

Discovering Statistics Using IBM SPSS Statistics, 4th edition Business Studies Testbank

Using this testbank:

This testbank is designed to be used in conjunction with Field, A. P. (2013). *Discovering Statistics Using IBM SPSS Statistics*, 4th edition. London: Sage.

The multiple choice questions are listed under the chapter they best represent.

Correct answers are denoted with a *.

Acknowledgements:

Special thanks to Dr Rob Angell from the University of Cardiff for updating the Business testbank for the 4th edition. Also thank you to all the business lecturers who took the time to take part in the companion website and testbank survey. Your feedback was instrumental in creating the resources for the 4th edition.

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Testbank Questions:

CHAPTER ONE – Why is my evil lecturer forcing me to learn statistics?

1. The standard deviation is the square root of:
 - a. The coefficient of determination
 - b. Sum of squares
 - c. Variance*
 - d. Range

2. A frequency distribution in which low scores are most frequent (i.e. bars on the graph are highest on the left-hand side) is said to be:
 - a. Positively skewed*
 - b. Leptokurtic

- c. Platykurtic
 - d. Negatively skewed
3. If research suggests that the mean number of insurance quotations a person makes in a year is 26 with a standard deviation of 4, what is the z-score for a score of 18?
- a. -2^*
 - b. 11
 - c. 2
 - d. -1.41
4. Which of the following is true about a 95% confidence interval of the mean for a sample of grocery shoppers rating their favourite store?
- a. 95 out of 100 sample means will fall within the limits of the confidence interval.
 - b. There is a 95% chance that the population mean will fall within the limits of the confidence interval.*
 - c. 95 out of 100 population means will fall within the limits of the confidence interval.
 - d. There is a .05 probability that the population mean falls within the limits of the confidence interval.
5. What does a significant test statistic tell us?
- a. There is an important effect.
 - b. The null hypothesis is false.
 - c. There is an effect in the population of sufficient magnitude to be scientifically interesting.*
 - d. All of the above.
6. A Type I error is when:
- a. We conclude that there is a meaningful effect in the population when in fact there is not.*
 - b. We conclude that there is not a meaningful effect in the population when in fact there is.
 - c. We conclude that the test statistic is significant when in fact it is not.
 - d. The data we have typed into SPSS is different than the data collected.
7. If we calculated that the correlation (i.e. the effect size) of company size and sales revenue for various organizations was $r = .42$, which expression would best describe this relationship?
- a. Small
 - b. Small to medium

- c. Large
 - d. Medium to large*
8. Which of these statements about statistical power is not true?
- a. Power is the ability of a test to detect an effect.
 - b. We can use power to determine how big a sample is required to detect an effect of a certain size.
 - c. Power is linked to the probability of making a Type I error.
 - d. All of the above are true.*
9. What is a significance level?
- a. The level at which statistics finally become meaningful.
 - b. The impact that reporting statistics incorrectly could have.
 - c. A pre-set level of probability that the results are correct.
 - d. A pre-set level of probability at which it will be accepted that results are due to chance (or not). *
10. What is the conventional level of probability that is often accepted when conducting statistical tests in social science and business?
- a. 0.1
 - b. 0.05 *
 - c. 0.5
 - d. 0.001
11. A null hypothesis:
- a. States that the experimental treatment will have an effect.
 - b. Is rarely used in experiments.
 - c. Predicts that an experimental treatment will have no effect on a dependent variable of interest. *
 - d. None of the above.
12. Which of the following terms best describes the sentence: 'organizations with employee training programmes will not employ fewer men or women'.

