

**ANSWERS TO SELECTED QUESTIONS
(NOT GIVEN IN TEXTBOOK)**

CHAPTER 1

- 1.7** (a) inferential statistics (f) inferential statistics
 (b) descriptive statistics (g) descriptive statistics
 (c) inferential statistics (h) inferential statistics
 (d) descriptive statistics (i) inferential statistics
 (e) inferential statistics
- 1.8** (a) experiment; cages with either one, several, or many other chimps
 (b) observational study
 (c) observational study
 (d) experiment; groups of 2, 3, or 4 students
 (e) observational study
 (f) experiment; test-taking or control workshop; allowing students to select type of
 workshop might confound results
 (g) observational study
 (h) observational study

Chapter 1: Introduction

Exercise 1. Descriptive and Inferential Statistics

Does the statement typify descriptive statistics (because it describes sets of actual observations) or inferential statistics (because it generalizes beyond collections of actual observations)?

1. Daniel Day-Lewis has received three academy awards (Oscars) for best actor. As of 2016, that is the most received by an actor. Day-Lewis received best actor academy awards for *My Left Foot* (1989), *There Will Be Blood* (2007), and *Lincoln* (2012). Source: https://en.wikipedia.org/wiki/List_of_Academy_Award_records#Most_awards
 - a. Descriptive statistics
 - b. Inferential statistics
2. Psychology students with an undergraduate GPA of 3.5 would be expected to attain a graduate school GPA of at least 3.0.
 - a. Descriptive statistics
 - b. Inferential statistics
3. A research report issued by the Centers for Disease Control and Prevention states that American adults are nearly 25 pounds heavier now than they were in 1960. Source: <http://usgovinfo.about.com/od/healthcare/a/tallbutfat.htm>
 - a. Descriptive statistics
 - b. Inferential statistics
4. In 2011, Statistics Canada counted 813 residents in Churchill, Manitoba, down 11.9% from 2006. Source: <http://www.cbc.ca/news/canada/manitoba/churchill-struggles-to-maintain-jobs-population-1.2968838>
 - a. Descriptive statistics
 - b. Inferential statistics
5. It is difficult and expensive to estimate the total number of polar bears because polar bears often live in remote habitats. The February 2016 IUCN Red List of Threatened Species reported that the total was approximately 26,000 polar bears. Source: <http://www.iucnredlist.org/details/22823/0>
 - a. Descriptive statistics
 - b. Inferential statistics
6. According to Nielson ratings for the week of October 31, 2016, *Vino El Amor* was the most highly rated prime broadcast TV program among Hispanics. Source: <http://www.nielsen.com/us/en/top10s.html>
 - a. Descriptive statistics
 - b. Inferential statistics

Answers:

1. a. Descriptive statistics
2. b. Inferential statistics
3. b. Inferential statistics
4. a. Descriptive statistics
5. b. Inferential statistics
6. b. Inferential statistics

Exercise 2. Qualitative, Ranked, and Quantitative Data

What type of data are referenced in the bold faced portion of the statement—qualitative (a single observation is a word, letter, or numerical code that represents a category), ranked (a single observation is a number that indicates a relative standing), or quantitative (a single observation is a number that represents an amount or count)?

1. In 2015, the Princeton Review awarded the University of Illinois the distinction of being the **No. 1 party school** in the nation. Source: <http://www.sbnation.com/college-football/2015/8/3/9090587/princeton-review-party-school-rankings-2015>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative
2. The 2015 American Psychological Association membership total was 117, 575, including 77,552 **full members** and 40,023 **affiliates**. Source: <http://www.apa.org/pubs/info/reports/2015-report.pdf>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative
3. The **number of text messages** sent in Britain peaked in 2011 at 39.7 billion. Source: <http://www.dailymail.co.uk/sciencetech/article-2538488/SMS-takes-seat-IM-number-texts-sent-Britain-falls-time.html>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative
4. In November 2014, Billboard.com reported that the **No. 2 best selling ringtone** was Meghan Trainor's *All About That Bass*. Source: <http://www.billboard.com/charts#/charts/ringtones>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative

5. The tallest woman in the history of WNBA basketball is Malgorzata Dydek who was measured at **7 ft. 2 in.** Source: <http://www.sportsgoogly.com/tallest-female-basketball-players-in-wnba/>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative

6. According to the results of a CollegeXpress survey conducted in 2015, the three most popular sports among high school and college students are **soccer, outdoor track, and basketball.** Source: <http://www.prweb.com/releases/2015/05/prweb12710257.htm>
 - a. Qualitative
 - b. Ranked
 - c. Quantitative

Answers:

1. b. Ranked
2. a. Qualitative
3. c. Quantitative
4. b. Ranked
5. c. Quantitative
6. a. Qualitative

Exercise 3. Population and Sample

Does the statement reference a population (a complete collection of observations) or a sample (any smaller collection of actual observations from a population)?

