1) Consider the following sample data:

25 11 6 4 2 17 9 6

For these data the sample mean is:
A) 8.
B) 3.
\*C) 10.
D) 12

2) Consider the following sample data:

25 11 6 4 2 17 9 6

For these data the median is:
A) 3.5
\*B) 7.5

C) 10.
D) None of the above.

3) A small company has 7 employees. The numbers of years these employees have worked for this company are shown as follows:

4 14 3 16 9 8 16

Based upon this information, the mean number of years that employees have been with this company is:
A) 
\*B) 10
C) 8.40.
D) 16.

4) A small company has 7 employees. The numbers of years these employees have worked for this company are shown as follows:

4 14 3 16 9 8 16

Based upon this information, the median number of years that employees have been with this company is:
\*A) 9 years.
B) 14 years
C) 10 years.
D) 16 years.

5) A small company has 7 employees. The numbers of years these employees have worked for this company are shown as follows:

4 14 3 16 9 8 16

Based upon this information, the mode number of years that employees have been with this company is:
A) 10.
B) 16.
C) 2.
\*D) 9.

6) A sample of people who have attended a college football game at your university has a mean = 3.2 members in their family. The mode number of family members is 2 and the median number is 2.0. Based on this information:
A) the population mean exceeds 3.2.
B) the distribution is left-skewed.

C) the distribution is bell-shaped.
\*D) the distribution is right-skewed.

7) A major retail store has studied customer behavior and found that the distribution of time customers spend in a store per visit is symmetric with a mean equal to 17.3 minutes. Based on this information, which of the following is true?
\*A) The median is approximately 17.3 minutes.

B) The median is to the left of the mean

C) The median is to the right of the mean.

D) The distribution is bell shaped.

8) A large retail company gives an employment screening test to all prospective employees. Frankin Gilman recently took the test and it was reported back to him that his score placed him at the 80th percentile. Therefore:
A) Frankin’s score has a z-score of 80.

B) 80 people who took the test scored below Franklin.

C) Frankin was in the bottom 20 percent of those that have taken the test.

\*D) Frankin scored as high or higher than 80 percent of the people who took the test.

9) A large retail company gives an employment screening test to all prospective employees. If a prospective employee receives a report saying that she scored at the 40th percentile:
A) she scored above the median

B) she scored in the top 40 percent of people who took the test

\*C) she scored better than 40 percent of people who took the test

D) her z score was a 40

10) If a data set has 740 values that have been sorted from low to high, which value in the data set will be the 20th percentile?
A) The 20th value

B) The 148th value

\*C) The average of the 148th and 149th values

D) None of the above.

11) If a data set has 1,133 sorted values, what value corresponds to the 3rd quartile?
A) The 760th value
B) The 849th value

C) The 250th value
\*D) The 850th value

12) At a sawmill in Oregon, a process improvement team measured the diameters for a sample of 1,500 logs. The following summary statistics were computed:

Q1 = 8.9 in.Q2 = 13.5 in. Q3 = 15.6 in  = 14.2 in.

Given this information, the boundaries on the box in a box and whisker plot are:
A) 13.5 in + 1.5 (Q3-Q1).
\*B) 8.9 in and 15.6 in.

C) 8.9 in and 14.2 in
D) 14.2 in + 1.5 (Q3-Q1).

13) At a sawmill in Oregon, a process improvement team measured the diameters for a sample of 1,500 logs. The following summary statistics were computed:

Q1 = 8.9 in.Q2 = 13.5 in. Q3 = 15.6 in  = 14.2 in.

Given this information, in a box and whisker plot, which of these four values will NOT appear.
A) 13.5 in.
B) 8.9 in.
C) 15.6 in.
\*D) 14.2 in

14) At a sawmill in Oregon, a process improvement team measured the diameters for a sample of 1,500 logs. The following summary statistics were computed:

Q1 = 8.9 in.Q2 = 13.5 in. Q3 = 15.6 in  = 14.2 in.

Given this information, which of the following statements is correct?
A) The distribution is left-skewed.

B) The distribution of log diameters is symmetric.

\*C) The distribution of log diameters is right-skewed.

D) A log that is over 20 inches in diameter can be considered an outlier.

15) At a sawmill in Oregon, a process improvement team measured the diameters for a sample of 1,500 logs. The following summary statistics were computed:

Q1 = 8.9 in.Q2 = 13.5 in. Q3 = 15.6 in  = 14.2 in.

Given this information, for a box and whisker plot which of the following statements is appropriate?
A) No tree will have a diameter of more than 22.3 in.

\*B) Virtually all of the data should fall between 0 in. and 25.65 in.

