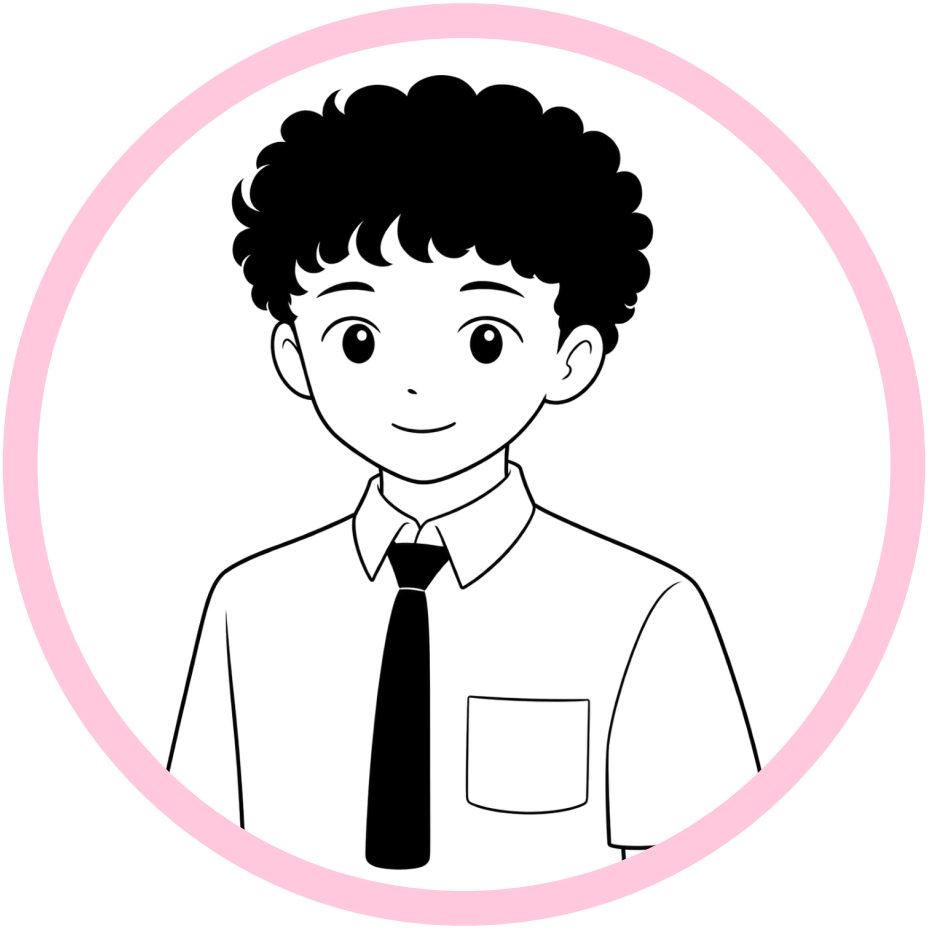
AQA A-LEVEL PSYCHOLOGY · 7182

PSYCHOLOGY



EXAM QUESTION PACK

3.2.3.1 SAMPLING

SCORE	PERCENTAGE
/251	%

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Q1.

A head teacher wanted to increase recycling in his school. He arranged for the canteen to have three bins, one for cardboard, one for plastic and one for food waste. A month later, a psychology teacher decided to see if the students were recycling. One lunch break she watched different students going to the bins. Each time, she wrote down which of the three types of waste they recycled. She positioned herself so that the students could not see her but so that she had a clear view of the bins.

(a) Identify **one** type of observation being used in this investigation.
Justify your answer.

(2)

(b) Explain the sampling technique the teacher used to record her observations.

(2)

As the different year groups had lunch at different times, the teacher was able to present her results as three year groups, as shown in the table below.

The number of items each year group recycled

Year group	Cardboard	Plastic	Food
7-9	20	35	10
10-11	18	25	7
12-13	12	15	5

(c) What do the results in the table suggest about the recycling initiative?
Refer to the data in the table above in your answer.

