

## Chapter 4

### Describing Data: Displaying and Exploring Data

#### True/False

1. A dot plot is an easy way to represent the relationship between two variables.
2. A dot plot is useful for quickly graphing frequencies in a small data set.
3. A stem and leaf diagram shows the actual data values.
4. There is some loss of information when raw data is tallied into a stem-and-leaf display.
5. For a stem-and-leaf display, the leaf for the value 98 is 9.
6. The stem in a stem-and-leaf display is the leading digit.
7. Quartiles are another way to describe the dispersion of a distribution.
8. The 50<sup>th</sup> percentile of a distribution is the same as the distribution mean.
9. The interquartile range is the difference between the values of the first and third quartile, indicating the range of the middle fifty percent of the observations.
10. The "box" in a box plot shows the interquartile range.
11. An outlier is a value in a data set that is inconsistent with the rest of the data.
12. A box plot shows the relative symmetry of a distribution.
13. A box plot shows a distribution's mean and mode.
14. The Pearson's coefficient of skewness is a measure of distribution's symmetry.
15. Negatively skewed indicates that a distribution is not symmetrical. The long tail is to the left or in the negative direction.
16. In a negatively skewed distribution, the mean is smaller than the median or mode and the mode occurs at the peak of the curve.
17. If Pearson's coefficient of skewness is equal to 0, then the mean and median are equal.
18. If Pearson's coefficient of skewness is negative, then the mean is greater than the median.
19. If Pearson's coefficient of skewness is negative, then the distribution is skewed to the left.
20. If Pearson's coefficient of skewness is negative, then the distribution is skewed to the right.

#### Multiple Choice

21. A dot plot shows
  - A) The general shape of a distribution
  - B) The mean, median, and mode
  - C) The relationship between two variables
  - D) The interquartile range.
22. A row of a stem-and-leaf chart appears as follows: 3 | 0 1 3 5 7 9. Assume that the data is rounded to the nearest unit.
  - A) The frequency of the class is seven.
  - B) The minimum value in the class is 0.
  - C) The maximum value in the class is 39.
  - D) The class interval is 5.

23. The test scores for a class of 147 students are computed. What is the location of the test score associated with the third quartile?
- A) 111
  - B) 37
  - C) 74
  - D) 75%
24. What statistics are needed to draw a box plot?
- A) Minimum, maximum, median, first and third quartiles
  - B) Median, mean and standard deviation
  - C) A median and an interquartile range
  - D) A mean and a standard deviation.
25. A box plot shows
- A) The mean and variance
  - B) The relative symmetry of a distribution for a set of data
  - C) The percentiles of a distribution
  - D) The deciles of a distribution
26. What does the interquartile range describe?
- A) The lower 50% of the observations
  - B) The middle 50% of the observations
  - C) The upper 50% of the observations
  - D) The lower 25% and the upper 25% of the observations
  - E) None of the above
27. A large oil company is studying the number of gallons of gasoline purchased per customer at self-service pumps. The mean number of gallons is 10.0 with a standard deviation of 3.0 gallons. The median is 10.75 gallons. What is the Pearson's coefficient of skewness?
- A) -1.00
  - B) -0.75
  - C) +0.75
  - D) +1.00
28. What is the value of the Pearson coefficient of skewness for a distribution with a mean of 17, median of 12 and standard deviation of 6?
- A) +2.5
  - B) -2.5
  - C) +0.83
  - D) -0.83
29. A sample of experienced typists revealed that their mean typing speed is 87 words per minute and the median is 73. The standard deviation is 16.9 words per minute. What is the Pearson's coefficient of skewness?
- A) -2.5
  - B) -4.2
  - C) +4.2
  - D) +2.5
30. A study of the net sales of a sample of small corporations revealed that the mean net sales is \$2.1 million, the median \$2.4 million, the modal sales \$2.6 million and the standard deviation of the distribution is \$500,000. What is the Pearson's coefficient of skewness?
- A) -9.1
  - B) +6.3

- C) -3.9
- D) +2.4
- E) None of the above

31. In a contingency table, we describe the relationship between
- A) two variables measured at the ordinal or nominal level.
  - B) two variables, one measured as an ordinal variable and the other as a ratio variable
  - C) two variables measured at the interval or ratio level
  - D) a variable measure on the interval or ratio level and time.

**Answers:**

- |          |           |          |           |           |          |          |          |
|----------|-----------|----------|-----------|-----------|----------|----------|----------|
| 1. False | 2. True   | 3. True  | 4. False  | 5. False  | 6. True  | 7. True  | 8. False |
| 9. True  | 10. True  | 11. True | 12. True  | 13. False | 14. True | 15. True | 16. True |
| 17. True | 18. False | 19. True | 20. False |           |          |          |          |
| 21. A    | 22. C     | 23. A    | 24. A     | 25. B     | 26. B    | 27. B    | 28. A    |
| 29. D    | 30. E     |          |           |           |          |          |          |
| 31. A    |           |          |           |           |          |          |          |