1. A 2013 poll by HuffPost/YouGov found that 48% of adults in the United States are open to the idea that our planet is being observed by alien spacecraft. Source: http://www.huffingtonpost.com/2013/09/11/48-percent-of-americans-believe-in-ufos_n_3900669.html
 - a. Population
 - b. Sample

2. Records maintained by the Dane County Treasurer's Office show that nine parcels of land in Dane County are owned by individuals named John Smith.
 - a. Population
 - b. Sample

3. The National Highway Traffic Safety Administration reported that 726 bicyclists were killed in crashes with motor vehicles in 2014. Source: http://www.pedbikeinfo.org/data/factsheet_crash.cfm
 - a. Population
 - b. Sample

4. According to the American Press Institute, the most popular way Americans reported getting their news in 2014 was directly from a news organization, such as a TV newscast, newspaper, website, or newswire. Source: <https://www.americanpressinstitute.org/publications/reports/survey-research/how-americans-get-news/>
 - a. Population
 - b. Sample

Answers:

1. b. Sample
2. a. Population
3. a. Population
4. b. Sample

Exercise 4. Level of Measurement

Select the level of measurement attained by the following sets of observations or data.

1. A student's state of residence (e.g., Wisconsin)
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio
2. Average height of men on a basketball team (e.g., 74")
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio
3. A viewer's "excellent" rating of a movie on a scale of "excellent," "good," "fair," and "poor."
 - a. Nominal
 - b. Ordinal
 - c. Interval/Ratio
4. Weights recorded for two women participating in a weight management program (e.g., 150 lbs. and 178 lbs.)
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio

Answers:

1. a. Nominal
2. c. Interval/Ratio
3. b. Ordinal

4. c. Interval/Ratio

Exercise 5. Discrete and Continuous

Indicate whether the following quantitative observations are discrete or continuous.

1. According to the 2010 U.S. Census, the population of Chicago was **2,695,598 persons**.
Source: <https://www.google.com/#q=population+of+chicago+2010+census>
 - a. Discrete
 - b. Continuous
2. The driving distance from Fairbanks, Alaska, to Scotland, Texas, is **3760.43 miles**.
Source: <http://www.mapquest.com>
 - a. Discrete
 - b. Continuous
3. On March 19, 2016, Joey Chestnut won a boysenberry pie eating contest by consuming **14.5 pounds** of pie in 8 minutes. Source: majorleagueeating.com/records.php
 - a. Discrete
 - b. Continuous

Answers:

1. a. Discrete
2. b. Continuous
3. b. Continuous

Exercise 5. Independent and Dependent Variables

Identify the independent variable in these experiments.

1. Eugenia Costa-Giomi (2004) carried out a study designed to investigate the effects of piano instruction on children's school performance. Fourth-grade children in Montreal were assigned to either an experimental group or to a control group. Children in the experimental group received three years of free piano instruction. Children in the control group received no formal music instruction. The independent variable is _____. Source: *Psychology of Music*, 2004, Vol. 32, No. 2, 139-152.
 - a. School performance
 - b. Group assignment (piano instruction or no formal music instruction)
2. Marian Banks (2002) investigated the effects of animal-assisted therapy (AAT) on loneliness among the elderly. The participants were assigned to one of three treatment conditions: No AAT, AAT once per week, or AAT three times per week. The results indicated that, compared to no AAT, loneliness was significantly lower among the participants who received AAT once or three times per week. The independent variable is _____. Source: *Journals of Gerontology: Series A: Biological Sciences & Medical Sciences*, 2002, Vol. 57A, No. 7, 428-432.

- a. AAT treatment condition (0, 1, or 3 times per week)
- b. Loneliness

Answers:

1. b. Group assignment
2. a. AAT treatment condition

Exercise 6. Random Sampling and Random Assignment

For each of the following, does the description indicate the use of random sampling or random assignment?

1. Randler, Demirhan, Wüst-Ackermann, and Desch (2016) were interested in reducing the negative emotions often associated with dissections of animals in science classes. The researchers randomly selected zoology course sections to either view a predissection video that instructed students about fish dissection (treatment group) or a life history video about the fish (comparison). The authors utilized a pre/posttest treatment-comparison design. The results showed that treatment group's posttest scores on positive affect, negative affect, state anxiety, and self-efficacy were higher than their pretest scores, whereas there were no differences between the pretest and posttest scores of the comparison group. The researchers concluded that the benefits of increased positive affect and self-efficacy come at the cost of higher negative affect and state anxiety. Source: Randler, C., Demirhan, E., Wüst-Ackermann, P., & Desch, I.H. (2016). *CBE: Life Sciences Education*, 15(1), Article 1. Downloaded from <http://www.lifescied.org/content/15/1/ar1.full.pdf+html>
 - a. Random sampling
 - b. Random assignment
2. In July 2009, the Pew Research Center reported that on a typical day, 34% of Americans take a nap. The report was based on a nationally representative sample of 1,488 adults. Source: <http://pewresearch.org/pubs/1296/americans-napping-habits>
 - a. Random sampling
 - b. Random assignment
3. Nussbaum and Kardash (2005) investigated the effects of different types of instructions on the frequency of counterarguments in essays written by 107 undergraduate students. Each of the undergraduates received one of three types of instructions. The instruction conditions were: Reason Condition, Counterargue/Rebut Condition, and Control Condition. Source: Nussbaum, E. M., & Kardash, C. M. (2005). The effects of goal instructions and text on the generation of counterarguments during writing. *Journal of Educational Psychology*, 97, 157-169.
 - a. Random sampling
 - b. Random assignment
4. Glenberg, Gutierrez, Levin, Japuntich, and Kaschak (2004) reported that second graders' reading comprehension benefited from manipulating objects referred to in the text. The