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(4)

(d) Explain **one** way in which the design of this observation could have been improved.

(2)

(Total 10 marks)

Q2.

A researcher was interested in the relationship between the number of hours a course was taught using a computer program and the satisfaction of the students on the course.

As part of his research he conducted a pilot study as follows. A topic from a business studies course was divided into 10 equal one-hour sessions.

Eleven students who were matched for their high level of interest in business studies took part in the study.

All 11 students completed all 10 hours of the topic. They were taught either completely online, with a combination of online teaching and classroom teaching, or just in a classroom.

Each student was allocated a letter, from A to K randomly. This determined the number of hours they studied online and the number of hours they studied in a classroom. The combinations are shown in **Table 1**.

Table 1: The numbers of hours each student (labelled A – K) studied the topic online and in a classroom with a teacher

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Number of online hours	10	9	8	7	6	5	4	3	2	1	0
Number of classroom hours	0	1	2	3	4	5	6	7	8	9	10

(a) Explain why it was important to match the students on their high level of interest in business studies.

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(2)

(b) Suggest **one** other variable for which the researcher should have matched the students. Explain how this might have affected the satisfaction scores if it was not controlled.

(2)

(c) Outline **one** benefit of allocating the students randomly to the different numbers of online hours and classroom hours as seen in **Table 1**.

(2)

(d) The sample used in this pilot study was an opportunity sample. Briefly explain how using a stratified sample when the final study is conducted might be an improvement to the design.

(3)

(e) The researcher designed a questionnaire to collect data from the students about how satisfied they felt when they had completed the course.
Give an example of an appropriate question that the researcher might use to collect qualitative data on the questionnaire.

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(1)

(f) Briefly explain **one** problem the researcher might have in analysing the qualitative data collected from the questionnaires.

_____

_____

_____

_____

(2)

(g) Outline **one** ethical issue that should have been taken into account when carrying out the questionnaire.

_____

_____

(1)

In order to analyse all the responses to the questionnaire, each response was given a score by the researcher. The maximum score on the questionnaire was 20, where a score of 0 meant dissatisfied and a score of 20 meant very satisfied.

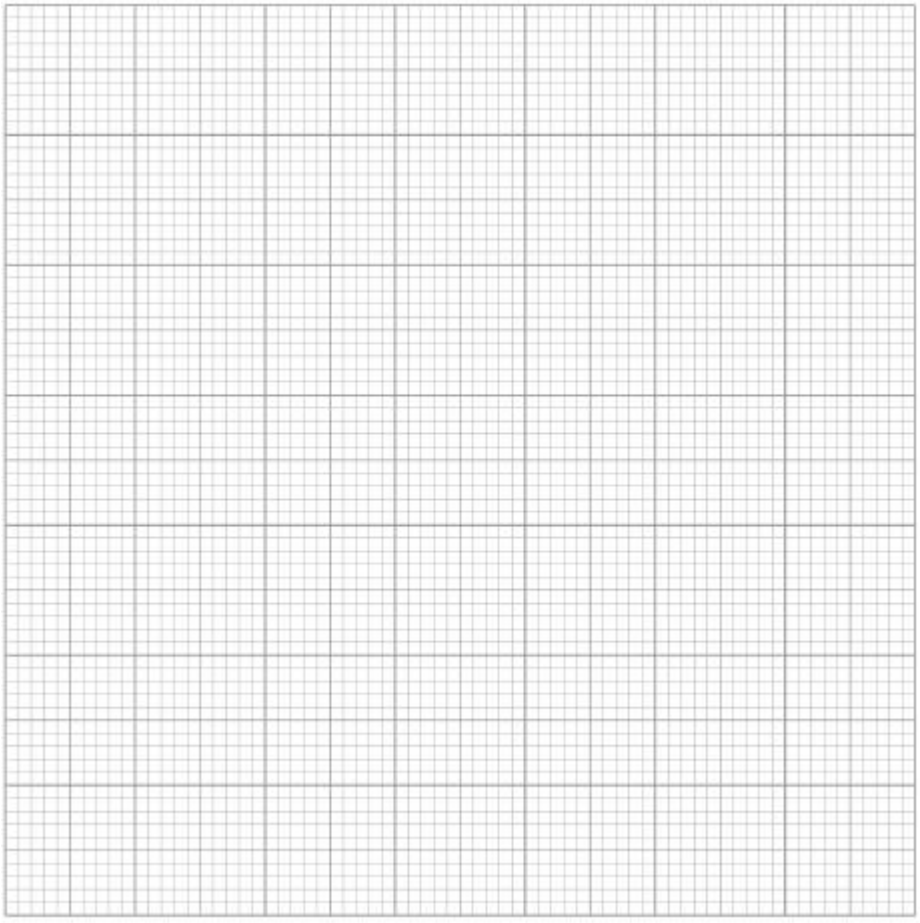
The following data was collected by the researcher.

