

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Solve the problem.**

- 1) A recent report stated "Based on a sample of 90 truck drivers, there is evidence to indicate that, on average, independent truck drivers earn more than company-hired truck drivers." Does this statement describe descriptive or inferential statistics? 1) \_\_\_\_\_  
A) inferential statistics B) descriptive statistics
- 2) A survey of high school teenagers reported that 90% of those sampled are interested in pursuing a college education. Does this statement describe descriptive or inferential statistics? 2) \_\_\_\_\_  
A) inferential statistics B) descriptive statistics

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

- 3) In a survey of 5000 high school students, 27% of those surveyed read at least one best-seller each month. Give an example of a descriptive statement and an inferential statement that could be made based on this information. 3) \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Answer the question True or False.**

- 4) When we take data obtained from a sample and make generalizations or predictions about the entire population, we are utilizing inferential statistics. 4) \_\_\_\_\_  
A) True B) False
- 5) Statistics involves two different processes, describing sets of data and drawing conclusions about the sets of data on the basis of sampling. 5) \_\_\_\_\_  
A) True B) False

**Solve the problem.**

- 6) The amount of television viewed by today's youth is of primary concern to Parents Against Watching Television (PAWT). 250 parents of elementary school-aged children were asked to estimate the number of hours per week that their child watches television. Identify the type of data collected by PAWT. 6) \_\_\_\_\_  
A) qualitative B) quantitative
- 7) Which data about paintings would *not* be qualitative? 7) \_\_\_\_\_  
A) the artist B) the style C) the value D) the theme

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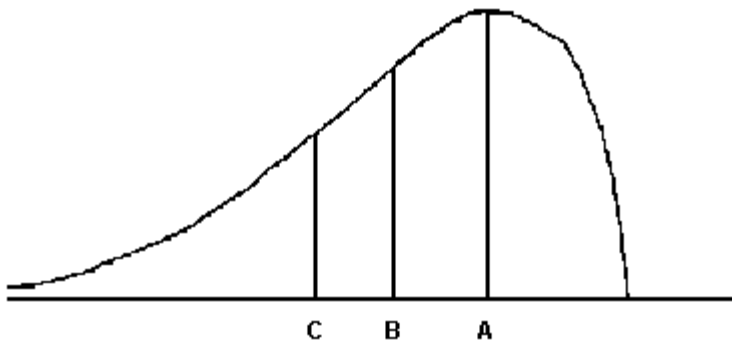
- 8) The data show the total number of medals (gold, silver, and bronze) won by each country winning at least one gold medal in the 2006 Winter Olympics. Find the mean, median, and mode of the numbers of medals won by these countries. 8) \_\_\_\_\_

1    2    3    3    4    9    9    11    11  
11    14    14    19    22    23    24    25    29

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9)

9) \_\_\_\_\_



For the distribution drawn here, identify the mean, median, and mode.

A) A = median, B = mode, C = mean

B) A = mode, B = mean, C = median

C) A = mode, B = median, C = mean

D) A = mean, B = mode, C = median

- 10) The distribution of salaries of professional basketball players is skewed to the right. Which measure of central tendency would be the best measure to determine the location of the center of the distribution?

10) \_\_\_\_\_

A) mean

B) range

C) mode

D) median

**Answer the question True or False.**

- 11) The mean and the median are useful measures of central tendency for both qualitative and quantitative data.

11) \_\_\_\_\_

A) True

B) False

- 12) In a symmetric and mound shaped distribution, we expect the values of the mean, median, and mode to differ greatly from one another.

12) \_\_\_\_\_

A) True

B) False

- 13) In symmetric distributions, the mean and the median will be approximately equal.

13) \_\_\_\_\_

A) True

B) False

- 14) In skewed distributions, the mean is the best measure of the center of the distribution since it is least affected by extreme observations.

14) \_\_\_\_\_

A) True

B) False

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Solve the problem.**

- 15) The ages of five randomly chosen professors are 63, 42, 69, 66, and 41. Calculate the sample variance of these ages.

