***Introductory Statistics, 10e* (Mann)**

**Chapter 1 Introduction**

1.1 Statistics and Types of Statistics

1) Under descriptive statistics, we study:

A) the methods to make decisions about one or more populations based on sample results

B) the methods for organizing, displaying, and describing data

C) how to describe the probability distribution

D) samples to assist in decision making

Answer: B

Diff: 1

LO: 1.1.0 Demonstrate an understanding of the types of statistics.

Section: 1.1 Statistics and Types of Statistics

Question Title: Chapter 01, Testbank Question 001

2) Under inferential statistics, we study:

A) the methods to make decisions about one or more populations based on sample results

B) the methods for organizing, displaying, and describing data

C) how to describe the frequency distribution

D) types of summary measures

Answer: A

Diff: 1

LO: 1.1.0 Demonstrate an understanding of the types of statistics.

Section: 1.1 Statistics and Types of Statistics

Question Title: Chapter 01, Testbank Question 002

3) True or False: In statistics, a population consists of all subjects or objects whose characteristics are being studied.

Answer: TRUE

Diff: 1

LO: 1.1.0 Demonstrate an understanding of the types of statistics.

Section: 1.1 Statistics and Types of Statistics

Question Title: Chapter 01, Testbank Question 003

4) In statistics, we define a sample as:

A) people living in one city only

B) the target population

C) all items under investigation

D) a portion of the population

Answer: D

Diff: 1

LO: 1.1.0 Demonstrate an understanding of the types of statistics.

Section: 1.1 Statistics and Types of Statistics

Question Title: Chapter 01, Testbank Question 004

1.2 Basic Terms

1) An observation is a:

A) graph observed for a data set

B) value of a variable for a single element

C) table prepared for a data set

D) sample observed from the population

Answer: B

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 005

2) An independent group wants to determine if the consumption of gasoline has increased due to changes in price. The group randomly selects 320 gas stations from 12 different states and collects data from the month of the year when gas is the cheapest and from the month of the year when gas is the most expensive. The data shows no significant difference in gas consumption between the two months. In this example, what is the variable being studied?

A) The 320 gas stations chosen

B) The 12 different states

C) The consumption of gasoline

D) The price of gasoline

Answer: C

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 006

3) A data set is a:

A) set of decisions made about the population

B) set of graphs and pictures

C) collection of observations on one or more variables

D) score collected from an element of the population

Answer: C

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 007

**Use the following to answer the questions below.**

**The following table lists the temperatures (in degrees Fahrenheit) of essential workers entering a medical facility.**

|  |  |
| --- | --- |
| **Essential Worker** | **Temperature****(in degrees Fahrenheit)** |
| **Sam** | **99.4** |
| **Betty** | **98.0** |
| **Lateshia**  | **98.9** |
| **Amani** | **98.3** |
| **Connor** | **97.6** |
| **Vincent** | **99.6** |
| **Maria** | **98.0** |

4) What is the variable for this data set?

Answer: Temperature

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 008

5) How many observations are in this data set?

Answer: 7

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 009

6) How many elements does this data set contain?

Answer: 7

Diff: 1

LO: 1.2.0 Demonstrate an understanding of the basic terms used in statistics.

Section: 1.2 Basic Terms

Question Title: Chapter 01, Testbank Question 010

1.3 Types of Variables

1) A quantitative variable is the only type of variable that can:

A) assume numeric values for which arithmetic operations make sense

B) be graphed

C) be used to prepare tables

D) have no intermediate values

Answer: A

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 011

2) A discrete variable is a variable that can assume:

A) categorical values only

B) a countable set of values only

C) an uncountable set of values

D) non-numerical values

Answer: B

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 012

3) A continuous variable is a variable that can assume:

A) categorical values only

B) a countable set of values only

C) any value in an interval

D) non-numerical values

Answer: C

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 013

4) A qualitative variable is a variable that:

A) can assume numerical values

B) cannot be graphed

C) can assume an uncountable set of values

D) cannot be measured numerically

Answer: D

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 014

5) Is the "size of a university's enrollment increase from last year to this year" an example of qualitative or quantitative data?

Answer: Quantitative

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 015

6) Is the variable "lengths of top-ten hit songs" discrete or continuous?

Answer: Continuous

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 016

7) Classify the variable as discrete or continuous: Durations of your last 30 cell phone calls.

Answer: Continuous

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 017

8) The two types of quantitative variables are continuous and \_\_\_\_\_\_\_\_.

Answer: discrete

Diff: 1

LO: 1.3.0 Demonstrate an understanding of the types of variables used in statistics.

Section: 1.3 Types of Variables

Question Title: Chapter 01, Testbank Question 018

1.4 Cross-Section Versus Time-Series Data

1) Time-series data are collected:

A) on the same element for the same variable at different points in time

B) on a variable that involves time, e.g., minutes, hours, weeks, months, etc.

C) for a qualitative variable

D) on different elements for the same period of time

Answer: A

Diff: 1

LO: 1.4.0 Demonstrate an understanding of cross-section and time-series data.

