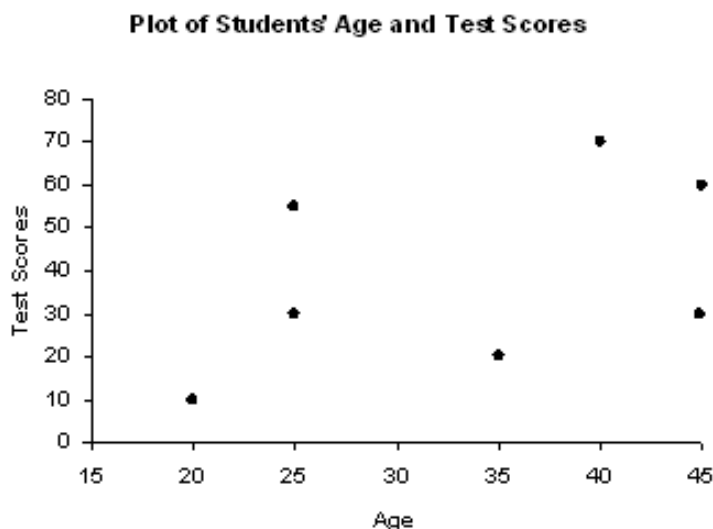


# **Answers to Even-Numbered Textbook Problems**

**CHAPTER 1 Introduction to Statistics**

2. It refers to the symbols used for the mathematical operations performed and the answers obtained.
4.
  - a. A transformation is a mathematical procedure for systematically converting a set of scores into different scores.
  - b. To make scores easier to work with and to make different kinds of scores comparable.
6. A percentage is a proportion multiplied times 100.
8. To organize, summarize, and communicate the IQ scores, and to draw conclusions about what the scores indicate about intelligence.
10. To transform a percentage to a proportion, divide the percentage by 100.
12.
  - a. Two decimal places
  - b. Four decimal places
  - c. Two decimal places
  - d. Two decimal places
14.  $X = 4.347$  and  $Y = 3.333$
16.  $Q = (3+5)(9+25) = (8)(34) = 272$
18.  $D = (1.917)(3.742) = 7.17$
20.
  - a. 0.30
  - b. 32.5%
  - c. 33.33%
  - d.  $0.375 = 0.38$
22.
  - a.  $(12/80)100 = 15\%$
  - b.  $(0.40)80 = 32$
  - c.  $(0.075)80 = 6$
  - d. Because  $(0.005)80 = 0.4$ , and 0.4 of one person cannot fail an exam.
- 24.



## CHAPTER 2 Statistics and the Research Process

2.
  - a. A pattern where one or close to one  $Y$  score is paired with a particular  $X$  score, so as the  $X$  scores change, the  $Y$  scores consistently change.
  - b. More or less the same batch of  $Y$  scores are paired with each  $X$  score.
4. When a greater variety of different  $Y$  scores are paired with a particular  $X$ .
6. In an experiment the researcher manipulates or changes the independent variable and then measures scores on the dependent variable. In a correlational study neither variable is manipulated by the researcher; scores on both variables are simply measured.
8. It is the variable measured by the experimenter; it reflects the behavior exhibited by participants; and it is assumed to be caused or influenced by the independent variable.
10.
  - a. They are used to organize, summarize, and describe the characteristics of a sample of scores, and to predict  $Y$  scores using the relationship with  $X$ .
  - b. They are used to decide whether sample data are representative of data that would be found in the population, and can therefore be used to make inferences about the population.
12.
  - a. A nominal scale identifies a quality or category. An ordinal scale involves scores that indicate rank order; units of measurement between scores are unequal, and there is no zero. An interval scale measures an actual amount; units between scores are equal, and negative numbers are allowed. A ratio scale measures an actual amount; units are equal, and there is a true zero.
  - b. Continuous variables can be measured in fractional amounts, discrete variables cannot.
  - c. Nominal and ordinal variables are discrete, interval and ratio variables are continuous.
14.
  - a. Study A is an experiment because the researcher manipulates the amount of alcohol participants consume. Study B is a correlational study because the researcher merely measures the amount of alcohol subjects consumed.
  - b. Study A because only here does the researcher manipulate the variable that might cause impairment in walking.
16.
  - a. The independent variable is volume of background music. The conditions are whether the music is played softly, played loudly, or not played. The dependent variable is the final exam score.
  - b. The independent variable is a student's year in college. The conditions are freshman, sophomore, junior, or senior. The dependent variable is the amount of fun had while attending college.
  - c. The independent variable is birth order. The conditions are being born first, second, or third. The dependent variable is level of intelligence.
  - d. The independent variable is length of exposure to the lamp. The conditions are 15 or 60 minutes. The dependent variable is amount of depression.
  - e. The independent variable is wall color. The conditions are blue, green, red, or beige walls. The dependent variable is number of aggressive acts.

18. We form a hypothesis about behavior that is translated into a predicted relationship between variables that we can measure in a sample. Then we describe the relationship in the sample by computing statistics, and use the statistics to estimate the corresponding parameters we would expect to find if we could examine the relationship in the population.
20. Sample A because one value of  $Y$  is consistently paired with one value of  $X$ .
22. Study A because each value of  $X$  is consistently paired with one or close to one value of  $Y$ .
24.
  - a. No. The study examines weight scores as a function of age scores.
  - b. Yes.
  - c. In each study, the independent variable is the variable plotted along the  $X$  axis, and the dependent variable is the variable plotted along the  $Y$  axis.