

Appendix A: Statistics in Psychological Research

Multiple Choice

1. Dr. Banguna is conducting an experiment to discover the effects of money payments (independent variable) on work performance (dependent variable). Dr. Banguna's null hypothesis would state ____.

- a. the size of the payment will not affect the level of work performance
- b. the larger the payment the higher the level of work performance
- c. the smaller the payment the lower the level of work performance
- d. no payment will cause no work to be performed at all

ANSWER: a

2. Renata runs a study looking at the drinking habits of undergraduates, and suspects the results would show that the amount a student drank will be related to his or her grade-point average (GPA). Instead, she finds that drinking habits (amount of drinks per week) are not related to GPA. This means that ____.

- a. Renata's hypothesis is true
- b. there is a negative correlation between alcohol consumption and GPA
- c. there is a positive correlation between alcohol consumption and GPA
- d. the null hypothesis is supported

ANSWER: d

3. Anqi is creating a picture-like graphic for her research paper. This graphic will be used to summarize and describe data she collected. Anqi is creating a ____.

- a. bar graph
- b. histogram
- c. pictograph
- d. descriptogram

ANSWER: b

4. Professor Jenrick has just completed an experiment in which he observed how many times a particular color was selected when 100 people were each given a choice of red, green, or blue. He represents the data graphically by constructing three boxes (labeled Red, Green, and Blue) whose heights are proportional to the number of times each color was chosen. Professor Jenrick has constructed a ____ of the data.

- a. histogram
- b. height chart
- c. central tendency measure
- d. statistical significance indicator

ANSWER: a

5. The most basic use of histograms is to ____.

- a. establish that the null hypothesis is true
- b. determine whether an analysis of variance is needed
- c. analyze data statistically

d. better understand the shape of the data

ANSWER: d

6. Professor Kipling is discussing statistics in your introductory psychology class. She explains that descriptive statistics are invaluable because they allow psychologists to ____.

a. describe the relationship between two variables

b. summarize a pool of data

c. determine whether a data set is normally distributed

d. determine whether the differences between two groups are significant

ANSWER: b

7. Descriptive statistics will allow you to compute ____.

a. a t-test

b. central tendency

c. the likelihood that results came about by chance

d. analysis of variance

ANSWER: c

8. Which of the following is one of the basic categories of descriptive statistics?

a. measures of central tendency

b. inferring causation

c. expressing the difference between two group means

d. predicting proportions in a population

ANSWER: a

9. Malcolm discovers that he has made 903 observations for his research study. Which abbreviation would he use to denote the total number of observations made?

a. X

b. Y

c. SD

d. N

ANSWER: d

10. Your instructor comes to class with the results of the last quiz. She tells you that the average score was 7 (out of a possible 10) and that the median was 6. These are measures of ____.

a. dispersion

b. central tendency

c. variance

d. range

ANSWER: b

11. Your friend places 11 numbers into a hat without showing you what those numbers are. He tells you he will give you \$10 if you can guess the exact number that he will

randomly pick out of the hat. He says that the mean of the numbers is 5, the median is 6, and the mode is 8. What would your best guess be?

- a. 5
- b. 6
- c. 8
- d. Any random number between 1 and 11; knowing the statistics won't help

ANSWER: c

12. Dorothea conducts a survey to find out how many national parks people have visited in the past two years. She polls twenty people and finds that ten people have visited no national parks; five people have visited one national park; four people have visited two national parks; and one person has visited twenty national parks. Which measure of central tendency should Dorothea use to provide the most accurate picture of her data?

- a. Mean
- b. Median
- c. Mode
- d. Standard deviation

ANSWER: b

Abby, Chrissy, and Kate are teammates playing "Win, Lose, or Draw." They need exactly 10 points to win and must choose who will draw next. They have some statistics on the points each girl gets when she draws: Abby has a mean of 10 points, Chrissy has a median of 10 points, and Kate has a mode of 10 points. Which girl should draw to have the best chance of winning?

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- a. Abby
- b. Chrissy
- c. Kate
- d. Both Kate and Abby

ANSWER: c

14. The mean is ____.

- a. the difference between the highest and lowest scores
- b. the arithmetic average
- c. one-half of the range
- d. the most frequent score

ANSWER: b

15. A researcher measures the number of times each of six rats has to run a maze before it masters the maze. The number of times recorded for each rat is 2, 3, 3, 4, 5, 7. In this example, the ____.

- a. mean is smaller than the median

- b. median is larger than the mode
- c. mean is larger than the range
- d. mode is larger than the range

ANSWER: b

16. Jack is a handsome and extremely charming fellow who is currently dating four women, but now must choose one. Alas, Jack is somewhat shallow and eccentric. He has decided to choose the woman whose median cost on a date is the lowest. The dollar amounts of the five dates with each woman are given below. Which of the women should Jack choose?