Section: 1.4 Cross-Section Versus Time-Series Data

Question Title: Chapter 01, Testbank Question 019

2) Cross-section data are collected:

A) on the same variable for the same variable at different points in time

B) on different elements at the same point in time

C) for a qualitative variable

D) on different elements for the same variable for different periods of time

Answer: B

Diff: 1

LO: 1.4.0 Demonstrate an understanding of cross-section and time-series data.

Section: 1.4 Cross-Section Versus Time-Series Data

Question Title: Chapter 01, Testbank Question 020

3) Is the total insect population among 12 U.S. national parks in 2017 an example of time-series or cross-section data?

Answer: Cross-section

Diff: 1

LO: 1.4.0 Demonstrate an understanding of cross-section and time-series data.

Section: 1.4 Cross-Section Versus Time-Series Data

Question Title: Chapter 01, Testbank Question 021

4) Classify the following as cross-section or time-series data: Monthly telephone bill for each family in an apartments complex.

Answer: Cross-section data

Diff: 2

LO: 1.4.0 Demonstrate an understanding of cross-section and time-series data.

Section: 1.4 Cross-Section Versus Time-Series Data

Question Title: Chapter 01, Testbank Question 022

1.5 Population Versus Sample

1) In statistics, the population that is being studied is often referred to as the:

A) studied population

B) null population

C) target population

D) projected population

Answer: C

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 023

2) In statistics, conducting a survey means:

A) collecting information from elements of a sample

B) making mathematical calculations

C) drawing pictures and graphs

D) none of these

Answer: A

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 024

3) In statistics, conducting a census means:

A) making decisions based on sample results

B) checking if a variable is qualitative or quantitative

C) collecting information from all members of the population

D) collecting a sample with replacement

Answer: C

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 025

4) A statistician wants to determine the total annual medical costs incurred by all U.S. states from 1995 to 2015 as a result of health problems related to smoking. She polls each of the 50 states annually to obtain health care expenditures, in dollars, on smoking-related illnesses. Does this study constitute a survey or a census. Explain.

Answer: Census. She collected data from all 50 states in the population.

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 026

5) A statistician wants to determine the average annual Gross National Product (GNP) for countries in Africa. He samples the 20 largest (in terms of population) African countries over 10 years, and gets their quarterly GNP results for each quarter of each year. The statistician is criticized because the sample is not representative. Explain why.

Answer: The statistician took the 20 largest countries. The sample must contain countries with different populations in almost the same proportion as they exist in the population.

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 027

6) In statistics, a representative sample is a sample that:

A) contains the characteristics of the population as closely as possible

B) represents the results of a sample exactly

C) contains all people living in an area

D) contains elements collected with replacement

Answer: A

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 028

7) The Ohio lottery involves selecting 5 numbers from 5 different, yet identical, bins. This is an example of sampling:

A) with replacement

B) without replacement

Answer: A

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 029

8) The Megabucks lottery involves selecting 3 numbers from a single bin. This is an example of sampling:

A) with replacement

B) without replacement

Answer: B

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 030

9) The following are all valid reasons why a census cannot be conducted except:

A) the size of the population is quite large

B) the population is too diverse

C) the cost of collecting information from all members of the population would exceed the budget

D) it is impossible to identify and access each member of the population

Answer: B

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 031

10) A random sample is a sample drawn in such a way that:

A) each member of the population has a 0.10 chance of being included in the sample

B) all elements of a population are included

C) some members of the population have no chance of being included in the sample

D) each member of the population has some chance of being included in the sample

Answer: D

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 032

11) Which of the following is not an example of a nonrandom or nonrepresentative sample?

A) Convenience sample

B) Quota sample

C) Cluster sample

D) Judgment sample

Answer: C

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 033

12) When a sample result is compared to the result we would have obtained by conducting a census, the difference between the two results that occurs by chance is called a \_\_\_\_\_\_\_\_.

Answer: sampling error

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 034

13) Which of the following is not a name for the difference between a sample result and the result we would have obtained by conducting a census, that occurs by human mistakes?

A) Bias

B) Nonsampling error

C) Nonsystematic error

D) Systematic error

Answer: C

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 035

14) The list of members of the population that is used to select a sample is called the \_\_\_\_\_\_\_\_.

Answer: sampling frame

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 036

15) A local radio station conducts a survey on the proposed amendment to change the curfew hours. This is what type of nonsampling error?

A) Selection error

B) Nonresponse error

C) Response error

D) Voluntary response error

Answer: D

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 037

16) A survey was conducted by mail and 35% of the questionnaires were not returned. This is what type of nonsampling error?

A) Selection error

B) Nonresponse error

C) Response error

D) Voluntary response error

Answer: B

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 038

17) A simple random sample is a sample drawn in such a way that:

A) each member of the population has some chance of being included in the sample

B) every tenth element of an arranged population is included

C) each sample of the same size has an equal chance of being selected

D) each member of the population has a 0.10 chance for being included in the sample

Answer: C

Diff: 1

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 039

18) Realizing that age may affect a person's response, the population under study was divided into different age groups (21-30, 31-40, 41-50, 51-60, and 61-70). Then, one sample, of the same size, is selected from each age group. This is what type of sampling technique?

