

Chapter 1 Homework Worksheet

1.1.8 Homework

For problems 1 through 4 below, state whether the collection is a sample or a population.

1. Seventy-five students from a given college are randomly selected. _____

2. Grades from all students at a given college are gathered. _____

3. Two hundred goldfish are gathered to test their response to a new type of fish food.

4. From the entire collection of a new breed of tomato vines, each tomato grown for an entire season is gathered and tested for taste. _____

For problems 5 through 8 below, state whether the computed value is a statistic or a parameter.

5. The grade points are averaged for seventy-five college students. _____

6. The grade points are averaged for all students at a given college. _____

7. The average age of all registered drivers is computed. _____

8. The percentage of honors students from 100 randomly selected college students is computed to be 12%. _____

Answer the following questions.

9. Is it possible to conduct a true census of a large population?

10. Why do we use statistical estimates given that they always contain error?

Are the following data sets quantitative, or categorical?

11. The following are randomly selected favorite primary or secondary colors chosen by randomly selected children.

{yellow, yellow, blue, green, blue, red, yellow, green, green, purple, blue, red, red, green, yellow, purple, purple, purple, red, green, green, orange, orange, orange, orange, purple, green, green, green, purple}

12. The following are foot lengths, in centimeters, of randomly selected adult males.

{24.4, 24.2, 25.4, 25.8, 26.3, 24.7, 25.1, 24.6, 26.1, 26.7, 25.1, 25.8, 26.4, 25.7, 25.6, 26.2, 26.2, 26.8, 26.4, 26.8, 26.3, 26.4, 24.5, 25.6, 25.7, 24.9, 27.0, 27.8, 27.6, 27.6}

13. Below are grade point averages for randomly selected community college students.

{3.2, 2.5, 3.4, 4.0, 2.1, 3.3, 3.2, 3.7, 2.9, 1.4, 2.2, 3.1, 1.7, 2.5, 3.2, 3.9, 3.7, 2.0, 2.6, 3.2, 2.9, 3.1, 2.4, 3.1, 2.4, 2.3, 3.7, 3.9, 2.6, 2.6}

14. Below are letter grades assigned to randomly selected college-level calculus students.

{A, C, B, A, C, B, F, D, F, C, A, C, D, A, D, A, D, D, C, C, D, C, A, A, A, C, C, D, C, C}

Plot the appropriate graphical display, either a dotplot or bar chart, for the data sets referenced below.

15. Plot an appropriate graphical display for the data in Problem 11.

17. Plot an appropriate graphical display for the data in Problem 13.

For problems 19 through 22, state whether the data are quantitative or qualitative.

19. The letter grades of seventy-five college students are collected. _____

21. Calendar years of students' birthdays are recorded from student applications.

For problems 23 through 26, describe the data as discrete or continuous.

23. The number of honors students at a given college is counted. _____

24. Heights of 75 college students are gathered. _____

25. The amount of change (in coins) in your pocket is counted. _____

26. The low temperature in degrees Celsius is recorded nightly. _____

1.2.3 Homework

For problems 3 and 4, state whether the error is a sampling error or non-sampling error.

3. Population data can vary widely — this type of error is due to the fact that we are taking relatively small samples from diverse populations.

4. This type of error is due to failings by humans or the equipment they use.

For problems 5 through 7, determine whether the data are influenced by non-response bias, response or measurement bias, or selection bias.

5. A student asks a group of fellow students "Don't you hate this college?"

6. Very few surveys tend to be returned in mail surveys. _____

7. Honors students tend to gather data that will not be difficult to obtain. _____

Answer the following questions.

8. It has been shown that children with more toys tend to have a higher level of intelligence. What can be said about the claim that giving children more toys will cause their intelligence to increase?

9. What can be said regarding the claim that cold weather causes people to catch a cold?

1.4.6 Homework

For problems 1 through 4, determine whether the study is observational or experimental. For experiments, identify the explanatory and response variables.

3. People are polled to measure support for a political issue. _____

For problems 8 through 15, state whether the method of sampling is systematic, convenience, stratified or cluster. State also whether the sample is representative of its population, and the sampling frame for the study.

8. A research organization randomly collects data from local residents to study how Americans feel about their communities.

9. A statistician gathers data from 100 randomly selected students at each of 25 randomly selected colleges to make inferences about all U.S. college students.

11. Students from every college in the United States are randomly selected to make inferences about all U.S. college students.

13. At a given college, 5 random students from every section of every course offered are questioned to measure the college's effectiveness in achieving student learning outcomes.

15. Students from a given college are sampled by selecting names corresponding to every 200th student ID.

Answer the following questions.

For the following problems, determine whether the conclusion is appropriate. Explain your answers.

19. The average IQ for a random sample of Internet users is higher than the average IQ of a random sample of non-Internet users. Because of this, we can conclude that the Internet is effective in raising average user IQ.

Answer the following questions.

23. It has been widely claimed that drinking grape juice every day can improve a person's health and lower risk of many diseases. List possible confounding variables.