- a. A directional hypothesis
 - b. An operational definition
 - c. A null hypothesis
 - d. A non-directional hypothesis *
13. The aim of experimental research is to:
- a. Be a phenomenon
 - b. Cause a phenomenon
 - c. Investigate what caused a phenomenon *
 - d. Prevent a phenomenon
14. 'Reducing the advertising budget will reduce short-term sales performance'. State the direction of this hypothesis:
- a. Directional *
 - b. Non-directional
 - c. Both
 - d. Not enough information given
15. Which of the following is *not* strictly a legitimate business hypothesis?
- a. There will be no difference in productivity between younger and older employees.
 - b. Men and women will not differ in the value of their financial investments.
 - c. Satisfaction might or might not have an effect on loyalty, depending on whether people like something or not.
 - d. As perceptions of value increase, customer commitment will increase.
16. Which of these statements is correct about one- and two-tailed tests?
- a. A statistical model that tests a directional hypothesis is called a one-tailed test, whereas one testing a non-directional hypothesis is called a two-tailed test. *
 - b. A statistical model that tests a non-directional hypothesis is called a one-tailed test, whereas one testing a directional hypothesis is called a two-tailed test.
 - c. A two-tailed test is a more powerful test than a one-tailed test.
 - d. A one-tailed test is a more accurate test than a two-tailed test.

Discovering Statistics Using IBM SPSS Statistics 4th edition

Education Testbank

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The multiple choice questions are listed under the chapter they best represent. Correct answers are denoted with a *.

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Testbank Questions:

CHAPTER ONE – Why is my evil lecturer forcing me to learn statistics?

1. Which of the following is an example of a quantitative research method?
 - a. Systematic reviews
 - b. Blog research
 - c. Visual methodologies
 - d. Statistical and correlational analysis*

2. Which of the following is a common example of self-reporting measurement error?
 - a. Lying on a questionnaire*
 - b. Calculator malfunction
 - c. Miscalibrated scales
 - d. Dud batteries in a stopwatch

3. Which of the following is an effective data collection tool in educational research?
 - a. Baseline surveys*
 - b. Acting
 - c. Visiting a solicitor
 - d. Brushing your teeth

4. SPSS is a computer software program used for..?
 - a. Doing your work for you
 - b. Analysing data sets*
 - c. Checking football scores
 - d. Voting on *The X Factor*

5. An independent variable is:
 - a. A variable thought to predict an outcome variable
 - b. An outcome
 - c. Synonymous with a dependent variable
 - d. A variable thought to be the cause of some effect*

6. Analysing data is which stage in the five-stage model of research?

- a. 1st
- b. 2nd
- c. 4th
- d. 5th*

7. What does this symbol mean? $\sqrt{\quad}$

- a. Divide by
- b. $2+2=4$
- c. Square root*
- d. Equal to

8. What is the answer to the following equation? $\sqrt{1999} =$

- a. 44.71*
- b. 43.07
- c. 45.98
- d. 44.00

9. Two distributions (D_1 and D_2) are plotted onto the same graph. D_1 is right skewed, D_2 is left skewed. The mean of D_1 is lower than D_2 . Which of the following statements is incorrect?

- a. The mean of D_2 is higher than the median of D_2 .
- b. The mean of D_2 is lower than the median of D_1 .
- c. The median of D_1 is the same as the mean of D_2 .
- d. All of the above*

10. Which of the following is a brief definition of 'contiguity'?

- a. Cause and effect must occur close together in time,*
- b. The effect will occur before the cause,
- c. Cause and effect can occur randomly,
- d. Effect never determines cause,

11. Your seminar tutor congratulates all students for working hard on their statistics homework. This is an example of:

- a. No reinforcement
- b. Negative reinforcement
- c. Positive reinforcement*
- d. Data collection

12. Negative reinforcement is a type of:

- a. Manipulation*
- b. Ignorance
- c. Refusal
- d. Variation

13. A repeated-measures design uses:

- a. Different subject groups throughout
- b. The same subject group throughout*
- c. Mixed subject groups throughout*
- d. No subject groups

14. A sample of size n is used to estimate the confidence interval for a proportion. Upon review, you consider the standard deviation too large. If you want to reduce your standard deviation so that it is a tenth ($1/10$) of the original size, what size sample do you need?

