No, the data should remain ungrouped because the data are categorical.
- 18. The interval width for each interval is 3.
- 19. (a)

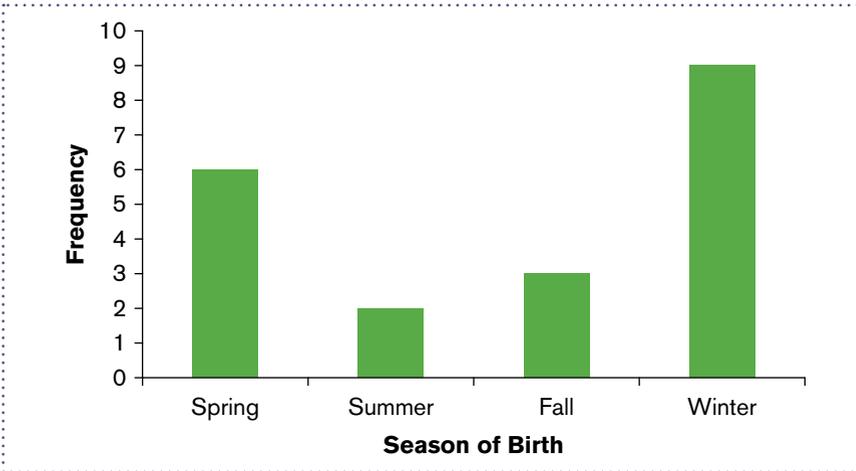
Number of Dreams	Percentile Rank
4	100%
3	88%
2	60%
1	24%
0	10%

(b) Two Dreams

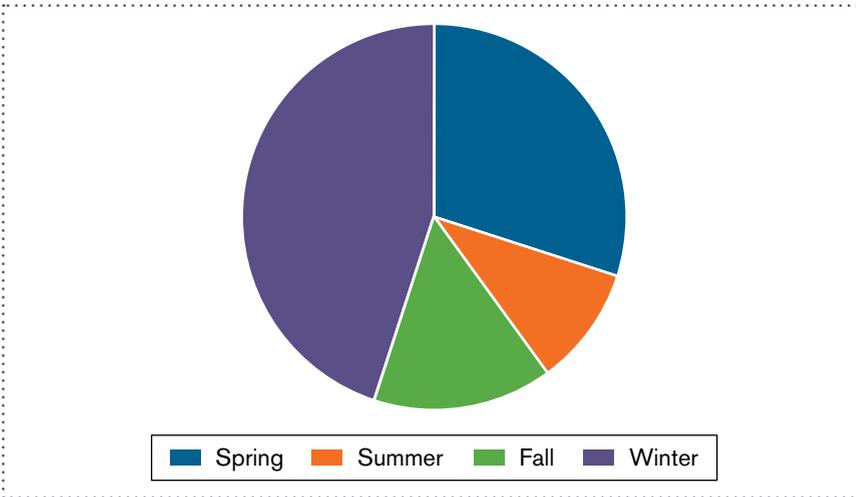
- 20. Sixty children qualify for the new cognitive-behavioral therapy.
- 21. (a) A bar chart or pie chart if distributing the letter grades along the *x*-axis. A histogram or frequency polygon if distributing the numeric values on a 4.0 grading scale. (b) A bar chart or pie chart. (c) A bar chart or pie chart distributing the frequencies for each behavioral therapy. (d) A histogram or frequency polygon.
- 22. (a) Histogram. (b) Bar chart. (c) Histogram. (d) Bar chart.
- 23. A = 8, B = 3, C = 12
- 24. (a) A = 78, B = 86, C = 68, D = 13. (b) Yes, this was a difficult test because half the class would fail.
- 25. (a) 35 students. (b) 6 students. (c) 15 students.
- 26.



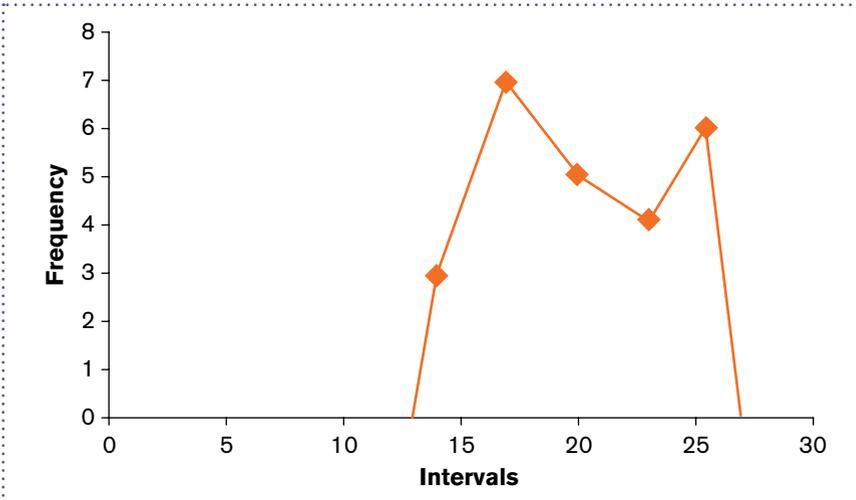
27. (a)



(b)



28.



29. The interval of 60–79 has the largest portion of students (20% of students fall in this interval).
30. The percentile point for the 50th percentile is 74.5 minutes.
31. (a) Real range = 56. (b) 30%.
32. (a) While more men earned a bachelor's degree in psychology in 1970–1971, women earn more than three times the number of bachelor's degrees in psychology as of 2005–2006. (b) Ungrouped data, because years are not distributed consecutively.
33. (a) A relative percent distribution. (b) About 576 Americans.

CHAPTER 3

1. (a) N . (b) n . (c) μ . (d) M or \bar{X} .
2. Measures of central tendency are statistical measures used to locate a single score that is most representative or descriptive of all scores in a distribution.
3. The median is the score in the middle of a distribution. It is always at the center of a distribution.
4. A population mean is the mean for a set of scores in an entire population, whereas the sample mean is the mean for a sample, or subset of scores from a population.
5. Five characteristics of the mean are as follows: (1) Changing an existing score will change the mean; (2) adding a new score or completely removing an existing score will change the mean, unless that value equals the mean; (3) adding, subtracting, multiplying, or dividing each score in a distribution by a constant will cause the mean to change by that constant; (4) the sum of the differences of scores from their mean is zero; and (5) the sum of the squared differences of scores from their mean is minimal.
6. The weighted mean equals the arithmetic mean when the sample sizes or “weights” for a set of scores are the same or equal.
7. Data that are normally distributed on an interval or ratio scale of measurement.
8. Data that are skewed and ordinal data.
9. The mode is used with other measures of central tendency for any modal distribution and for nominal data.
10. (a) Median. (b) Mean. (c) Mean.
11. Mean = 4, median = 2, mode = 0.
12. (a) College students: mean = 25, median = 18, mode = 21. Parents: mean = 14, median = 18, mode = 21. (b) Because both distributions are skewed, the median would be the appropriate measure of central tendency. This might be misleading, though, because the median indicates that texting was the same between groups (the median was 18 in both samples), even though differences exist in regard to the mean.

