

Testbank

to accompany

Australasian Business Statistics

3rd Australian Edition

by Black et al.

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Chapter 1

Introduction to Statistics

True/False Questions

1. A portion (subset) of the entities under study is called the sample.

- *a. True
- b. False

General Feedback:

Section 1.2, Difficulty: Easy

2. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by selecting a focus group of 40 industrial customers. For this study, the set of 40 industrial customers is a population.

- a. True
- *b. False

General Feedback:

Section 1.2, Difficulty: Easy

3. Simon Arnett, Director of Human Resources, is exploring the causes of employee absenteeism at Buderim Bottling during the last operating year (1 January 2005 to 31 December 2005). Personnel records for 50 of the plant's 250 employees are selected for analysis. For this study, the group of 50 is a parameter.

- a. True
- *b. False

General Feedback:

Section 1.2, Difficulty: Easy

4. Michael Bayley, Marketing Director of UniPower's Electrical Division, is leading a study to identify and assess the relative importance of product features. Michael directs his staff to design a survey questionnaire for distribution to all of UniPower's 954 customers. Michael is ordering a census of the customers.

- *a. True
- b. False

General Feedback:

Section 1.2, Difficulty: Medium

5. Claudia Taylor Director of Global Industrial Sales in Melbourne is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by surveying all 1500 industrial customers Sue is ordering a sample of the industrial customers.

- a. True
- *b. False

General Feedback:
Section 1.2, Difficulty: Medium

6. Penny Bauer, Chief Financial Officer of Harrison Haulage, suspects irregularities in the payroll system and orders an inspection of 'each and every payroll voucher issued since 1 January 2005'. Penny is ordering a census of the payroll records.

- *a. True
- b. False

General Feedback:
Section 1.2, Difficulty: Medium

7. Upon discovering an improperly adjusted drill press, Jack Joyner, Director of Quality Control, ordered a 100% inspection of all castings drilled on the evening shift. Jack is ordering a sorting of the castings.

- a. True
- *b. False

General Feedback:
Section 1.2, Difficulty: Medium

8. Greek letters are commonly used to represent population parameters.

- *a. True
- b. False

General Feedback:
Section 1.2, Difficulty: Medium

9. The symbol μ is used to represent the population mean?

- *a. True
- b. False

General Feedback:
Section 1.2, Difficulty: Medium

10. Bauer, Chief Financial Officer of Harrison Haulage, suspects irregularities in the payroll system, and orders an inspection of 'every tenth payroll voucher issued since 12005 and a calculation of the percentage of irregular vouchers in this group'. The percentage which Penny ordered is a sample parameter.

- a. True
- *b. False

General Feedback:
Section 1.2, Difficulty: Medium

11. The lowest level of data measurement is nominal level.

- *a. True
- b. False

General Feedback:
Section 1.3, Difficulty: Easy

12. Ordinal level is the scale of measurement that has these two properties: linear distance is meaningful and the location of origin (zero) is arbitrary.

- a. True
- *b. False

General Feedback:
Section 1.3, Difficulty: Easy

13. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by surveying all 1500 industrial customers. One question on the survey asked the customers, 'Which of the following best describes your primary business: (a) (b) wholesaler, (c) retail, (d)'. The measurement level for this question is ratio level.

- a. True
- *b. False

General Feedback:
Section 1.3, Difficulty: Easy

14. Ranking is an operation that is meaningful for processing ordinal data, but is meaningless for processing nominal data?

- *a. True
- b. False

General Feedback:

Section 1.3, Difficulty: Medium

15. A consumer has been asked to rank five cars based upon their desirability. This level of measurement is nominal.

a. True

*b. False

General Feedback:

Section 1.3, Difficulty: Medium

16. A level of data measurement that has an absolute zero is called ratio.

*a. True

b. False

General Feedback:

Section 1.3, Difficulty: Easy

17. Members of the account department's staff were asked to rate their supervisor's leadership style as either (1) authoritarian or (2) participatory. This is an example of nominal level data.