Table 2: The numbers of hours each student (labelled A – K) studied the topic online and the satisfaction scores of each student.

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Number of online hours	10	9	8	7	6	5	4	3	2	1	0
Satisfaction scores	5	6	8	7	10	12	13	15	17	19	19

(h) Using the data in **Table 2** and the graph paper provided below, draw an appropriate scattergram. Fully label your display.

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(4)

(i) What conclusion might the researcher draw, based on the results of the study?

_____

_____

_____

_____

(2)

(j) The researcher looked at the mode and median satisfaction scores of the students. Calculate these two descriptive statistics.

_____

_____

_____

_____

(2)

(k) Explain why the median would be more suitable than the mode to represent the average score for satisfaction for the students.

_____

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_____

_____

_____

(2)

(l) Another researcher looked at the data for the satisfaction scores and commented that they suggested a negative skew in the data.

Look at the following sets of descriptive statistics from a different study. Which of the sets (A or B or C) would indicate a negative skew in the distribution of the data?

Shade **one** box only.

A Mean: 7.3, median: 7.5, mode: 7.0 ⬭

B Mean: 7.3, median: 10.5, mode: 16 ⬭

C Mean: 7.3, median: 6.5, mode: 5 ⬭

(1)

(Total 24 marks)

Q3.

Researchers wished to study the link between attachment and parasocial relationships. They surveyed a stratified sample of 100 18-year-old students from four different schools. Some schools had a large number of students and others had a smaller number of students. The students were asked questions about their childhood, their feelings towards celebrities and about their friendships at school.

(a) Explain how the researchers could have obtained a stratified sample from the four different schools.

(4)

(b) At the end of the survey, researchers wished to treat the students ethically. They used the following statement in their debriefing:

‘Thank you for taking part in the survey. Your data will be very useful. Have you any questions?’

Suggest **two** additional points that could be added to the debriefing statement to better ensure ethical treatment of the students.

(4)

(c) Discuss the attachment theory explanation for parasocial relationships. Refer to the likely findings of the study above in your answer.

(8)

(Total 16 marks)

Q4.

Researchers wished to study the link between androgyny and psychological health. They surveyed a stratified sample of 100 18-year-old students from four different schools. Some schools had a large number of students and others had a smaller number of students. The

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students were asked to rate themselves on an androgyny scale and then answered a series of questions. The questions focused on students' self-esteem and how they felt about their relationships with others.

(a) Explain how the researchers could have obtained a stratified sample from the four different schools.

(4)

(b) At the end of the survey, the researchers wished to treat the students ethically. They used the following statement in their debriefing:

'Thank you for taking part in the survey. Your data will be very useful. Have you any questions?'

Suggest **two** additional points that could be added to the debriefing statement to better ensure ethical treatment of the students.

(4)

(c) Discuss Bem's research into androgyny. Refer to the likely findings of the study above in your answer.

(8)

(Total 16 marks)

Q5.

