

1.9: Chapter 1 Solutions

2.

- a. all children who take ski or snowboard lessons
- b. a group of these children
- c. the population mean age of children who take their first snowboard lesson
- d. the sample mean age of children who take their first snowboard lesson
- e. X = the age of one child who takes his or her first ski or snowboard lesson
- f. values for X , such as 3, 7, and so on

4.

- a. the clients of the insurance companies
- b. a group of the clients
- c. the mean health costs of the clients
- d. the mean health costs of the sample
- e. X = the health costs of one client
- f. values for X , such as 34, 9, 82, and so on

6.

- a. all the clients of this counselor
- b. a group of clients of this marriage counselor
- c. the proportion of all her clients who stay married
- d. the proportion of the sample of the counselor's clients who stay married
- e. X = the number of couples who stay married
- f. yes, no

8.

- a. all people (maybe in a certain geographic area, such as the United States)
- b. a group of the people
- c. the proportion of all people who will buy the product
- d. the proportion of the sample who will buy the product
- e. X = the number of people who will buy it
- f. buy, not buy

10. a

12. quantitative discrete, ratio, 150

14. qualitative, nominal, Oakland A's

16. quantitative discrete, ratio, 11,234 students

18. qualitative, nominal, Crest

20. quantitative continuous, ratio, 47.3 years

22. b

24.

- a. The survey was conducted using six similar flights.
The survey would not be a true representation of the entire population of air travelers.
Conducting the survey on a holiday weekend will not produce representative results.
- b. Conduct the survey during different times of the year.
Conduct the survey using flights to and from various locations.
Conduct the survey on different days of the week.

26. Answers will vary. Sample Answer: You could use a systematic sampling method. Stop the tenth person as they leave one of the buildings on campus at 9:50 in the morning. Then stop the tenth person as they leave a different building on campus at 1:50 in

the afternoon.

28. Answers will vary. Sample Answer: Many people will not respond to mail surveys. If they do respond to the surveys, you can't be sure who is responding. In addition, mailing lists can be incomplete.

30. b

32. convenience; cluster; stratified; systematic; simple random

34.

- a. qualitative (categorical)
- b. quantitative discrete
- c. quantitative discrete
- d. qualitative (categorical)

36.

Causality: The fact that two variables are related does not guarantee that one variable is influencing the other. We cannot assume that crime rate impacts education level or that education level impacts crime rate.

Confounding: There are many factors that define a community other than education level and crime rate. Communities with high crime rates and high education levels may have other lurking variables that distinguish them from communities with lower crime rates and lower education levels. Because we cannot isolate these variables of interest, we cannot draw valid conclusions about the connection between education and crime. Possible lurking variables include police expenditures, unemployment levels, region, average age, and size.

38.

- a. Possible reasons: increased use of caller id, decreased use of landlines, increased use of private numbers, voice mail, privacy managers, hectic nature of personal schedules, decreased willingness to be interviewed
- b. When a large number of people refuse to participate, then the sample may not have the same characteristics of the population. Perhaps the majority of people willing to participate are doing so because they feel strongly about the subject of the survey.

40.

Table 1.19

a.	# flossing per week	Frequency	Relative frequency	Cumulative relative frequency
	0	27	0.4500	0.4500
	1	18	0.3000	0.7500
	3	11	0.1833	0.9333
	6	3	0.0500	0.9833
	7	1	0.0167	1

- b. 5.00%
- c. 93.33%

42. The sum of the travel times is 1,173.1. Divide the sum by 50 to calculate the mean value: 23.462. Because each state's travel time was measured to the nearest tenth, round this calculation to the nearest hundredth: 23.46.

44. b

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