*a. True

b. False

General Feedback:

Section 1.3, Difficulty: Easy

18. The tax file number of employees would be an example of ordinal data measurement?

a. True

*b. False

General Feedback:

Section 1.3, Difficulty: Easy

19. Grades on a test range from 0 to 100. This level of data is ratio.

*a. True

b. False

General Feedback:

Section 1.3, Difficulty: Easy

20. Data that are collected at a fixed point in time are called cross-section data.

- *a. True
- b. False

General Feedback:

Section 1.3, Difficulty: Easy

21. The news weather reports in Australia use Celsius temperature readings to convey the warmth of the air in various locations across the country. These Celsius temperature readings would most likely be categorised as interval data?

- *a. True
- b. False

General Feedback:

Section 1.3, Difficulty: Medium

22. What proportion of Perth voters favor trade restrictions with China? In an effort to determine this, a research team calls every registered voter in Perth and successfully contacts them. The proportion from the data gathered from the calls most likely is a parameter.

- *a. True
- b. False

General Feedback:

Section 1.3, Difficulty: Medium

23. Data that are collected over time are called time series data.

- *a. True
- b. False

General Feedback:

Section 1.3, Difficulty: Medium

24. Data consisting of consumer confidence over several months may be considered as cross sectional data.

- a. True
- *b. False

General Feedback:

Section 1.3, Difficulty: Easy

25. The Jacaranda Swimming Pool Company wants to determine the average number of years it takes before a major repair is required on one of their pools. The manager of the company

asks Rick Johnson, company accountant, to randomly contact fifty families who purchased Jacaranda pools in the past ten years and determine how long it was in each case before a major repair was needed. The information will be used to estimate the average number of years before a major repair is required for all pools sold by Jacaranda. The average, based on the data gathered from the fifty families, could best be described as a population.

- a. True
- *b. False

General Feedback:
Section 1.3, Difficulty: Medium

26. Data relating to consumer confidence for a given month may be considered as cross sectional data.

- *a. True
- b. False

General Feedback:
Section 1.3, Difficulty: Easy

27. Data collected to address a specific need is known as primary data.

- *a. True
- b. False

General Feedback:
Section 1.4, Difficulty: Easy

28. A market researcher is interested in determining the average income for families in Hamilton, New Zealand. To accomplish this, she takes a random sample of 400 families and uses the data gathered to estimate the average income for families in the city. This is an example of primary data.

- *a. True
- b. False

General Feedback:
Section 1.4, Difficulty: Easy

29. A university conducted a survey of its employees to determine their level of satisfaction with working at the university. This is an example of secondary data.

- a. True
- *b. False

General Feedback:

Section 1.4, Difficulty: Easy

30. A company has recently made a decision to build a new plant in Victoria. In making this decision it used data supplied by the Australian Bureau of Statistics. This is an example of secondary data.

- *a. True
- b. False

General Feedback:

Section 1.4, Difficulty: Easy

Multiple Choice Questions

31. The complete collection of all entities under study is called the _____.

- a. sample
- b. parameter
- c. statistic
- *d. population

General Feedback:

Section 1.2, Difficulty: Easy

32. Michael Bayley, Marketing Director of UniPower's Electrical Division, is leading a study to identify and assess the relative importance of product features. Michael directs his staff to design a survey questionnaire for distribution to all of UniPower's 954 customers. For this study, the set of 954 customers is a _____.

- a. statistic
- *b. population
- c. parameter
- d. sample

General Feedback:

Section 1.2, Difficulty: Easy

33. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by surveying all 1500 industrial customers. For this study, the set of 1500 industrial customers is a _____.

- a. statistic
- b. sample
- *c. population
- d. parameter

General Feedback:

Section 1.2, Difficulty: Easy

34. Simon Arnett, Director of Human Resources, is exploring the causes of employee absenteeism at Buderim Bottling during the last operating year (1 January 2005 to 31 December 2005). For this study, the set of all employees who worked at Buderim Bottling during the last operating year is a _____.