15) \_\_\_\_\_

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- 16) A sociologist recently conducted a survey of citizens over 60 years of age who have net worths too high to qualify for Medicaid but have no private health insurance. The ages of the 25 uninsured senior citizens were as follows: 16) \_\_\_\_\_

68 73 66 76 86 74 61 89 65 90 69 92 76  
62 81 63 68 81 70 73 60 87 75 64 82

Suppose the mean and standard deviation are 74.04 and 9.75, respectively. If we assume that the distribution of ages is mound-shaped and symmetric, what percentage of the respondents will be between 64.29 and 93.54 years old?

- A) approximately 95% B) approximately 84%  
C) approximately 81.5% D) approximately 68%
- 17) The distribution of scores on a test is mound-shaped and symmetric with a mean score of 78. If 68% of the scores fall between 72 and 84, which of the following is most likely to be the standard deviation of the distribution? 17) \_\_\_\_\_
- A) 2 B) 3 C) 12 D) 6
- 18) Which of the following is a measure of relative standing? 18) \_\_\_\_\_
- A) z-score B) pie chart C) variance D) mean

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

- 19) Test scores for a history class had a mean of 79 with a standard deviation of 4.5. Test scores for a physics class had a mean of 69 with a standard deviation of 3.7. One student earned a 82 on the history test and a 84 on the physics test. Calculate the z-score for each test. On which test did the student perform better? 19) \_\_\_\_\_
- 20) The z-score for a value  $x$  is -2.5. State whether the value of  $x$  lies above or below the mean and by how many standard deviations. 20) \_\_\_\_\_

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- 21) The speeds of the fastballs thrown by major league baseball pitchers were measured by radar gun. The mean speed was 88 miles per hour. The standard deviation of the speeds was 6 mph. Which of the following speeds would be classified as an outlier? 21) \_\_\_\_\_
- A) 76 mph B) 97 mph C) 107 mph D) 82 mph
- 22) Which of the following statements concerning the box plot and z-score methods for detecting outliers is false? 22) \_\_\_\_\_
- A) The z-score method uses the mean and standard deviation as a basis for detecting outliers.  
B) The box plot method is less affected by an extreme observation in the data set.  
C) The box plot method uses the quartiles as a basis for detecting outliers.  
D) The z-score method is less affected by an extreme observation in the data set.

23) The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students. The portion of students in the sample who visited campus bars on the weekend before the final exam week is an example of \_\_\_\_\_.

- A) a discrete random variable.
- C) a parameter.

- B) a categorical random variable.
- D) a statistic

23) \_\_\_\_\_

## Answer Key

Testname: P1EX

- 1) A
- 2) B
- 3) Descriptive: 27% of the students sampled (or 1350) read at least one best-seller each month.

Inferential: Based on the survey, we estimate that about 27% of all high school students read at least one best-seller each month.

- 4) A
- 5) A
- 6) B
- 7) C
- 8) The mean is the sum of the numbers divided by 18:

$$\frac{1 + 2 + 3 + 3 + 4 + 9 + 9 + 11 + 11 + 11 + 14 + 14 + 19 + 22 + 23 + 24 + 25 + 29}{18} \\ = \frac{234}{18} = 13 \text{ medals.}$$

The median is the mean of the two middle numbers:  $\frac{11 + 11}{2} = 11$  medals.

The mode is the most frequent number of medals: 11 medals.

- 9) C
- 10) D
- 11) B
- 12) B
- 13) A
- 14) B

15)  $s^2 = \frac{\sum (x - \bar{x})^2}{n - 1}$

$$\bar{x} = \frac{\sum x}{n} = \frac{63 + 42 + 69 + 66 + 41}{5} = 56.2$$

$$s^2 = \frac{(63 - 56.2)^2 + (42 - 56.2)^2 + (69 - 56.2)^2 + (66 - 56.2)^2 + (41 - 56.2)^2}{5 - 1} \\ = 184.70$$

- 16) C
- 17) D
- 18) A
- 19) history z-score = 0.67; physics z-score = 4.05; The student performed better on the physics test.
- 20) The value of  $x$  lies 2.5 standard deviations below the mean.
- 21) C
- 22) D
- 23) D