three treatment groups included in the experiment were: Manipulate, Read, and Control. Source: Glenberg, A. M., Gutierrez, T., Levin, J. R., Japuntich, S., & Kaschak, M. P. (2004). Activity and imagined activity can enhance young children's reading comprehension. *Journal of Educational Psychology*, 96, 424-436.

- a. Random sampling
 - b. Random assignment
5. The Centers for Disease Control (CDC) analyzed data from national surveys to estimate national flu vaccination coverage for the 2015-16 flu season. The CDC reported that the vaccination rate for children 6 months through 17 years was 59.3% in both 2014-15 and 2015-16. However, the vaccination rate for adults 18 years or more declined from 43.6% to 41.7% during the same time period. Source: <http://www.cdc.gov/flu/fluview/coverage-1516estimates.htm>
- a. Random sampling
 - b. Random assignment

Answers:

1. b. Random assignment
2. a. Random sampling
3. b. Random assignment
4. b. Random assignment
5. a. Random sampling

Exercise 7. Chapter Review

Read the research study description and then answer the questions that follow the description.

Research Study 1

Chapell, Blanding, Silverstein, Takahashi, Newman, Gubi, and McCann (2005) carried out an investigation of the relationship between test anxiety and academic performance among undergraduate college students. They found that females had both significantly higher test anxiety test scores than males and significantly higher cumulative GPAs. Source: Chapell, M.S., Blanding, Z.B., Silverstein, M.E., Takahashi, M., Newman, B., Gubi, A., & McCann, N. (2005). Test anxiety and academic performance in undergraduate and graduate students. *Journal of Educational Psychology*, Vol. 97(2), 268-274.

1. The investigators carried out an ____.
 - a. Experiment
 - b. Observational study
2. GPA is a ____ variable.
 - a. Qualitative
 - b. Quantitative

3. Gender is measured on the ____ level.
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio

4. Test anxiety is measured on the ____ level.
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio

Answers:

1. b. Observational study
2. a. Quantitative
3. a. Nominal
4. c. Approximately interval

Research Study 2

Researchers in Dublin, Ireland, carried out a study on the effects of a Self-Alert Training (SAT) program in adults with ADHD. The participants were randomly assigned to either the SAT or control training. One of the psychological outcome measures was the Beck Depression Inventory (BDI). The BDI contains 21 questions about the severity of depression symptoms. Test takers are asked to rate each question on a scale of 0 to 3 where higher scores indicate higher depression. The Elevator Counting with Distraction was used to assess sustained attention. For this test, the test takers listened to a series of tones and counted the high-pitched tones only. The post-training results indicated that the SAT group had significantly lower BDI scores than the control group. The post-training results also showed that the SAT group's improvement on the Elevator Counting with Distraction test was significantly greater than the control group's improvement. Source: Salomone, S., Fleming, G. R., Shanahan, J. M., Castorina, M., Bramham, J., O'Connell, R. G., & Robertson, I. H. (2015). The effects of a self-alert training (SAT) program in adults with ADHD. *Frontiers in Human Neuroscience*, 9 (45). Doi: 10.3389/fnhum.2015.00045.

1. The investigators carried out an ____.
 - a. Experiment
 - b. Observational study

2. A Beck Depression Inventory (BDI) score is a ____ variable.
 - a. Qualitative
 - b. Quantitative

3. Depression is measured on the ____ level.
 - a. Nominal
 - b. Ordinal
 - c. Approximately interval
 - d. Interval/Ratio

4. An Elevator Counting with Distraction test score is a ____ variable.
 - a. Qualitative
 - b. Quantitative

5. Depression is a/an ____ variable.
 - a. Dependent
 - b. Independent

6. Group assignment (SAT or control) is a/an ____ variable.
 - a. Dependent
 - b. Independent

Answers:

1. a. Experiment
2. b. Quantitative
3. c. Approximately interval
4. b. Quantitative
5. a. Dependent
6. b. Independent