- *a. population
- b. sample
- c. statistic
- d. parameter

General Feedback:

Section 1.2, Difficulty: Easy

35. When a person collects information from the entire population, this is called a _____.

- a. sample
- *b. census
- c. statistic
- d. parameter

General Feedback:

Section 1.2, Difficulty: Easy

36. Michael Bayley, Marketing Director of UniPower's Electrical Division, is leading a study to identify and assess the relative importance of product features. Michael directs his staff to design a survey questionnaire for distribution to 100 of UniPower's 954 customers. Michael is ordering a _____.

- a. statistic from the customers
- b. census of the customers
- c. sorting of the customers
- *d. sample of the customers

General Feedback:

Section 1.2, Difficulty: Medium

37. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by selecting a focus group of 40 industrial customers. Sue is ordering a _____.

- a. statistic from the industrial customers

- b. census of the industrial customers
- c. sorting of the industrial customers
- *d. sample of the industrial customers

General Feedback:

Section 1.2, Difficulty: Medium

38. Penny Bauer, Chief Financial Officer of Harrison Haulage, suspects irregularities in the payroll system and orders an inspection of 'every tenth payroll voucher issued since 1 January 2005.' Penny is ordering a _____.

- a. census of the payroll records
- b. parameter from the payroll records
- *c. sample of the payroll records
- d. sorting of the payroll records

General Feedback:

Section 1.2, Difficulty: Medium

39. Upon discovering an improperly adjusted drill press, Jack Joyner, Director of Quality Control, ordered an inspection of 'every fifth casting drilled on the evening shift'. Jack is ordering a _____.

- *a. sample of the castings
- b. sorting of the castings
- c. census of the castings
- d. parameter from the castings

General Feedback:

Section 1.2, Difficulty: Medium

40. Which of the following symbols is used to represent a population parameter?

- a. \sim
- b. $\#$

General Feedback:

Section 1.2, Difficulty: Medium

41. Simon Arnett, Director of Human Resources, is exploring the causes of employee absenteeism at Buderim Bottling during the last operating year (1 January 2005 to 31 December 2005). The average number of absences per employee, calculated from the personnel data of all employees, is a _____.

- a. population
- b. sample
- *c. parameter

d. statistic

General Feedback:

Section 1.2, Difficulty: Medium

42. Statistics are usually represented by _____.

- a. greek letters
- *b. roman letters
- c. ordinal data
- d. interval data

General Feedback:

Section 1.2, Difficulty: Medium

43. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by selecting a focus group of 40 industrial customers. One question asked the focus group customers to rate 'Merchandise is delivered on time' on a scale of 1 to 5, with 1 meaning 'never' and 5 meaning 'always'. The average response of the 40 customers to this question is a _____.

- a. parameter
- b. population
- c. sample
- *d. statistic

General Feedback:

Section 1.2, Difficulty: Medium

44. Simon Arnett, Director of Human Resources, is exploring the causes of employee absenteeism at Buderim Bottling during the last operating year (1 January 2005 to 31 December 2005). Personnel records of 50 employees are selected for analysis. (The plant employs 250.) For this study, the average number days absent for these 50 employees is a _____.

- a. population
- b. sample
- c. parameter
- *d. statistic

General Feedback:

Section 1.2, Difficulty: Medium

45. Which of the following operations is meaningful for processing nominal data?

- a. addition
- b. multiplication
- c. ranking
- *d. counting

General Feedback:

Section 1.3, Difficulty: Medium

46. Which scale of measurement has these two properties, linear distance is meaningful and the location of origin (zero) is absolute (natural)?