- a. $10n$
- b. $100n$ *
- c. $1000n$
- d. $10,000n$

15. A randomized controlled trial (RCT) is often used to test:

- a. Efficacy of various types of intervention within a patient population*
- b. Popularity of types of music
- c. Methods of data collection
- d. Versions of SPSS software

16. The random allocation to groups of participants in an RCT occurs:

- a. Before assessment of eligibility and recruitment
- b. After assessment of eligibility and recruitment but before implementation of the intervention*
- c. After both assessment of eligibility and recruitment and implementation of the intervention
- d. At any point

17. The two most important sources of systematic variation in RCTs are:

- a. Counterbalancing and randomization
- b. Systematic and unsystematic variation
- c. Practice effects and boredom effects*
- d. Frequency distributions and positive skews

18. You begin a study with primary school children. You show them a box which contains 3 yellow, 2 black, 4 white and 3 clear buttons. Two buttons are taken one after the other at random from the box. What is the probability that both buttons are black?

- a. $1/6$
- b. $1/16$
- c. $1/60$
- d. $1/66^*$

19. You ask a participant in a study to roll a die, and to keep rolling until they roll either a 5 or a 6. What is the variance of the distribution of the number of rolls required?

- a. 6^*
- b. 3
- c. $1/3$
- d. $1/18$

20. The median is always:

- a. The middle score when results are ranked in order of magnitude*
- b. The most frequently occurring value in a data set
- c. The same as the mean

d. Never the same as the mode

21. You ask a class of 15 students to tell you the number of people who follow them on Twitter. They give their answers as 10, 27, 145, 70, 8, 23, 2, 0, 66, 201, 12, 5, 9, 34, 20. Calculate the median number of followers.

a. 0

b. 12

c. 20*

d. 145

22. Calculate the mean number of followers to 2 decimal places.

a. 13.42

b. 42.13*

c. 24.31

d. 34.12

23. How is a null hypothesis denoted?

a. H_0 *

b. H_1

c. H_2

d. H_3

24. Which of the following are true statements?

I. All bell-shaped distributions are symmetric.

II. Bar charts are useful to describe quantitative data.

III. Cumulative frequency plots are useful to describe quantitative data.

a. I only

b. I and II only

c. I and III only*

d. II and III only

25. A data set is usually collated in:

a. Tabular form*

- b. Histograms
- c. Pie charts
- d. A Word document

Discovering Statistics Using IBM SPSS Statistics 4th edition

Health, Nursing and Midwifery Testbank

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The multiple choice questions are listed under the chapter they best represent. Correct answers are denoted with a *.

Acknowledgements:

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CHAPTER 1 Why is my evil lecturer forcing me to learn statistics?

1. Quantitative research involves the use of which of the following?
 - a. Language
 - b. Letters
 - c. Numbers*
 - d. Description

2. The research process is comprised of five stages. Which of the following is *not* one of those stages?
 - a. Data collection
 - b. Generate theory
 - c. Analysis
 - d. Dispersion*

3. To answer this question visit:
http://www.performance.doh.gov.uk/hospitalactivity/data_requests/download/total_time_ae/ae_08_q4_pt3.xls. The Department of Health has numerous tables of health related data. Which strategic health authority has figures closest to the mean in terms of percentage of patients who spent less than 4 hours in A&E? (Do not include walk-in centres, but use data for types 1, 2 and 3.)
 - a. Yorkshire and the Humber
 - b. South Central
 - c. East Midlands*
 - d. London

4. To answer this question visit:
http://www.performance.doh.gov.uk/hospitalactivity/data_requests/download/total_time_ae/ae_08_q4_pt3.xls. Using the data obtained for 2007–2008 January to March (Q4) relating to attendance at A&E departments (see appendix 1), what is the median percentage of patients who spent less than 4 hours in A&E (not including walk in centres)?
 - a. 96.75%
 - b. 97.75%*
 - c. 97.7%

d. 97.8%

5. To answer this question visit http://www.performance.doh.gov.uk/hospitalactivity/data_requests/download/total_time_ae/ae_08_q4_pt3.xls. Using the data obtained for 2007–2008 January to March (Q4) relating to attendance at A&E departments (see appendix 1), what is the mode?

a. 96.75%

b. 97.75%

c. 97.7%*

d. 97.8%

6. To answer this question visit http://www.performance.doh.gov.uk/hospitalactivity/data_requests/download/total_time_ae/ae_08_q4_pt3.xls. Using the data obtained for 2007–2008 January to March (Q4) relating to attendance at A&E departments (see appendix 1), calculate the range.