- a. Barbie: 10, 11, 17, 18, and 20.
- b. Sandy: 20, 40, 70, 111, and 200.
- c. Anna: 102, 111, 312, 514, and 813.
- d. Bambi: 4, 8, 12, 13, and 500.

ANSWER: d

17. To calculate the mean of a set of data, you add up all the scores and divide the result by the ____.

- a. range
- b. standard deviation
- c. number of scores
- d. mode

ANSWER: c

18. Consider the following data set: 2, 2, 3, 3, 3, 4, 4, 5, 5, 92. If the last value (92) is removed from the data set, which statistical measure will change the most?

- a. only the mode
- b. only the mean
- c. the median
- d. the mode and the mean

ANSWER: b

19. Batina is a conservative investor, much to the chagrin of her husband. He cannot believe she values stability in an investment over the historical rate of return. The standard deviations of the following returns of investment are given below. Which investment should Batina choose?

- a. 1.23
- b. 0.98
- c. 2.21
- d. 1.91

ANSWER: b

20. Alejandra is interested in describing the spread of the scores in her data set. She should calculate the ____ of the data set.

- a. mean

- b. range
- c. correlation
- d. mode

ANSWER: b

21. Jebreel is a graduating senior who must decide among four job offers in four different cities. He wants to move to a city where he can wear the same clothes all year. The standard deviations of temperature in these cities are given below. Which city should Jebreel choose?

- a. 8.19
- b. 12.46
- c. 19.48
- d. 24.13

ANSWER: a

22. As a researcher, you are interested in how the scores in your data set are dispersed. Specifically, you want to know the average difference between each score and the mean. You would find out this information by looking at the ____.

- a. range
- b. variance
- c. standard deviation
- d. correlation coefficient

ANSWER: c

23. What does it mean if the standard deviation of a distribution of quiz grades is 0?

- a. An equal number of people received each grade (A, B, C, D, and E).
- b. The distribution is a normal, bell-shaped curve.
- c. Everyone in the class received the same grade or score.
- d. Everyone in the class received a different grade.

ANSWER: c

24. In a normal distribution of scores, which of the following is true?

- a. About 5 percent of the scores are more than two standard deviations from the mean.
- b. The mean score is always 0.
- c. Most scores are located in the two "tails" at either end of the distribution.
- d. The standard deviation indicates the arithmetic average score.

ANSWER: a

25. Which of the following is a characteristic of a normal distribution?

- a. The mean and the standard deviation are equal.
- b. The standard deviation and the variance are equal.
- c. Fifty percent of the sample is within one standard deviation of the mean.
- d. The mean, median, and mode are equal.

ANSWER: d

26. Crystal received her SAT score from her counselor. She scored two standard deviations above the mean. What does this indicate about Crystal's score?

- a. It was higher than 97.5 percent of the other scores.
- b. It was only higher than 84 percent of the other scores.
- c. It was only higher than 68 percent of the other scores.
- d. There is insufficient information to answer this question.

ANSWER: a

27. Joe has collected data on the number of hours ten-year-olds spend watching television each week. He tells you that the distribution of scores followed a truly normal curve. Which of the following is suggested by Joe's statement?

- a. Fifty percent of the scores fall below the mean.
- b. The mean, median, and mode are all different.
- c. Sixty percent of the scores fall within one standard deviation above and below the mean.
- d. Ten percent of the scores fall two standard deviations above the mean.

ANSWER: a

28. If an IQ test is constructed to have a mean of 100 and a standard deviation of 16, approximately what percentage of scores falls between 84 and 116?

- a. 34 percent
- b. 95 percent
- c. 68 percent
- d. 50 percent

ANSWER: c

29. Hui-Hui has just received her scores on the Scholastic Achievement Test (SAT) and learns that her score was at the 84th percentile. Hui-Hui's score represents a standard score of ____.

- a. +1
- b. -1
- c. +2
- d. -2

ANSWER: a

30. Clint has learned his standard score on a standardized achievement test is -1 (minus one). What percentage of test takers performed better than Clint?

- a. 84 percent
- b. 16 percent
- c. 50 percent
- d. 95 percent

ANSWER: a

Professor Goranson studies the relation between adolescents' self-esteem and the number of close friends they report having. After completing her statistical analyses, Professor Goranson finds that as the number of close friendships increased, adolescents' self-esteem rose moderately. Which correlation coefficient did she likely obtain?

31. Professor Goranson studies the relation between adolescents' self-esteem and the number of close friends they report having. After completing her statistical analyses, Professor Goranson finds that as the number of close friendships increased, ad
- a. -0.86
 - b. -0.35
 - c. $+0.46$
 - d. $+0.98$

ANSWER: c

32. You are conducting a survey of international students studying at your university. Several of the questions on the survey try to determine how much exposure to American culture the student had before coming to the United States. You suspect that the more exposure the student had before arriving here, the fewer problems of adjustment he or she will report. You are looking for a(n) ____.