Researchers wished to study the effects of scaffolding on learning. They surveyed a stratified sample of 100 18-year-old students from four different schools. Some schools had a large number of students and others had a smaller number of students. The students were asked questions about how they learn, different teaching and classroom activities, and what helps them learn.

(a) Explain how the researchers could have obtained a stratified sample from the four different schools.

(4)

(b) At the end of the survey, the researchers wished to treat the students ethically. They used the following statement in their debriefing:

'Thank you for taking part in the survey. Your data will be very useful. Have you any questions?'

Suggest **two** additional points that could be added to the debriefing statement to better ensure ethical treatment of the students.

(4)

(c) Discuss Vygotsky's theory of cognitive development. Refer to the likely findings of the study above in your answer.

(8)

(Total 16 marks)

Q6.

Students often claim that listening to music helps them to concentrate. A psychologist was not aware of any previous research in this area. She decided to investigate this claim.

Forty students from a nearby sixth form centre volunteered to take part in her study. They

each answered the following question:

‘Do you think that you concentrate on your work ‘better’, ‘worse’ or ‘the same’ if you listen to music while working?’

She obtained the results in **Table 1**.

Table 1: Responses to question - ‘Do you think that you concentrate on your work ‘better’, ‘worse’ or ‘the same’ if you listen to music while working?’

Better	Worse	The same
22	8	10

(a) Should the hypothesis for this study be directional? Explain your answer.

(2)

(b) What percentage of the students reported that they would be able to concentrate ‘better’ if they listened to music while they worked? Show your workings.

(2)

(c) Explain why using stratified sampling might improve this study.

(2)

(d) The data collected in this study is primary data.

Explain what is meant by ‘primary data’.

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(2)

(e) In a follow-up study, the psychologist obtained a volunteer sample of 10 students aged 17 years from a different sixth form centre. Using a repeated measures design, participants were asked to complete two puzzle tasks as quickly as possible.

Task A was to find 10 differences in a ‘spot the difference’ puzzle while working in silence.

Task B was to find 10 differences in another ‘spot the difference’ puzzle while listening to music through headphones.

The tasks were counterbalanced and the time taken to complete each task was recorded for each student.

Table 2: Times taken (in seconds) to complete Task A (silence) and Task B (music)

Participant	Task A (silence)	Task B (music)
1	67	82
2	45	70
3	58	60
4	43	59
5	72	77
6	90	105
7	101	90
8	37	59
9	54	83
10	63	89

Explain **one** reason why the mean would be the most appropriate measure of central tendency to summarise the data in **Table 2**.

(2)

(f) Calculate the mean values for **both** Task A **and** Task B. Show your workings.

Task A

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Task B

(4)

(g) The psychologist used counterbalancing in the follow-up study.

Discuss the purpose of counterbalancing.

(3)

(h) Identify **one** possible extraneous variable that the psychologist should have controlled in this follow-up study. Explain how this variable might have affected the results of the study if it was not controlled.

(3)

(i) Explain how the follow-up study could be said to be an improvement on the original study.

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(4)

(Total 24 marks)

Q7.

A researcher wanted to compare the effectiveness of two therapies for young offenders who had been identified as having anger management issues. Offenders, who were all sentenced to two years in a Young Offenders' Institution, were asked to volunteer to take part in an anger management programme. Fifty volunteers were randomly allocated to Group 1 (Therapy A) or Group 2 (Therapy B).