a. 2.1*

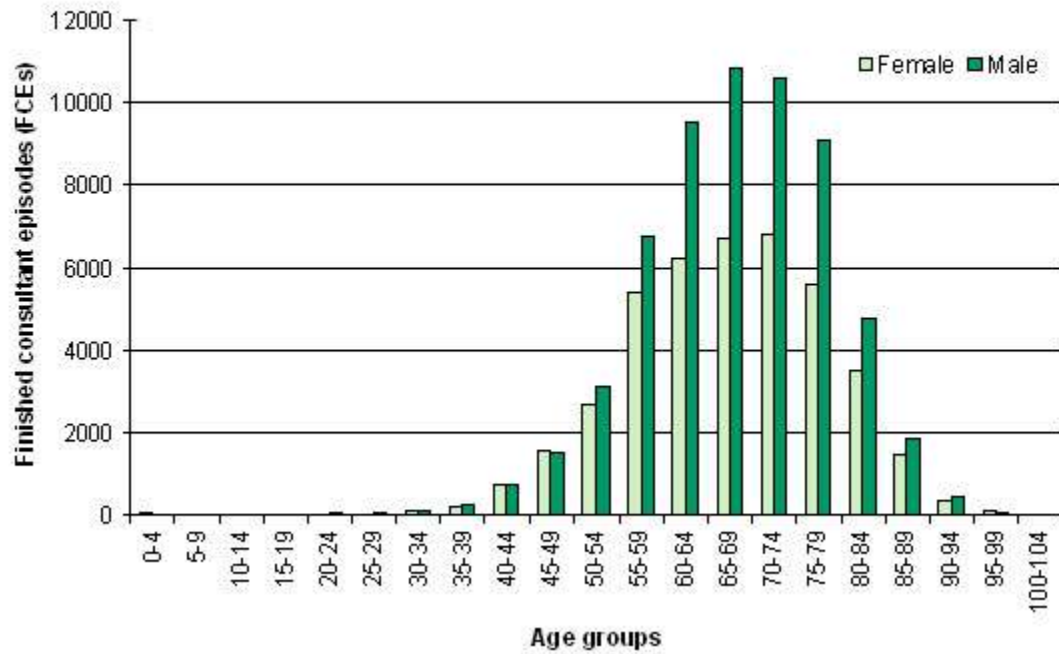
b. 2.2

c. 2.3

d. 2.4

7. Looking at the distribution of data on the bar chart below, how best can it be described?

FCEs by age for lung cancer (C33-C34) in 2006-07

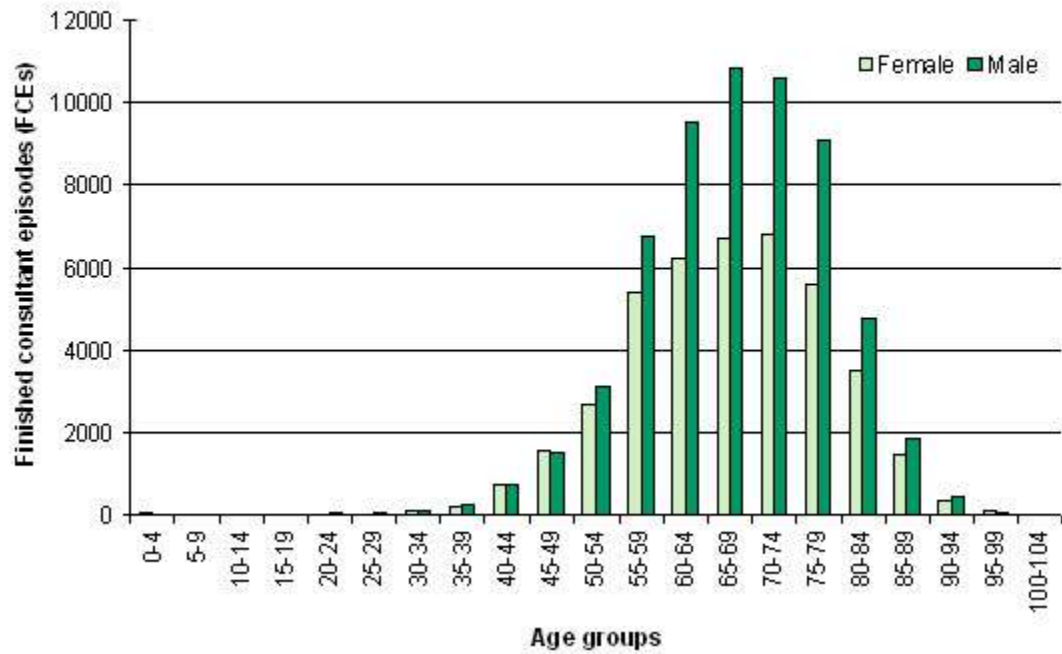


Source: <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=955>

- a. Normally distributed
- b. Negatively skewed*
- c. Positively skewed
- d. Leptokurtic

8. What does the data in the chart demonstrate?

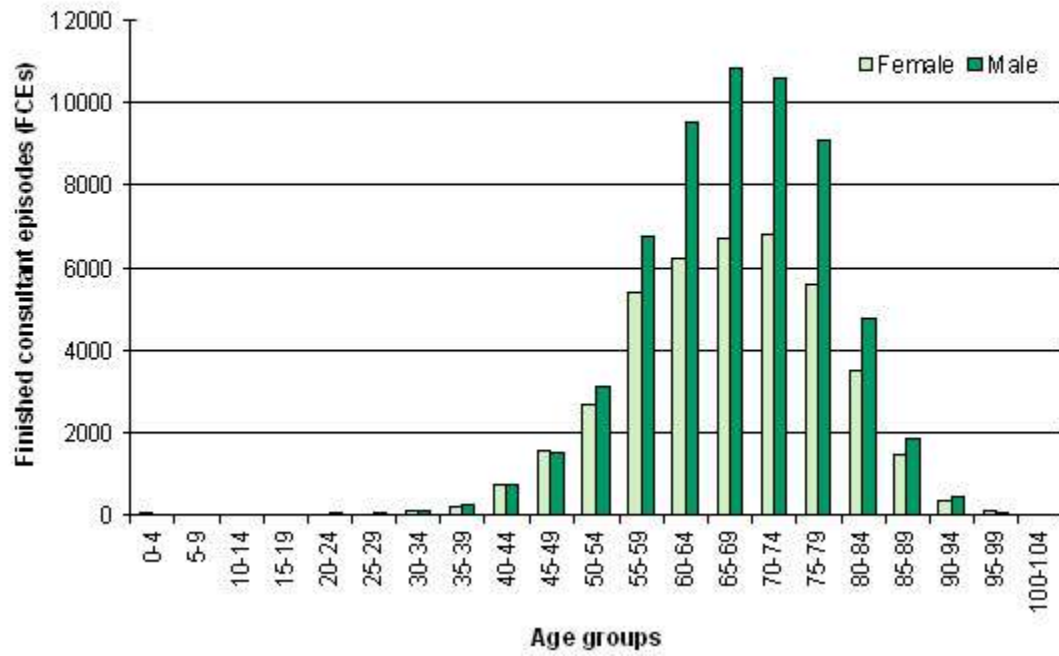
FCEs by age for lung cancer (C33-C34) in 2006-07



- a. The incidence of cancer is highest among women aged 55–59.
- b. The incidence of childhood cancer is highest in girls.
- c. Cancer affects everyone.
- d. A higher incidence of cancer occurs in men across most age groups.*

9. Based on the following chart, the statement that lung cancer is more common in people over 40 could be considered as which of the following?

FCEs by age for lung cancer (C33-C34) in 2006-07



- a. Null hypothesis*
- b. Alternative hypothesis
- c. Experimental hypothesis
- d. Hypothesis

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Sport and Exercise Science Testbank

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Testbank Questions:

CHAPTER ONE – Why is my evil lecturer forcing me to learn statistics?