- *a. interval level
- b. ordinal level
- c. nominal level
- d. ratio level

General Feedback:

Section 1.3, Difficulty: Easy

47. A question in a survey of computer users asked 'Which operating system do you use most often: (a) Apple OSX, (b) Linux, (c) MS Window XP, (d) Unix'. The measurement level for this question is _____.

- *a. nominal level
- b. ordinal level
- c. interval level
- d. ratio level

General Feedback:

Section 1.3, Difficulty: Easy

48. Claudia Taylor, Director of Global Industrial Sales in Melbourne, is concerned by a deteriorating sales trend. Specifically, the number of customers is stable at 1500 but they are purchasing less each year. She orders her staff to search for causes of the downward trend by surveying all 1500 industrial customers. One question on the survey asked the customers: 'How many people does your company employ: (a) 0–25, (b) 26–100, (c) 101–1000, (d) 1001+'. The measurement level for this question is _____.

- a. nominal level
- *b. ordinal level
- c. interval level
- d. ratio level

General Feedback:

Section 1.3, Difficulty: Easy

49. Morningstar Mutual Funds analyses the risk and performance of mutual funds. Each mutual fund is assigned an overall rating of one to five stars. One star is the lowest rating, and five stars is the highest rating. This level of measurement is _____.

- a. nominal
- b. ratio
- *c. ordinal
- d. interval

General Feedback:

Section 1.3, Difficulty: Easy

50. A person has decided to code a particular set of sales data. A value of 0 is assigned if the sales occurred on a weekday, and a value of 1 means it happened on a weekend. This is an example of _____.

- *a. nominal level data
- b. ordinal level data
- c. interval level data
- d. ratio level data

General Feedback:

Section 1.3, Difficulty: Easy

51. A market research analyst has asked consumers to rate the appearance of a new package on a scale of 1 to 5. A 1 means that the appearance is awful while a 5 means that it is excellent. The level of this data is usually considered _____.

- a. nominal
- *b. ordinal
- c. interval
- d. ratio

General Feedback:

Section 1.3, Difficulty: Medium

52. A restaurant's sales (in dollars) is an example of what level of data measurement?

- a. nominal
- b. ordinal
- c. interval
- *d. ratio

General Feedback:

Section 1.3, Difficulty: Medium

53. If it were not for the existence of an 'absolute zero,' ratio data would be considered the same as _____.

- a. nominal
- b. ordinal
- *c. interval
- d. descriptive data

General Feedback:

Section 1.3, Difficulty: Easy

54. Which types of data are normally used with parametric statistics?

- a. ratio and ordinal
- b. nominal and ordinal
- *c. interval and ratio
- d. interval and ordinal

General Feedback:

Section 1.3, Difficulty: Medium

55. Using data from a group to generalise to a larger group involves the use of _____.

- a. descriptive statistics
- *b. inferential statistics
- c. population derivation
- d. sample persuasion

General Feedback:

Section 1.2, Difficulty: Medium

56. Jessica Salas, Managing Director of Salas Products, is reviewing the warranty policy for her company's new model of car batteries. Life tests performed on a sample of 100 batteries indicated an average life of seven years under normal conditions. Jessica recommended a six year warranty period for the new model. This is an example of _____.

- a. descriptive statistics
- b. nonparametric statistics
- *c. inferential statistics
- d. nominal data

General Feedback:

Section 1.2, Difficulty: Medium

57. Penny Bauer, Chief Financial Officer of Harrison Haulage, suspects irregularities in the payroll system, and orders an inspection of 'each and every payroll voucher issued since 1

January 2005'. Five per cent of the payroll vouchers contained material errors. This is an example of _____.

- a. nonparametric statistics
- b. nominal data
- *c. descriptive statistics
- d. inferential statistics

General Feedback:

Section 1.2, Difficulty: Hard

58. A statistics instructor collects information about the background of his students. About 30% have taken economics and about 40% have taken accounting. There are 23 male students and 27 female students in this class. This is an example of _____.