C) Fifty percent of the trees will have diameters between 13.5 and 15.6 inches.

D) Seventy-five percent of the trees in the sample have values between 8.9 in. and 15.6 in.

16) If a distribution for a quantitative variable is thought to be nearly symmetric with very little variation. If a box and whisker plot is created for this distribution, which of the following is true?
A) the whiskers should be about half as long as the box is wide.

B) The upper whisker will be much longer than the lower whisker

\*C) the left and right-hand edges of the box will be approximately equal distance from the median

D) the box will be quite wide but the whisker will be very short.

17) Which of the following is the most frequently used measure of variation?
A) The variance
B) The mode

C) The range
\*D) The standard deviation

18) Which of the following measures is not affected by extreme values in the data?
A) The standard deviation
B) The range

C) The mean
\*D) The median

19) The following data reflect the number of customers who test drove new cars each day for a sample of 20 days at the Redfield Ford Dealership.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 7 | 2 | 9 | 4 |
| 9 | 7 | 10 | 4 | 7 |
| 5 | 6 | 4 | 0 | 7 |
| 6 | 3 | 4 | 14 | 6 |

Given these data, what is the range?
\*A) 14
B) Approximately 3.08

C) 1
D) 5.95

20) The following data reflect the number of customers who test drove new cars each day for a sample of 20 days at the Redfield Ford Dealership.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 7 | 2 | 9 | 4 |
| 9 | 7 | 10 | 4 | 7 |
| 5 | 6 | 4 | 0 | 7 |
| 6 | 3 | 4 | 14 | 6 |

Given these data, what is the variance?
A) Approximately 181
B) 0.69

\*C) Approximately 9.52
D) Approximately 3.08

21) The following data reflect the number of customers who test drove new cars each day for a sample of 20 days at the Redfield Ford Dealership.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | 7 | 2 | 9 | 4 |
| 9 | 7 | 10 | 4 | 7 |
| 5 | 6 | 4 | 0 | 7 |
| 6 | 3 | 4 | 14 | 6 |

Given these data, what is the interquartile range?
A) 4
\*B) 3
C) 14
D) 7

22) The advantage of using the interquartile range versus the range as a measure of variation is:
A) it utilizes all the data in its computation.

B) it is less affected by extremes in the data.

C) it gives a value that is closer to the true variation.

D) it is easier to compute.

23) The following data reflect the number of customers who return merchandise for a refund on Monday. Note these data reflect the population of all 10 Mondays for which data are available.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 40 | 12 | 17 | 25 | 9 |
| 46 | 13 | 22 | 16 | 7 |

Based on these data, what is the standard deviation?
A) 13.03
B) 12.36
C) 152.8
D) 39

24) The following data reflect the number of customers who return merchandise for a refund on Monday. Note these data reflect the population of all 10 Mondays for which data are available.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 40 | 12 | 17 | 25 | 9 |
| 46 | 13 | 22 | 16 | 7 |

Assume that this same exact pattern of data were replicated for the next ten days. How would this affect the standard deviation for the new population with 20 items?
A) The standard deviation would be cut in half.

B) The standard deviation would be doubled.

C) The standard deviation would not be changed.

D) There is no way of knowing the exact impact without knowing how the mean is changed.

25) Consider the following data which represent the number of miles that employees commute from home to work each day. There are two samples: one for males and one for females.

 Males:

13 5 2 23 14 5

Females:

15 6 3 2 4 6

Which of the following statements is true?
A) The female distribution is more variable since the range for the females is greater than for the males.

B) males and females on average commute the same distance

C) The males in the sample commute farther on average than the females.

D) Females in the sample commute farther on average than do males.

26) Consider the following data which represent the number of miles that employees commute from home to work each day. There are two samples: one for males and one for females.

Males:

13 5 2 23 14 5

Females:

15 6 3 2 4 6

The coefficient of variation of commute miles for the males is:
A) approximately 61.5
B) approximately 76 percent.

C) about 7.8
D) about 67 percent

27) Consider the following data which represent the number of miles that employees commute from home to work each day. There are two samples: one for males and one for females.

 Males:

13 5 2 23 14 5

Females:

15 6 3 2 4 6

Which of the following statements is true?
A) The coefficient of variation is larger for females than for males

B) Females have the larger mean

C) The coefficient of variation is larger for males than for females

D) Females have the larger range

28) If the age distribution of customers at a major retail chain is thought to be bell-shaped with a mean equal to 43 years and a standard deviation equal to 7 years, the percentage of customers between the ages of 29 and 57 years is:
A) at least 75.
B) approximately 68.