A) Simple random sampling

B) Systematic random sampling

C) Stratified random sampling

D) Cluster sampling

Answer: C

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 040

19) The names of all 5,000 students in a high school are arranged alphabetically. To select 200 students from the list, *k =* 5000/200 = 25. The 25th student is chosen, and then the 50th, 75th, 100th, etc. This is what type of sampling technique?

A) Simple random sampling

B) Systematic random sampling

C) Stratified random sampling

D) Cluster sampling

Answer: B

Diff: 2

LO: 1.5.0 Demonstrate an understanding of the difference between a population and a sample.

Section: 1.5 Population Versus Sample

Question Title: Chapter 01, Testbank Question 041

1.6 Design of Experiments

1) True or False: A survey, or observational study, can be used to determine a cause-and-effect relationship between two variables.

Answer: FALSE

Diff: 2

LO: 1.6.0 Demonstrate an understanding of the sources of data used in statistics.

Section: 1.6 Design of Experiments

Question Title: Chapter 01, Testbank Question 042

2) Which method of research involves a treatment group?

A) Designed experiment

B) Survey

C) Observational Study

D) Convenience Study

Answer: A

Diff: 1

LO: 1.6.0 Demonstrate an understanding of the sources of data used in statistics.

Section: 1.6 Design of Experiments

Question Title: Chapter 01, Testbank Question 043

3) A dummy pill that looks just like the real medicine is called a \_\_\_\_\_\_\_\_.

Answer: placebo

Diff: 1

LO: 1.6.0 Demonstrate an understanding of the sources of data used in statistics.

Section: 1.6 Design of Experiments

Question Title: Chapter 01, Testbank Question 044

4) In a double-blind experiment, who knows which patients are taking the real medicine and which patients are taking the placebo?

A) Only the patients

B) Only the experimenters

C) Both the patients and the experimenters

D) Neither the patients nor the experimenters

Answer: D

Diff: 1

LO: 1.6.0 Demonstrate an understanding of the sources of data used in statistics.

Section: 1.6 Design of Experiments

Question Title: Chapter 01, Testbank Question 045

5) Marcia is participating in a designed experiment testing a new migraine medicine, and she is receiving a placebo instead of the real medicine. Marcia indicates that the pill she is taking is decreasing the occurrence of migraines. What is this phenomenon called?

Answer: Placebo effect

Diff: 2

LO: 1.6.0 Demonstrate an understanding of the sources of data used in statistics.

Section: 1.6 Design of Experiments

Question Title: Chapter 01, Testbank Question 046

1.7 Summation Notation

**Use the following to answer the questions below.**

**The telephone bills for the past month for four families are $48, $65, $39, and $81.**

1) The value of  is:

Answer: 233

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 047

2) The value of  is:

Answer: 14,611

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 048

3) The value of 2 is:

Answer: 54,289

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 049

4) The value of  is:

Answer: 213

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 050

**Use the following to answer the questions below.**

**The test scores of five students are 85, 64, 95, 75, and 93.**

5) The value of  is:

Answer: 412

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 051

6) The value of  is:

Answer: 34,620

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 052

7) The value of 2 is:

Answer: 169,744

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 053

8) The value of  is:

Answer: 362

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 054

**Use the following to answer the questions below.**

**Consider the following five pairs of *m* and *f* values:**

|  |  |
| --- | --- |
| ***m*** | ***f*** |
| **6** | **3** |
| **9** | **5** |
| **7** | **5** |
| **13** | **6** |
| **7** | **8** |

9) The value of  is:

Answer: 42

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 055

10) The value of  is:

Answer: 232

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 056

11) The value of  is:

Answer: 384

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 057

12) The value of  is:

Answer: 159

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 058

13) The value of  is:

Answer: 2,164

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 059

14) The value of  is:

Answer: 1,370

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 060

15) The value of  is:

Answer: 1,015

Diff: 2

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 061

**Use the following to answer the questions below.**

**Consider the following six pairs of *x* and *y* values:**

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| **8** | **10** |
| **11** | **16** |
| **15** | **20** |
| **5** | **7** |
| **20** | **28** |
| **21** | **21** |

16) The value of  is:

Answer: 102

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 062

17) The value of  is:

Answer: 1,592

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 063

18) The value of  is:

Answer: 34,802

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 064

19) The value of  is:

Answer: 27,712

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 065

20) The value of  is:

Answer: 1,276

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 066

21) The value of  is:

Answer: 2,030

Diff: 1

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 067

22) The value of  is:

Answer: 21,752

Diff: 2

LO: 1.7.0 Demonstrate an understanding of summation notation.

Section: 1.7 Summation Notation

Question Title: Chapter 01, Testbank Question 068

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