- *a. descriptive statistics
- b. inferential statistics
- c. nonparametric statistics
- d. nominal data

General Feedback:

Section 1.2, Difficulty: Easy

59. The Citrus Company has a factory in Renmark, South Australia. Management has decided to determine the average number of sick days taken per worker in 2005. To accomplish this, management gathers records on all the factory workers and averages the number of sick days taken in 2005 by each worker. This process is using _____.

- *a. descriptive statistics
- b. inferential statistics
- c. company-wide statistics
- d. locale-specific statistics

General Feedback:

Section 1.2, Difficulty: Medium

60. The Sydney Chamber of Commerce wants to assess its members' opinions of the Closer Economic Relations Trade Agreement. One hundred of the 2000 members are randomly selected and contacted by phone. Seventy-five reported an overall favorable opinion and twenty-five reported an overall unfavorable opinion. The proportion, 0.75, is a _____.

- a. sample
- b. population
- c. parameter
- *d. statistic

General Feedback:

Section 1.2, Difficulty: Medium

61. A researcher wants to know what the average variation is in the altimeters of small, privately-owned planes. The task of determining this is expensive and time consuming, if even possible, given the large number of such planes. The researcher decides to use government records to randomly locate the owners of ten such planes and then ask permission to test their altimeters. When the researcher is done, he will use the data gathered from the group of ten to reach conclusions about all small, privately owned planes. This process can best be described as _____.

- a. data statistics
- *b. research statistics
- c. descriptive statistics
- d. inferential statistics

General Feedback:

Section 1.2, Difficulty: Easy

62. A large manufacturing company in Melbourne produces valves for the chemical industry. According to specifications, one particular valve is supposed to have a 10 cm opening on the side. Quality control inspectors take random samples of these valves just after the hole is bored. They measure the size of the hole in an effort to determine if the machine is out-of-adjustment. The measurement of the diameter of the hole represents which level of data?

- *a. ratio
- b. nominal
- c. ordinal
- d. interval

General Feedback:

Section 1.3, Difficulty: Medium

63. A marketing survey is conducted to ascertain the potentiality of several new products. A series of focus groups is used to conduct this survey. At the end of one of the sessions, the group members are asked to rank the remaining eight products in order of desirability. A one indicates the most favored product and an eight is awarded to the least desirable. The numbers are examples of what level of data?

- a. ratio
- b. interval
- *c. ordinal
- d. nominal

General Feedback:

Section 1.3. Difficulty: Medium

64. The unemployment rate is often used as an indicator of a community's economic vitality. An unemployment rate is best described as what level of measurement?

- a. nominal
- b. ordinal
- c. interval
- *d. ratio

General Feedback:

Section 1.3, Difficulty: Easy

65. An investor evaluates the performance of her portfolio by calculating the portfolio's rate of return. The portfolio's rate of return can best be described as what level of data?

- *a. ratio
- b. interval
- c. ordinal
- d. nominal

General Feedback:

Section 1.3, Difficulty: Medium

66. Universities often assign numbers as student identification. These numbers are best categorised as what level of data?

- a. interval
- *b. nominal
- c. ordinal
- d. ratio

General Feedback:

Section 1.3, Difficulty: Easy

67. Nominal and ordinal data are sometimes classified as _____.

- a. metric data
- *b. nonmetric data
- c. descriptive data
- d. inferential data

General Feedback:

Section 1.3, Difficulty: Hard

68. Moody's Investors Service uses nine ratings of corporate bonds to assist potential investors assess their risk.

Rating	Meaning
Aaa	Best quality
Aa	High quality
A	Higher medium quality
Baa	Lower medium quality
Ba	Possess speculative elements
B	Lack characteristics of desirable investment
Caa	Poor standing
Ca	Speculative in a high degree
C	Extremely poor prospects

The level of data measurement in Moody's bond ratings is _____.

