Test Bank for Fundamental Statistics for the Behavioral Sciences 9th Howell

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Chapter 2—Basic Concepts

MULTIPLE CHOICE QUESTIONS

2.1 Scales of measurement are important because
a) they influence the kinds of statistical tests we will use in at least a crude way.
b) they reflect the kinds of statements we may make about relationships between points on the scale.
c) they limit the kinds of conclusions we can draw from a study.
d) *all of the above

2.2 + Which scale really isn't much of a scale at all?
a) *nominal
b) ordinal
c) interval
d) ratio

2.3 + The major difference between an interval and a ratio scale is that
a) with an interval scale you know which values represent more of the quantity.
b) with an interval scale you can speak meaningfully about a score of 0.
c) *with a ratio scale you can speak meaningfully about a score of 0.
d) both scales carry the same level of information

2.4 When we are concerned about the measurement scale, we are concerned about
a) the numbers we have collected.
b) the underlying concept which we are trying to measure.
c) the interpretation we can give to our resulting statistics.
d) *both the underlying concept and our interpretation of them.

2.5 Evans et al. (1998) recorded adrenaline levels of children who lived near a newly opened airport to see if the presence of the airport increased stress levels in children. (Increased stress would be associated with increases in adrenaline levels.) In this study we would most likely view adrenaline as
a) a ratio measurement of stress.
b) a nominal measure of stress.
c) *somewhere between an ordinal and an interval measure of stress.
d) an absolute measure of stress.

2.6 In the study of children living near an airport, we first need to be concerned about
a) the underlying scale of adrenaline scores.
b) *the relationship between numerical scores on adrenaline and underlying stress.
c) whether adrenaline increases over time in a continuous fashion.
d) the number of children who showed high adrenaline scores.

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2.7 + If we are comparing the adrenaline scores of children who live near an airport with those who live away from an airport, the dependent variable is
a) location.
b) *adrenaline.
c) stress.
d) distance from the airport.

2.8 In the preceding question the independent variable is
a) stress.
b) adrenaline.
c) *location.
d) the number of children treated for sleep disturbance.

2.9 When we use paw-lick latency as a measure of temperature sensitivity, latency is
a) an independent variable.
b) a categorical variable.
c) *a continuous variable.
d) a discrete variable.

2.10 If we want to obtain a random sample of people to interview, we could best do so by
a) *drawing random numbers from a table and linking a number to a person.
b) taking every 10th name out of the telephone book.
c) knocking on doors and interview whoever answers.
d) asking for volunteers.

2.11 + Which of the following is least likely to be an example of an independent variable?
a) gender
b) age
c) treatment condition
d) *test score

2.12 + Which of the following is a discrete variable?
a) *gender
b) age
c) height
d) depression score

2.13 + The Greek letter Σ is a symbol for
a) multiplication.
b) suppression.
c) the square root.
d) *summation.

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2.14 An important general rule given in the text is
a) always square values before you do anything else.
b) work algebraic equations from right to left.
c) *perform operations that are within parentheses before you perform operations outside of parentheses.
d) operations can be performed in any order.

2.15 In an equation, a constant is
a) always represented by the letter "c."
b) a term that you can ignore.
c) another word for "variable."
d) *a number that does not change its value in a given situation.

2.16 + Which of the following is most certainly an ordinal scale?
a) football numbers
b) *mailbox numbers
c) IQ scores
d) Celsius temperature scale

2.17 + Calculate ΣX^2 with $X_1 = 2$, $X_2 = 5$.
a) 11
b) *29
c) 18
d) 49

2.18 + Professor Jeffrey assigned each of his students a number and selected 20 for his study by using a table of random numbers. Professor Jeffrey was interested in how the type of feedback received would affect the level of happiness in his students. The students were either praised or insulted and then the levels of happiness were measured by a questionnaire administered at the end of the study. What is the dependent variable of this study?
a) praise
b) feedback
c) students
d) *happiness

2.19 In the above study, what is the independent variable?
a) weight
b) *feedback
c) students
d) happiness

2.20 What is wrong with the above study when generalizing to people in general?
a) The sample was not randomly assigned.
b) *The sample was not random sampled from a larger population.
c) A nominal scale was used to measure the dependent variable.
d) Nothing was wrong with the above study.

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2.21 + For the set of numbers 1, 17, 19, 30, 87, X_5 refers to
a) 1, 17, 19, 30.
b) 1, 17, 19, 30, 87.
c) *87.
d) 5.

2.22 + For the following equation, which mathematical operation should be performed first?

$$\frac{6+2(7*(4+1))}{3-1}$$

a) 3 – 1
b) 6 + 2
c) *4 + 1
d) 2 × 4

2.23 Which of the following is NOT an example of "assigning a number to an object"?
a) giving a sensitivity score to a roommate
b) measuring a child's IQ
c) giving a football player jersey #87
d) *All of the above are examples of assigning numbers to objects.

2.24 A true zero point is characteristic of
a) all scales of measurement.
b) an interval scale.
c) *a ratio scale.
d) none of the above

2.25 + If a happiness scale had a true zero point, a score of zero would mean
a) low levels of happiness.
b) *an absence of happiness.
c) an arbitrary level of happiness.
d) nothing useful.