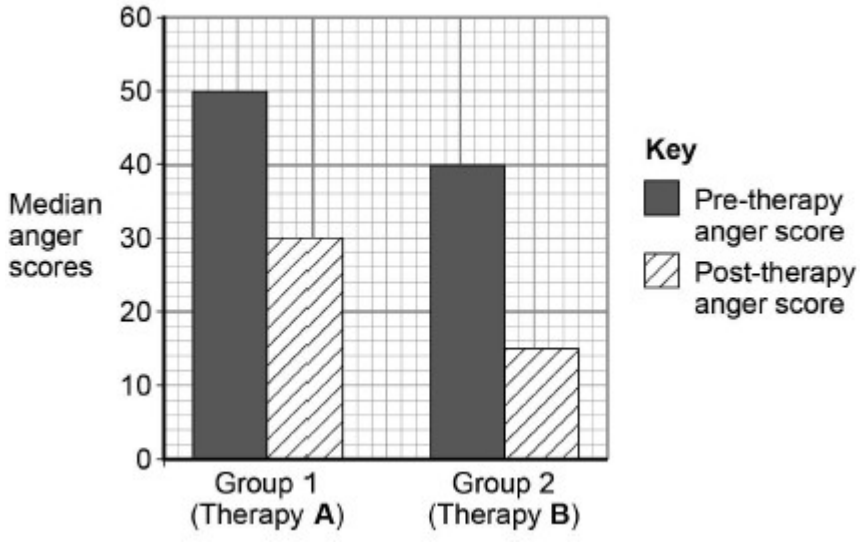
Each participant's anger was assessed before and after therapy. For the **pre-therapy anger score** they completed an Anger Scale questionnaire and their responses were scored. A high score indicated extreme anger and a low score indicated mild anger.

For the next eight weeks, participants attended weekly sessions for either Therapy A or Therapy B.

For the **post-therapy anger score**, at the end of the treatment period, participants completed the same Anger Scale questionnaire.

The data obtained are shown in the figure below.

Median anger scores before and after therapy for Group 1 (Therapy A) and Group 2 (Therapy B)



(a) The researcher used volunteers for this study. Outline **one** disadvantage of using volunteers to take part in this study.

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(2)

(b) Explain how the researcher could allocate the volunteers randomly to the conditions of the experiment.

(3)

(c) Write a suitable hypothesis for this study.

(3)

(d) What do the data in the figure above seem to suggest?

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(3)

(e) Explain how the study might be improved by using a matched pairs design.

(4)

(f) Outline **one** ethical issue that might have occurred in this study and explain how the researcher could have dealt with this issue.

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(4)

(g) Give **one** disadvantage of using median values as seen in the figure above to represent the anger scores of participants.

(1)

(h) Explain how demand characteristics might have occurred in this study.

(2)

(i) The researcher used a questionnaire to assess the anger scores of the offenders. Briefly discuss **one** strength of using questionnaires in research.

(Total 24 marks)

Q8.

Read the item and then answer the questions that follow.

A psychologist wanted to see if verbal fluency is affected by whether people think they are presenting information to a small group of people or to a large group of people.

The psychologist needed a stratified sample of 20 people. She obtained the sample from a company employing 60 men and 40 women.

The participants were told that they would be placed in a booth where they would read out

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an article about the life of a famous author to an audience. Participants were also told that the audience would not be present, but would only be able to hear them and would not be able to interact with them.

There were two conditions in the study, **Condition A** and **Condition B**.

Condition A: 10 participants were told the audience consisted of 5 listeners.

Condition B: the other 10 participants were told the audience consisted of 100 listeners.

Each participant completed the study individually. The psychologist recorded each presentation and then counted the number of verbal errors made by each participant.

(a) Identify the dependent variable in this study.

(2)

(b) Write a suitable hypothesis for this study.

(3)

(c) Identify **one** extraneous variable that the psychologist should have controlled in the study **and** explain why it should have been controlled.

(3)

(d) Explain **one** advantage of using a stratified sample of participants in this study.

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(2)

(e) Explain how the psychologist would have obtained the male participants for her stratified sample. Show your calculations.

(3)

(f) The psychologist wanted to randomly allocate the 20 people in her stratified sample to the two conditions. She needed an equal number of males in each condition and an equal number of females in each condition. Explain how she would have done this.

(4)

(Total 17 marks)

Q9.

Imagine you have been asked to design a study to investigate possible gender differences in card sorting behaviours. You decide you will ask participants to sort a shuffled pack of playing cards into their suits of hearts, clubs, diamonds and spades. You decide you will time the participants as they do this using a stop watch.