1. A prediction from a theory is known as a:
 - a. Hypothesis*
 - b. Hypotenuse
 - c. Hypnosis
 - d. Hypothalamus

2. Which of the following is *not* a hypothesis?
 - a. Compression garments are the best way to prevent the delayed onset of muscle soreness (DOMS).*
 - b. Consumption of caffeine equal to 6 mg/kg of body mass increases reaction time when compared to a placebo.
 - c. Increased levels of physical activity in school children will lead to prolonged concentration during taught sessions.

- d. Listening to music whilst actively cooling down after high-intensity exercise will facilitate the removal of blood lactate and accelerate the recovery process compared with no music.
3. A sports psychologist was interested in the effects of a six-week imagery intervention on an athlete's ability to execute a sport-specific skills such penalty taking in football/soccer. How might you define the imagery variable?
 - a. Independent variable*
 - b. Dependent variable
 - c. Outcome variable
 - d. Resultant variable
4. If maximum oxygen uptake (VO_2 max) was considered the independent variable, which of the following would be an appropriate dependent variable?
 - a. Marathon race time
 - b. Concentration of muscle lactate
 - c. Delayed onset of muscle soreness (DOMS)
 - d. All of the above*
5. Likert scales are frequently used in psychology to measure intangible phenomena such as motivation. If a five-point Likert scale was used to determine an individual's motivation to perform a specific task, which of following best describes the variable?
 - a. Discrete variable*
 - b. Continuous variable
 - c. Ratio variable
 - d. Nominal variable
6. A 400 m race time would be considered an example of which level of measurement?
 - a. Nominal
 - b. Ordinal
 - c. Interval
 - d. Ratio*
7. If sport and exercise science students were asked to rank biomechanics, physiology, psychology, nutrition and research methods on a 1–5 scale, with 1 being the subject you like the most and 5 being the one you like the least, which level of measurement would it be?
 - a. Nominal
 - b. Ordinal*
 - c. Interval
 - d. Ratio
8. The courses studied by a group of undergraduate students would be considered an example of which level of measurement?
 - a. Nominal*

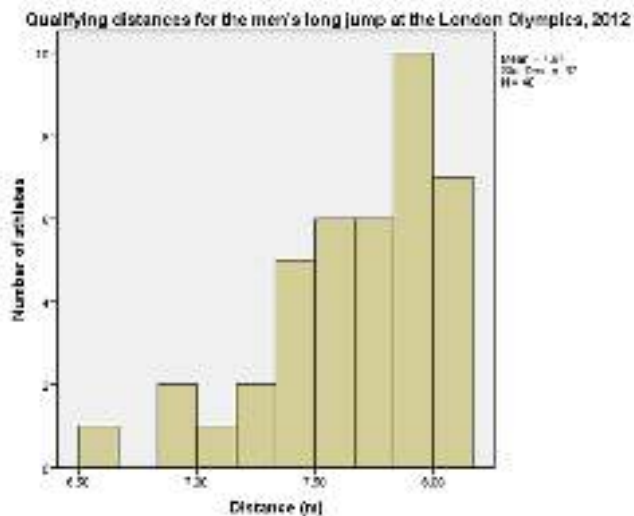
- b. Ordinal
 - c. Interval
 - d. Ratio
9. Which of the following examples would be considered as a continuous variable?
- a. Sex of participants
 - b. University courses
 - c. Rank order of preferred modules (e.g. 1 = like the most, 5 = like the least)
 - d. Heart rate*
10. A group of researchers wanted to know whether a new portable, online gas analysis system provided an accurate measure of VO_2 max. To assess whether the VO_2 max measures were sufficiently accurate a group of participants performed an incremental exercise test using the new portable system. The test was then repeated one week later, but this time using Douglas bags. How would you define this type of validity?
- a. Concurrent validity
 - b. Content validity
 - c. Criterion validity
 - d. Predictive validity*
11. How would you conceptualize the measurement of blood pressure from a group of individuals on multiple occasions to see if the results were sufficiently similar?
- a. Reliability*
 - b. Validity
 - c. Similarity
 - d. Predictability
12. Which of the following is an example of correlational research?
- a. Skinfold thicknesses and body fat in triathletes*
 - b. Percentage body fat in rugby union and rugby league players
 - c. Alterations in percentage body fat following six weeks of aerobic exercise
 - d. Body fat measures using air displacement plethysmography (ADP), dual energy X-ray absorptiometry (DEXA) and bioelectrical impedance (BIA)
13. Which of the following is an example of experimental research?
- a. Stature (height) in men and women*
 - b. Hours of physical activity and duration of concentration in school children
 - c. Aerobic capacity and marathon race time
 - d. Attitude and motivation to perform a specific task
14. Researchers wanted to examine the impact of a high-protein diet (e.g. Adkins diet) in a group of individuals who had been sedentary for a minimum of 20 years. A variety of physiological phenomena such as blood pressure and blood glucose concentrations were measured before, during and after the diet. How might you describe the research design of such a study?
- a. Between-groups design