C) approximately 95.
D) approximately 81.5.

29) Under what circumstances is it necessary to use the coefficient of variation to compare relative variability between two or more distributions?
A) When the standard deviations of the distributions are not equal

B) When the means of the distributions are not equal

C) When the means of the distributions are equal

D) When the standard deviations of the distributions are equal

30) In the annual report, a major food chain stated that the distribution of daily sales at their Detroit stores is known to be bell-shaped, and that 95 percent of all daily sales fell between $19,200 and $36,400. Based on this information, what were the mean sales?
A) Approximately $27,800

B) Close to $30,000

C) Around $20,000

D) Can’t be determined without more information.

31) The number of days that homes stay on the market before they sell in Houston is bell-shaped with a mean equal to 56 days. Further, 95 percent of all homes are on the market between 40 and 72 days. Based on this information, what is the standard deviation for the number of days that houses stay on the market in Houston?
A) 16
B) 8

C) 
D) 4

32) Incomes in a particular market area are known to be right-skewed with a mean equal to $33,100. In a report issued recently, a manager stated that at least 89 percent of all incomes are in the range of $26,700 to $39,500, and this was based on Tchebysheff’s theorem. Given these facts, what is the standard deviation for the incomes in this market area?
A) Approximately $4266
B) Approximately $3,200

C) Approximately $2,133
D) Approximately $6,400

33) A distribution has a coefficient of variation of 65% and mean of 74. What is the value of the standard deviation?
A) 0.65
B) 48.1
C) 113.8
D) 4810

34) The asking price for homes on the real estate market in Baltimore has a mean value of $286,455 and a standard deviation of $11,200. Four homes are listed by one real estate company with the following prices:

Home 1: $456,900

Home 2: $306,000

Home 3: $266,910

Home 4: $201,456

Based upon this information, which house has a standardized value that is relatively closest to zero?
A) Home 1
B) Home 2

C) Home 3
D) Home 2 and home 3

35) The asking price for homes on the real estate market in Baltimore has a mean value of $286,455 and a standard deviation of $11,200. The mean and standard deviation in asking price for homes in Denver are $188,468 and $8,230, respectively. Recently, one home sold in each city where the asking price for each home was $193,000. Based on these data, which of the following conclusions can be made?
A) The asking prices of homes in Denver is less variable than those in Baltimore.

B) The house in Baltimore is relatively further from the mean than the house in Denver.

C) The distribution of asking prices in the two cities is bell-shaped.

D) The two homes have approximately the same standardized values.

36) The asking price for homes on the real estate market in Baltimore has a mean value of $286,455 and a standard deviation of $11,200. The mean and standard deviation in asking price for homes in Denver are $188,468 and $8,230, respectively. Recently, one home sold in each city where the asking price for each home was $193,000. Assuming that both distributions are bell-shaped, which of the following statements is true?
A) The Baltimore home has the higher standard z value.

B) The Denver home has a higher standard z value

C) The coefficient of variation for Denver is less than for Baltimore.

D) both cities have the same coefficient of variation

37) A report on spending by adults on recreation stated the following: At least 75 percent of the people in the survey spend between $750 and $1,250 per year. The report also said that at least 88 percent spend between $625 and $1,375 per year. Given this information, which of the following is most apt to be true?
A) The standard deviation is approximately $187.5

B) The standard deviation is approximately $125.

C) The distribution of spending on recreation can be assumed to be bell-shaped.

D) The standard deviation is approximately $250

38) The distribution of actual weight of potato chips in a 16 ounce sack is thought to be bell-shaped with a mean equal to 16 ounces and a standard deviation equal to 0.45 ounces. Based on this, between what two limits could we expect 95 percent of all sacks to weigh?
A) 15.55 to 16.45 ounces
B) 14.65 to 17.35 ounces

C) 14 to 18 ounces
D) 15.10 to 16.90 ounces

39) A recent study in the restaurant business determined that the mean tips for male waiters per hour of work are $6.78 with a standard deviation of $2.11. The mean tips per hour for female waiters are $7.86 with a standard deviation of $2.20. Based on this information, which of the following statements do we know to be true?
A) The distribution of tips for both males and females is right-skewed.

B) The median tips for females exceeds that of males.

C) On a relative basis, males have more variation in tips per hour than do females.

D) The variation in tips received by females is more variable than males.

40) Data was collected on the number of television sets in a household, and it was found that the mean was 3.5 and the standard deviation was 0.75

Based on these sample data what is the standardized value corresponding to 5 televisions?
A) 1.125
B) 2.00
C) 1.5
D) -2.00