

Chapter 1 - The Nature of Probability and Statistics

1. Statistics is the science of conducting studies to

- A) solve a system of equations.
- B) hypothesize, experiment, and form conclusions.
- C) collect, organize, summarize, analyze, and draw conclusions from data.
- D) monitor, study, and report on a subject.

Section: 1.1

2. How are statistics important in our everyday lives, and why do we need to understand them?

Ans: Statistics are used to analyze the results of surveys. It is important to understand the terms and concepts so that one can understand exactly what is being represented (or misrepresented) by a given statement.

Section: 1.1

3. A _____ is a characteristic or attribute of a subject that can assume different values?

- A) datum
- B) variable
- C) exponent
- D) sample

Section: 1.1

4. Variables with values that are determined by chance are called _____.

- A) specialized.
- B) erratic variables.
- C) random variables.
- D) inconsistent variables.

Section: 1.1

5. Each value in a data set may be referred to as either a data value or a(n) _____.

- A) subdata
- B) datum
- C) atom
- D) point

Section: 1.1

6. If a weather center monitors and calculates the average number of tornadoes that pass through Topeka, Kansas each year, what type of variable would they be investigating?

- A) random variable
- B) controlled variable
- C) isolated variable
- D) hypothesis variable

Section: 1.1

7. Inferential statistics is based on probability.

Section: 1.1

8. Which of the following correctly describes the relationship between a sample and a population?
- A) A sample is a group of populations that are subject to observation.
 - B) A population is a group of samples that may or may not be included in a study.
 - C) A sample is a group of subjects selected from a population to be studied.
 - D) A population and a sample are not related.

Section: 1.1

9. A _____ consists of all subjects that are being studied.

Section: 1.1

10. _____ is a decision-making process for evaluating claims about a population, based on information obtained from samples.

Section: 1.1

11. Which branch of statistics would employ probability to predict how many miles one should be able to drive a 2000 Toyota Celica during its lifetime?

- A) time series statistics
- B) descriptive statistics
- C) inferential statistics
- D) differential statistics

Section: 1.1

12. In which branch of statistics would a researcher acquire twenty-five 2000 Toyota Celicas, drive them until they had a major mechanical failure, record the final mileage, and then write a report for *Car and Driver*?

- A) predictive statistics
- B) descriptive statistics
- C) inferential statistics
- D) differential statistics

Section: 1.1

13. Based on her electric bills from last year, Mrs. Smith expects she will be paying \$75/month this year. This is an example of descriptive statistics.

Section: 1.1

14. What level of measurement would be applied when doing a survey on the average American's shoe size?

Difficulty: Moderate Section: 1.2

15. What level of measurement classifies data into mutually exclusive categories in which no order or ranking can be imposed on the data?

- A) nominal
- B) ordinal
- C) interval
- D) ratio

Difficulty: Moderate Section: 1.2

16. What level of measurement allows for the ranking of data, a precise difference between units of measure, and also includes a true zero?

- A) nominal B) ordinal C) interval D) ratio

Difficulty: Moderate Section: 1.2

17. Classifying the fruit in a basket as apple, orange, or banana, is an example of the _____ level of measurement?

- A) nominal B) ordinal C) interval D) ratio

Difficulty: Moderate Section: 1.2

18. Rating a restaurant by a number of stars is an example of an ordinal level of measurement.

Difficulty: Moderate Section: 1.2

19. The _____ level of measurement classifies data into categories that can be ranked; however, precise differences between the ranks do not exist.

Difficulty: Moderate Section: 1.2

20. Determining the number of people from the state of Alaska who voted for a Republican in the last election is an example of _____ measurement.

Difficulty: Moderate Section: 1.2

21. A person's hair color would be an example of a quantitative variable.

Difficulty: Moderate Section: 1.2

22. The variable of height is an example of a quantitative variable.

Difficulty: Moderate Section: 1.2

23. Explain the difference between qualitative, quantitative, discrete, and continuous variables.

Ans: Qualitative variables can be placed into distinct categories, but they cannot be ranked. Quantitative variables are discrete if they can be assigned a value, generally an integer, and they can be counted. Quantitative variables are continuous if they can assume an infinite number of values between two specific values.

Difficulty: Moderate Section: 1.2

24. A _____ variable assumes values that can be counted.

Difficulty: Moderate Section: 1.2

25. The number of birds in a tree is an example of a continuous variable.

Difficulty: Easy Section: 1.2

26. Quantitative data can be further classified as continuous or nonsequential.
Difficulty: Easy Section: 1.2
27. The amount of time needed to run the Boston marathon is an example of which type of variable?
A) discrete B) qualitative C) continuous D) temporal
Difficulty: Easy Section: 1.2
28. The four basic methods used to obtain samples are: random, irregular, cluster, and stratified sampling.
Difficulty: Easy Section: 1.3
29. In a research study, it is always preferable for the researcher to carefully choose his participants rather than randomly select them from a suitable group..
Difficulty: Moderate Section: 1.3
30. _____ sampling is used when the population is large and it includes subjects residing over a large geographic area.
Difficulty: Moderate Section: 1.3
31. How might a telephone survey performed between the hours of 8 AM and 5 PM be biased?
Ans: The telephone survey may be biased as they can only interview people who are available during standard working hours.
Difficulty: Moderate Section: 1.3
32. If you were told that four students from a class of twenty were questioned for a poll about study habits, this would be an example of _____.
A) random sampling C) stratified sampling
B) systematic sampling D) cluster sampling
Difficulty: Moderate Section: 1.3
33. What type of sampling is being employed if the country is divided into economic classes and a sample is chosen from each class to be surveyed?
A) random sampling C) stratified sampling
B) systematic sampling D) cluster sampling
Difficulty: Moderate Section: 1.3
34. Questioning every 14th customer leaving a theatre about the movie they had seen, would be an example of systematic sampling.
Difficulty: Moderate Section: 1.3