- b. Between-within design
- c. Within-subjects design*
- d. Independent-groups design

15. The results of the men's long jump final at the London Olympics in 2012 are given below. What is the mean distance jumped by the top 10 athletes?

Position	1	2	3	4	5	6	7	8	9	10
Distance (m)	8.31	8.16	8.12	8.11	8.10	8.07	8.01	7.93	7.85	7.80

- a. 8.04 m
 - b. 8.05 m*
 - c. 8.06 m
 - d. 8.07 m
16. What is the median distance jumped by the top 10 athletes (see Q15)?
- a. 8.05 m
 - b. 8.07 m
 - c. 8.09 m*
 - d. 8.11 m
17. Examine the histogram of the qualifying distance for the men's long jump final at the London Olympics in 2012. How would you describe the appearance of the histogram?
- a. Negatively skewed*
 - b. Positively skewed
 - c. Positive kurtosis (leptokurtic)
 - d. Negative kurtosis (platykurtic)



18. Assuming the histogram in Q17 is not normally distributed (i.e. does not have a 'bell-shaped' curve appearance), what would be the most appropriate measure of central tendency?
- Mean
 - Mode
 - Median*
 - Menial
19. Why might the range *not* be an accurate representation of data dispersion for the data presented in Q17?
- Distorted by the lower scores*
 - Distorted by the higher scores
 - Distorted by both the lower and higher scores
 - Distorted because the data are platykurtic
20. When describing the central tendency and dispersion of a data set, which of the following are acceptable formats? (You may select more than one option.)
- Mean and standard deviation*
 - Median and interquartile range
 - Mode and standard deviation
 - Mean and interquartile range
21. If the interquartile range is less sensitive to outlying data points (see the histogram in Q16), what might be an appropriate measure of central tendency?
- Mean
 - Mode
 - Median*
 - Menial
22. Based on the data provided in Q15, calculate the z -score for the participant who finished third in the men's long jump final.
- 0.5*
 - 0.4
 - 0.6
 - 0.3
23. Based on the data provided in Q15, calculate the z -score for the participant who finished ninth in the men's long jump final.
- 1.3
 - 1.3
 - 1.4
 - 1.4

24. Jessica Ennis won the Olympic heptathlon in London, but how did she perform in the 100 m hurdles, high jump and long jump compared with the other athletes? Using the data below, calculate Jess Ennis' z -scores for the three previously mentioned events.

	100 m Hurdles (s)	High Jump (m)	Long Jump (m)
JE Result	12.54	1.86	6.48
Mean	13.61	1.80	5.98
SD	0.47	0.08	0.43

100 m Hurdles

- a. -2.3^*
- b. -1.3
- c. 2.3
- d. 1.3

High Jump

- e. 0.75^*
- f. 1.00
- g. 0.50
- h. 0.00

Long Jump

- i. 1.2^*
- j. 1.3
- k. 1.1
- l. 1.0

25. How is a null hypothesis denoted?

- a. H_0^*
- b. H_1
- c. H_2
- d. H_3

26. How is a research hypothesis denoted?

- a. H_0
- b. H_1^*
- c. H_2
- d. H_3

27. Which of the following would be classed as a null hypothesis?

- a. There will be no significant difference in simple reaction times between men and women.*

- b. There will be a significant difference in simple reaction times with women being faster than men.
- c. There will be a significant difference in simple reaction times with men being faster than women.
- d. There will be a significant difference in simple reaction times.