Discuss the following aspects of this investigation:

- with reference to the card sorting task, explain how you would ensure that this is made the same task for all participants

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- **one** methodological issue you should take into account when obtaining suitable participants for this study and explain how you would deal with this issue
- how you would ensure that the experience of your participants is ethical.

(Total 9 marks)

Q10.

Briefly outline **two** problems that might arise when making generalisations on the basis of psychological research findings.

(Total 4 marks)

Q11.

A psychologist used an independent groups design to investigate whether or not a cognitive interview was more effective than a standard interview, in recalling information. For this experiment, participants were recruited from an advertisement placed in a local paper. The advertisement informed the participants that they would be watching a film of a violent crime and that they would be interviewed about the content by a male police officer.

The psychologist compared the mean number of items recalled in the cognitive interview with the mean number recalled in the standard interview.

(a) Name the sampling technique used in this experiment.

_____

_____

(1)

(b) Suggest **one** limitation of using this sampling technique.

_____

_____

_____

_____

(2)

(c) Identify the independent variable **and** the dependent variable in this experiment.

Independent variable _____

_____

Dependent variable _____

_____

(2)

(d) Explain **one** advantage of using an independent groups design for this experiment.

_____

_____

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_____

_____

(2)

(e) Discuss whether or not the psychologist showed an awareness of the British Psychological Society (BPS) Code of Ethics when recruiting participants for this experiment.

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(3)

(Total 10 marks)

Q12.

A psychologist wanted to investigate whether or not people are influenced by the opinions of others.

The psychologist selected 100 pupils from a secondary school to be participants in the study.

The psychologist showed participants a cake which weighed 350 grams. The task for the participants was to estimate the weight of the cake in grams.

Participants were allocated randomly to one of two groups.

In **Group A**, 50 participants were asked individually to estimate the weight of the cake. The psychologist gave each participant a blank piece of paper on which to write his or her estimate.

In **Group B**, the other 50 participants were asked individually to estimate the weight of the cake. This time, the psychologist gave each participant a piece of paper which contained a list of five weights (493 grams, 512 grams, 502 grams, 485 grams and 601 grams). The participants were told that these were the estimates given by five people and that they should write their own estimate below these other estimates.

The psychologist expected that participants in **Group B** would be influenced by the five other estimates. She expected that they would write down a weight similar to the five estimates on the piece of paper.

The median estimates for the weight of the cake are shown in the table below.

The median estimate for the weight of the cake (in grams) in Group A and Group B

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	Group A Estimate written on a blank piece of paper	Group B Estimate written below the list of five other estimates
The median estimate of the weight of the cake (in grams)	348	510

(a) What might the psychologist conclude from the median scores shown in the table above?
Explain your answer.

(2)

(b) Identify the independent variable and the dependent variable in this study.

Independent variable _____

Dependent variable _____

(2)

(c) Explain how stratified sampling might have been used to select the participants in this study.

(3)

(d) (i) The psychologist allocated the participants randomly to the two groups that were used in this study.

Explain how the psychologist could have allocated the participants randomly

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to the two groups.

(2)

(d) (ii) Briefly explain **one** reason why random allocation of participants is important.

(2)

(e) The psychologist used an independent groups design in this study.

Explain **one** reason why it would not have been appropriate to use a repeated measures design in this study.

(2)

(f) Identify and briefly explain **one** ethical issue that the psychologist should have considered in this study.

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(3)

(g) (i) After the study, the psychologist interviewed some of the participants in **Group B**.

Outline **one** type of interview that she might have conducted.

_____

_____

_____

_____

_____

_____

(2)

(g) (ii) Explain **one** limitation of the type of interview that you have outlined in your answer to (g)(i).

_____

_____

_____

_____

_____

_____

(2)

(Total 20 marks)

Q13.

