Chapter 1 - Practice Problems 1

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.
1) Define the terms population, sample, parameter and statistic. How does a census compare to a sample? 1) ______________

2) Distinguish between qualitative and quantitative data. Give an example for each. 2) ______________

3) Define continuous and discrete data and give an example of each. 3) ______________

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the given value is a statistic or a parameter.
4) A sample of 120 employees of a company is selected, and the average age is found to be 37 years. 4) _______
   A) Statistic   B) Parameter

5) After taking the first exam, 15 of the students dropped the class. 5) _______
   A) Parameter   B) Statistic

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Identify the sample and population. Also, determine whether the sample is likely to be representative of the population.
6) An employee at the local ice cream parlor asks three customers if they like chocolate ice cream. 6) ______________

7) 100,000 randomly selected adults were asked whether they drink at least 48 oz of water each day and only 45% said yes. 7) ______________
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

8) A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the population from which the study was sampled.

A) All the adult American pine trees taller than 60 feet
B) The 25,000 adult American pine trees in the forest
C) The 250 adult American pine trees from which the data was collected
D) All American pine trees, of any age, in the forest

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use critical thinking to develop an alternative conclusion.

9) A study shows that adults who work at their desk all day weigh more than those who do not. Conclusion: Desk jobs cause people to gain weight.

Use critical thinking to address the key issue.

10) You plan to make a survey of 200 people. The plan is to talk to every 10th person coming out of the school library. Is there a problem with your plan?

11) A questionnaire is sent to 10,000 persons. 5,000 responded to the questionnaire. 3,000 of the respondents say that they "love chocolate ice cream". We conclude that 60% of people love chocolate ice cream. What is wrong with this survey?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Perform the requested conversions. Round decimals to the nearest thousandth and percents to the nearest tenth of a percent, if necessary.

12) Convert the fraction \( \frac{1}{2} \) to an equivalent decimal and percentage.

A) 0.62, 62%  B) 0.5, 5%  C) 0.5, 50%  D) 0.62, 620%

Solve the problem.

13) A gardener has 46 clients, 50% of whom are businesses. Find the number of business clients.

A) 230 clients  B) 23 clients  C) 23,000 clients  D) 2300 clients

14) Alex and Juana went on a 60-mile canoe trip with their class. On the first day they traveled 27 miles. What percent of the total distance did they canoe?

A) 2%  B) 0.45%  C) 45%  D) 200%
Perform the requested conversions. Round decimals to the nearest thousandth and percents to the nearest tenth of a percent, if necessary.

15) Convert 0.3 to an equivalent fraction and percentage.  

A) \( \frac{1}{5}, \) 30%  
B) \( \frac{1}{5}, \) 3%  
C) \( \frac{3}{10}, \) 30%  
D) \( \frac{3}{10}, \) 3%

Identify the number as either continuous or discrete.

16) The average height of all freshmen entering college in a certain year is 68.4 inches.  

A) Continuous  
B) Discrete

17) The number of freshmen entering college in a certain year is 621.  

A) Continuous  
B) Discrete

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

18) A new breakthrough in computer hardware will enable the consumer to download files at a much faster rate than is currently capable. The new hardware is being tested to determine the download rate for several types of data. The manufacturer of the new hardware is required to list on the packaging of the new product the download speed in bytes per second (bps) for the slowest type of data. What is the variable of interest to the manufacturer of the new hardware?

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

19) The major contribution of inferential statistics is that it ______.

A) allows us to take sample information and make statements about populations  
B) gives us a description of the data contained in the population  
C) gives us a description of the data contained in the sample  
D) allows us to take population information and make statements about samples
Answer Key  
Testname: CH 1 SET 1

1) A population is the complete collection of all elements. A sample is a subset of elements drawn from a population. A parameter is a numerical measurement describing some characteristic of a population. A statistic is a numerical measurement describing some characteristic of a sample. A census is the collection of data from every element in a population; a sample is a subset of a population.

2) Qualitative data can be separated into categories that are distinguished by nonnumeric characteristics. Quantitative data consist of numbers representing counts or measurements. Examples will vary.

3) Continuous numerical data result from infinitely many possible values that can be associated with points on a continuous scale so that there are no gaps or interruptions. Discrete data result from either a finite number of possible values or a countable number of possible values. Examples will vary.

4) A
5) A
6) Sample: the 3 selected customers; population: all customers; not representative
7) Sample: the 100,000 selected adults; population: all adults; representative
8) B
9) Desk job workers are confined to their chairs for most of their work day. Other jobs require standing or walking around which burns calories. It is probably the lack of exercise that causes higher weights, not the desk job itself.
Avoid causality altogether by saying lack of walking and exercise is associated with higher weights.
10) People who don’t go to the library are excluded.
11) This is not a random sample. The survey is based on voluntary, self–selected responses and therefore has serious potential for bias.
12) C
13) B
14) C
15) C
16) A
17) B
18) The variable of interest to the manufacturer is the download speeds, in bps, of the new hardware that is being tested.
19) A