2.26 In an experiment, an independent variable is _____ and a dependent variable is _____.
a) *manipulated, measured
b) measured, manipulated
c) continuous, manipulated
d) discrete, summation

2.27 Use of a sample not randomly selected in an experiment
a) makes random assignment impossible.
b) *limits the degree to which the results can be generalized to the whole population.
c) requires the use of ratio scales of measurement.
d) interferes with the use of quantitative independent variables.

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2.28 According to the text, the most important component of an experiment for giving us confidence that our results are meaningful is
a) random sampling.
b) *random assignment.
c) summation notation.
d) the manipulation of the dependent variable.

2.29 Which of the following is NOT true of random number tables?
a) They can be used to draw random samples.
b) They can be used to assign participants to conditions.
c) *They are only useful for drawing random numbers between 0 and 9.
d) It is appropriate to start at any place in the table when using it.

2.30 Where X is a variable and C is a constant, which of the following equations is true?
a) $\Sigma(X+C) = \Sigma X + C$
b) $\Sigma(X+C) = \Sigma C + X$
c) $\Sigma CX = X\Sigma C$
d) *$\Sigma CX = C\Sigma X$

2.31 + Which of the following types of variables cannot be continuous?
a) *nominal variables
b) independent variables
c) dependent variables
d) quantitative variables

2.32 A consumer researcher wanted to examine the effects of using different-colored boxes on shoppers' level of buying her brand of cereal. What is the dependent variable?
a) *levels of buying
b) kind of cereal
c) different colored boxes
d) the consumer researcher

2.33 + The use of different colored boxes in the above example is most likely to be a
a) continuous independent variable.
b) *discrete independent variable.
c) continuous dependent variable.
d) discrete dependent variable.

2.34 + Which of the following is most likely to be an independent variable?
a) running speeds
b) depression scores
c) paw-lick latencies
d) *forms of therapy

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2.35 Ordinal scales
a) are not really scales at all because they only provide numbers as arbitrary levels.
b) give information about differences between points on the scale.
c) *provide information by ordering people, objects, or events along some continuum.
d) have a true zero point.

2.36 When _____ is used, every subject in a study has an equal chance of being placed in each of the groups being formed?
a) *random assignment
b) equivalent groups
c) matching
d) selective assignment

2.37 Which of the following statements is NOT true about scales of measurement?
a) Measurement scales depend on the purpose for which you collected data.
b) Moving from ordinal to ratio scales represents an increase in the meaning assigned to numbers
c) *Certain statistical procedures can only be performed with ratio data.
d) Measurement scales were, at least historically, tied to psychology's quest to be treated as a true science.

2.38 What does NOT count as "measurement?"
a) The assignment of numbers to behaviors
b) Matching verbal expressions to ratings of hostility
c) Assessment of behavior with only a weakly valid instrument
d) *These are all examples of measurement.

TRUE/FALSE QUESTIONS

2.39 [FALSE] Ranking students from the most popular to the least popular is an example of ratio data.

2.40 [TRUE] Classifying students by their major field of study is an example of nominal data.

2.41 [TRUE] Marital status (e.g., single, married, divorced/separated, widowed) is a discrete variable.

2.42 [TRUE] Height is a continuous variable.

2.43 [FALSE] A "variable" refers to data that is constant.

2.44 [FALSE] A researcher randomly assigned clients to two conditions (a wait-list control group and a hypnosis group) and measured their smoking reduction. Smoking reduction is an independent variable.

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2.45 [TRUE] A student measured the effect on test performance of listening to various types of music while studying. Test performance is a dependant variable.

2.46 [TRUE] If $X_1 = 1$, $X_2 = 3$, and $X_3 = 5$, then the $\Sigma X = 9$.

2.47 [FALSE] If $X_1 = 1$, $X_2 = 3$, and $X_3 = 5$ and $C = 3$, then $C\Sigma X = 12$.

2.48 [FALSE] $\Sigma XY = \Sigma X \Sigma Y$.

OPEN-ENDED QUESTIONS

2.49 Name three examples of discrete variables.

2.50 Name three examples of continuous variables.

2.51 Give one example of each of the following types of data:
a) nominal
b) ordinal
c) interval
d) ratio

2.52 Dr. Smith measured depressive symptoms using a questionnaire where scores could range from 0 to 40. Then, he used the clinical cutoff of a score of 16 to classify people as depressed or not depressed. Briefly describe the two types of data Dr. Smith had at his disposal.

2.53 A drink manufacturer wanted to examine the effect of different can designs on sales.
a) Name the independent variable.
b) Name the dependent variable.
c) Is the dependent variable discrete or continuous?

2.54 An instructor for a course in Psychology of Gender wanted to know if there are gender differences in whether or not students major in the sciences.
a) Name the independent variable.
b) Name the dependent variable.
c) Is the dependent variable discrete or continuous?

2.55 Briefly describe the benefits of random assignment to groups.

2.56 Describe two ways to obtain a random sample.

2.57 Suppose the following numbers represent test scores from students in this class: 80, 95, 75, 100.
a) What is X_2?
b) What notation would be used to represent the sum of these test scores?

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2.58 Given the following numbers: 1, 3, 4, 2, 3:

a) Calculate ΣX.

b) Calculate ΣX^2

c) Calculate ΣCX, where $C = 2$

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