- a. hypothesis.
- b. negative correlation.
- c. positive correlation.
- d. independent variable.

ANSWER: b

33. Edhivia is studying the relationship between smoking and number of visits to the doctor. After giving a survey to 1,000 people, she finds that the more people smoked, the more times they visited the doctor every year. From these results, Edhivia can logically conclude that ____.

- a. there is a negative correlation between smoking and visiting the doctor
- b. there is a positive correlation between smoking and visiting the doctor
- c. smoking causes people to go to the doctor
- d. her results are invalid since participants were not randomly assigned to groups

ANSWER: b

34. Fiona, a quantitative psychologist, is interested in using inferential statistics because they provide ____.

- a. a measure of how likely it is that a result came about by chance
- b. a correlation between the dependent variable and the independent variable
- c. information about the variability of the data
- d. a summarization of a pool of data

ANSWER: a

35. Richard Simmons wants to know whether his original weight-loss system (Simmons I) is as effective as his new weight-loss system (Simmons II). His results indicate that people on Simmons I lose an average of 28.5 pounds in six months and people on Simmons II

lose an average of 30.1 pounds in six months. What type of statistics should Richard use to see if the Simmons II system is really better than the Simmons I system?

- a. inferential
- b. descriptive
- c. mean
- d. mode

ANSWER: a

Francesca is at a casino watching a game involving dice. She determines that one of the dice is loaded, causing it to turn up “3” more often than would be expected by chance. To know for certain if this was true, Francesca would have to conduct a study to determine if her findings have statistical ____.

36. Francesca is at a casino watching a game involving dice. She determines that one of the dice is loaded, causing it to turn up “3” more often than would be expected by chance. To know for certain if this was true, Francesca would have to

- a. significance
- b. power
- c. validity
- d. generalizability

ANSWER: a

37. In Dr. Dalbey's study, women missed an average of three work days a year because of colds, and men missed an average of five work days because of colds. To see if the difference between these means is statistically significant, Dr. Dalbey should ____.

- a. calculate a set of medians
- b. calculate a correlation coefficient
- c. conduct a t test
- d. utilize factor analytic techniques

ANSWER: c

38. In Diti's study, employees who listened to rap music produced an average of 5.71 units and employees who listened to polka music produced an average of 2.71 units. To see if the difference between these means is statistically significant, Diti should ____.

- a. calculate a correlation coefficient
- b. examine the medians
- c. conduct a t test
- d. calculate percentiles

ANSWER: c

39. Dr. Yodela wants to find out whether there is a significant difference in the mean scores of two groups on his new intelligence test. Which statistic should Dr. Yodela use?

- a. The median
- b. A correlation
- c. An analysis of variance
- d. A t test

ANSWER: d

40. In a memory experiment, Dr. Nall finds that the difference in the mean number of nonsense syllables remembered by Group A vs. Group B is statistically significant at the p
- a. there are five chances in a hundred that the difference was due to chance
 - b. an ANOVA (analysis of variance) found an interaction effect
 - c. if the experiment were conducted 100 times, the result would be the same 90 percent of the time
 - d. the standard deviations in the two groups were small

ANSWER: a

41. What information is necessary to calculate the degrees of freedom for a t test?

- a. The size of the between-group effect
- b. The uncertainty level
- c. The p value
- d. The size of the sample

ANSWER: d

42. While conducting statistical analysis, Gordon forgets how to calculate degrees of freedom. All he knows is that Group 1 has twenty-three subjects and Group 2 has twenty-seven subjects. How many degrees of freedom should Gordon use for his analysis?

- a. 4
- b. 48
- c. 50
- d. 2

ANSWER: b

43. Sumon is conducting an experiment. The six experimental groups receive three different dosage levels of a drug either in the morning or in the evening. Sumon is trying to investigate the interaction between dosage level and the time of day of the dose. Sumon will most likely choose to analyze his data with a(n) ____.

- a. t test
- b. analysis of variance
- c. correlation
- d. standard score

ANSWER: b

44. If your research study had more than two experimental/control groups and encompassed more than one independent variable, you would have to use a(n) ____ to determine the differences between the groups.

- a. chi-squared test
- b. analysis of variance
- c. t test
- d. correlation coefficient

ANSWER: b

45. Eunice is a new elementary school principal. One of her first projects is to determine whether students have been appropriately assigned to either the Sparrow, Blue Jay, or Robin reading groups. She administers the Miller Reading Ability Test (MRAT) to all three groups. What statistical analysis should Eunice use to compare the means of the three groups?

- a. analysis of variance
- b. correlational analysis
- c. standard deviation
- d. t test

ANSWER: a