King Fahd University of Petroleum and Minerals
Department of Mathematics

Stat 211
Major Exam 1
212
February 19, 2022

EXAM COVER

Number of versions: 4
Number of questions: 20
Number of Answers: 5

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Net Time Allowed: 90 Minutes

MASTER VERSION

1. Which of the following statements involve descriptive statistics as opposed to inferential statistics?

    (a) The Alcohol, Tobacco and Firearms Department reported that Houston had 1,791 registered gun dealers in 1997.   (correct)

    (b) The FAA samples 500 traffic controllers in order to estimate the percent retiring due to job stress related illness.

    (c) Based on a survey of 400 magazine readers, the magazine reports that 45% of its readers prefer double column articles.

    (d) Based on a sample of 300 professional tennis players, a tennis magazine reported that 25% of the parents of all professional tennis players did not play tennis.

    (e) All the choices

2. The Jack In The Box franchise in Bangor, Maine, has determined that the chance a customer will order a soft drink is 0.90. The probability that a customer will order a hamburger is 0.60. The probability that a customer will order french fries is 0.50. If a customer places an order, what is the probability that the order will include a soft drink and no fries if these two events are independent?

    (a) 0.45   (correct)
    (b) 0.65
    (c) 0.70
    (d) 0.54
    (e) 0.50

3.   The Maple Grove Hotel manager has collected data on the number of rooms occupied each evening for the past 700 nights. The fewest rooms occupied during that period was 11 and the most was the capacity, 430. Based on this information, which of the following would be reasonable class limits for the first class if the manager wishes to use 8 classes to develop a frequency distribution?

(a)   10 to 65   (correct)

(b)   0 to 52.38

(c)   0 to 40

(d)   11 to 19

(e)   10 to 110

4.   Which of the following is most likely a parameter as opposed to a statistic?

(a)   the proportion of females registered to vote in a county   (correct)

(b)   the average score of the first five students completing an assignment

(c)   every third person to arrive at the bank

(d)   the average height of people randomly selected from a database

(e)   the proportion of trucks stopped yesterday that were cited for bad brakes

5. The human resources department at a major high tech company recently
    conducted an employee satisfaction survey of 100 of its 3,000 employees.
    Data were collected on such variables as age, gender, marital status, cur-
    rent salary, level of overall satisfaction on a scale from 1 to 5, number of
    years with the company, and job title. Considering the age variable where
    employees were asked to list their age at their last birthday, which of the
    following best describes the level of data measurement for that variable?

    (a) Ratio level   (correct)
    (b) Interval level
    (c) Nominal level
    (d) Cross-sectional data
    (e) Ordinal level

6. Data on the number of credit hours of 20,000 students at a public university
    enrolled in a Spring semester were collected. Which of the following is the
    best for presenting the information?

    (a) stem-and-leaf display   (correct)
    (b) Pareto diagram
    (c) contingency table
    (d) pie chart
    (e) histogram

7. Harrison Water Sports has three retail outlets: Seattle, Portland, and Phoenix. The Seattle store does 50 percent of the total sales in a year, while the Portland store does 35 percent of the total sales. Further analysis indicates that of the sales in Seattle, 20 percent are in boat accessories. The percentage of boat accessories at the Portland store is 30 and the percentage at the Phoenix store is 25. If a sales dollar is recorded as a boat accessory, the probability that the sale was made at the Portland store is:

    (a) 0.43   (correct)
    (b) 0.24
    (c) 0.35
    (d) 0.57
    (e) 0.65

8. The manager of the customer service division of a major consumer electronics company is interested in determining whether the customer who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products. The possible responses to the question "Out of a 100-point score with 100 being the highest and 0 being the lowest, what is your satisfaction level with Blu-ray player that you purchased?" result in

    (a) an interval scale variable   (correct)
    (b) an ordinal scale variable
    (c) a nominal scale variable
    (d) a ratio scale variable
    (e) All the choices

9.   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 distribution is right-skewed   (correct)

     (b)   The population mean exceeds 3.2

     (c)   The distribution is bell-shaped

     (d)   The distribution is negatively skewed

     (e)   The distribution is left-skewed

10.   The average score for a class of 35 students was 70. The 20 male students in the class averaged 73. What was the average score for the 15 female students in the class?

     (a)   66   (correct)

     (b)   73

     (c)   70

     (d)   50

     (e)   60

11.   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   (correct)
       (b)   The coefficient of variation is larger for males than for females
       (c)   Females have the larger range
       (d)   Females have the larger mean
       (e)   Median is same for males and females

12.   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)   Approximately 95   (correct)
       (b)   Approximately 81.5
       (c)   Approximately 68
       (d)   At least 75
       (e)   At most 60

13.   The estimation of the population average family expenditure on food based on the sample average expenditure of 1,000 families is an example of

   (a)   Inferential statistics   (correct)
   (b)   Descriptive statistics
   (c)   A parameter
   (d)   A statistic
   (e)   Estimator

14.   Which of the following statements about the median is not true?

   (a)   It is more affected by extreme values than the mean   (correct)
   (b)   It is a measure of central tendency
   (c)   It is equal to the mode in bell-shaped "normal" distributions
   (d)   It is equal to Q_2
   (e)   All the choices

15.   A large retail company gives an employment screening test to all prospective employees. Franklin Gilman recently took the test and it was reported back to him that his score placed him at the $80th$ percentile. Therefore:

   (a)   Franklin scored as high or higher than 80 percent of the people who took the test   (correct)

   (b)   80 people who took the test scored below Franklin

   (c)   Franklin was in the bottom 20 percent of those that have taken the test

   (d)   Franklin's score has a z-score of 80

   (e)   Franklin was 80 0ut of 100 in the test

16.   According to a survey of American households, the probability that the residents own 2 cars if annual household income is over $50,000 is 80%. Of the households surveyed, 60% had incomes over $50,000 and 70% had 2 cars. The probability that the residents of a household do not own 2 cars and have an income over $50,000 a year is

   (a)   0.12   (correct)

   (b)   0.18

   (c)   0.22

   (d)   0.48

   (e)   0.90

17.   If two events are collectively exhaustive, what is the probability that one
       or the other occurs?

       (a)   1.00   (correct)

       (b)   0.50

       (c)   0.70

       (d)   0.00

       (e)   Cannot be determined from the given information

18.   Health care issues are receiving much attention in both academic and
       political arenas. A sociologist recently conducted a survey of citizens over
       60 years of age whose net worth is too high to qualify for Medicaid. The
       ages of 25 senior citizens were as follows:

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

       Based on this information, which of the following is the correct statement?

       (a)   One fourth of the senior citizens sampled are below 65.5 years of age

              (correct)

       (b)   The middle 50% of the senior citizens sampled are between 65.5 and
              73.0 years of age

       (c)   The mean age of senior citizens sampled is 73.5 years of age

       (d)   The variability in the age of senior citizens is times 2 of the mean age

       (e)   All choices are correct

19.   The Biltmore Hotel manager is getting ready to make a presentation that she hopes will justify adding additional staff. As part of the presentation, she has constructed charts and graphs. The general type of statistical analysis she is using is:

(a)   Descriptive statistics   (correct)

(b)   Hypothesis testing

(c)   Estimation

(d)   Inferential statistics

(e)   Simple linear regression

20.   The probability that a person has an Internet connection at home is 30%. The probability that he has access to the Internet at work is 20%. The probability that a person who has access to the Internet at work also has access at home is 65%. What is the probability that a person has an Internet connection exactly at one of the two places?

(a)   0.24   (correct)

(b)   0.13

(c)   0.17

(d)   0.70

(e)   0.80