- a. ratio
- b. interval
- *c. ordinal
- d. nominal

General Feedback:

Section 1.3, Difficulty: Medium

69. MacUser's magazine rates products for the Apple Macintosh on a scale from one mouse to five mice. One mouse indicates low value/performance and five mice indicate highest value/performance.

- a. nominal
- b. interval
- c. ratio
- *d. ordinal

General Feedback:

Section 1.3, Difficulty: Medium

70. Which of the following symbols is used to represent a population parameter?

- a. σ
- b. @
- c. &
- *d. ∞

General Feedback:

Section 1.2, Difficulty: Medium

Short Answer/Essay Questions

71. What is the primary aim of business statistics?

Correct Answer:

Section 1.1. The main aim of business statistics is to extract the best possible information from the data collected and use it to make logical and informed business decisions.

72. Give some examples of how statistics may be used in business and our daily lives.

Correct Answer:

Section 1.1. Examples may include: Monitoring stock markets and currency exchange rates, market research including interpreting sales figures and forecasting product demand, assessing the effectiveness of advertising, improving production methods and assessing product reliability and safety, examining and reporting economic data such as inflation, interest rates, unemployment, house prices etc.

73. Describe the concept of a population.

Correct Answer:

Section 1.2. A population is a collection of objects (often called units or subjects) of interests. Examples of a population can include: a small business, all workers employed at a business, all iPads made by Apple in the past 12 months. A population (and unit) can be widely defined, such as "all tablet computers"; or narrowly defined such as all iPhones produced in Shenzhen in March 2012.

74. Define the concept categorical data.

Correct Answer:

Section 1.3. Categorical data contrasts with numerical data, and is a data type that is simply an identifier or label that has no numerical meaning. Such data are often not numbers, such as a person's occupation or a student's grade in a test.

75. Define the concept of numerical data.

Correct Answer:

Section 1.3. Numerical data contrasts with categorical data, and is data that has a natural order and the numbers represent some quantity. Examples of numerical data include the number of heads in ten tosses of a coin, or the weights of football players.

76. Describe the two sources of data collection.

Correct Answer:

Section 1.4. There are two types of data, primary and secondary. Primary data is original data collected by the researcher to address a specific need or purpose, and may be collected by using a survey, questionnaire, experiment or some other study. Secondary data is data that is already available, and may include data from external sources such as government departments (eg. the Australian Bureau of Statistics), trade associations or universities.

Internal sources of secondary data can include sales figures, production records or customer evaluations.

77. A marketing demographic survey is undertaken to determine the market potential for a new product. One of the questions asked is: What type of residence do you live in? Respondents are offered several possible answers including: house, townhouse or apartment. In order to computerise the survey answers, the responses are coded as: 1 for house, 2 for townhouse, and 3 for apartment. What level of data do the numbers, 1, 2 and 3 represent?

Correct Answer:

Section 1.2. The numbers 1, 2 and 3 represent nominal data.

78. During a strategy planning session, the executives of UniPower identified thirty-one significant opportunities to the future health of the company. Toward the end of the session, Paul Pearson, a management consultant, asked the executives to rate each opportunity on a scale of 1 to 5. What type of data measurement does this represent?

Correct Answer:

Section 1.3. This is a type of ordinal data measurement

79. A business is attempting to find the best regional town in Australia in which to relocate. As part of the investigation, the availability of TAFE colleges is researched. TAFE colleges are available within 50 km of some towns but not others. The availability of TAFE colleges can best be described as what level of data?

Correct Answer:

Section 1.3. This level of data is known as nominal data.

80. A researcher wants to know what the average variation is in altimeters of small, privately owned planes. The task of determining this is expensive and time consuming, if even possible, given the large number of such planes. The researcher decides to use government records to randomly locate the owners of ten such planes and then ask permission to test their altimeters. When the researcher is done, he will use the data gathered from the group of ten to reach conclusions about all small, privately owned airplanes. Is the data collected primary or secondary?

Correct Answer:

Section 1.4. This type of data is known as primary data.