Psychological research suggests an association between birth order and certain abilities. For example, first-born children are often logical in their thinking whereas later-born children tend to be more creative. A psychologist wonders whether this might mean that birth order is associated with different career choices. She decides to investigate and asks 50 artists and 65 lawyers whether they were the first-born child in the family or not.

(a) Write a non-directional hypothesis for this study.

(2)

(b) Identify an appropriate sampling method for this study and explain how the psychologist might have obtained such a sample

The psychologist found the following results:

- 20 of the 50 artists were first-born children
- 35 of the 65 lawyers were first-born children.

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She analysed her data using a statistical test and calculated a value of x^2 = 2.27. She then looked at the relevant table to see whether this value was statistically significant. An extract from the table is provided below.

Table: Critical values of x^2

Level of significance for a one-tailed test				
	0.10	0.05	0.025	0.01
Level of significance for a two-tailed test				
	0.20	0.10	0.05	0.02
df				
1	1.64	2.71	3.84	5.41

Calculated value of x^2 must be equal to or exceed the table (critical) values for significance at the level shown

(3)

(c) Imagine that you are writing the results section of the report on this investigation. Using information from the description of the study above and the relevant information from the statistical table, provide contents suitable for the results section.

You must provide all of the following:

- an appropriately labelled 2×2 contingency table a sketch of an appropriately labelled bar chart
- identification of the appropriate statistical test with justification for its use
- identification of an appropriate significance level
- a statement of the results of the statistical test in relation to the hypothesis.

(12)

(Total 17 marks)

Q14.

Psychologists often need to select participants to take part in research. The descriptions below are all types of sampling method.

A The psychologist puts an advert in a newspaper, asking for participants.

B The psychologist uses lists of students in a university and selects every tenth student to take part.

C The psychologist asks some of his psychology students to take part in the research.

D The psychologist gives a number to all students in a university, then selects participants in an unbiased way.

In the table below, write which description, **A**, **B**, **C**, or **D**, matches each sampling method.

Sampling Method	Description

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Random Sample	
Opportunity Sample	
Volunteer Sample	

(Total 3 marks)

Q15.

A teacher has worked in the same primary school for two years. While chatting to the children, she is concerned to find that the majority of them come to school without having eaten a healthy breakfast. In her opinion, children who eat 'a decent breakfast' learn to read more quickly and are better behaved than children who do not. She now wants to set up a pre-school breakfast club for the children so that they can all have this beneficial start to the day. The local authority is not willing to spend money on this project purely on the basis of the teacher's opinion and insists on having scientific evidence for the claimed benefits of eating a healthy breakfast.

(a) Explain why the teacher's personal opinion cannot be accepted as scientific evidence.
Refer to some of the major features of science in your answer.

A psychologist at the local university agrees to carry out a study to investigate the claim that eating a healthy breakfast improves reading skills. He has access to 400 five-year-old children from 10 local schools, and decides to use 100 children (50 in the experimental group and 50 in the control group). Since the children are so young, he needs to obtain parental consent for them to take part in his study.

(6)

(b) The psychologist used a random sampling method. Explain how he could have obtained his sample using this method.

(3)

(c) Explain limitations of using random sampling in this study.

(3)

(d) Explain why it is important to operationalise the independent variable and the dependent variable in this study and suggest how the psychologist might do this.

(5)

(e) The psychologist used a Mann-Whitney test to analyse the data. Give **two** reasons why he chose this test.

(2)

(f) He could have used a matched pairs design. Explain why this design would have been more difficult to use in this study.

(2)

(g) Other than parental consent, identify **one** ethical issue raised in this study and explain how the psychologist might address it.

(2)

(h) The psychologist asks some of his students to conduct a separate observational

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study at the same time on the same group of children. The aim of this observational study is to test the idea that eating a healthy breakfast affects playground behaviour.

Design an observational study to investigate the effects of a healthy breakfast on playground behaviour. Include in your answer sufficient detail to allow for reasonable replication of the study. You should state the hypothesis you are setting out to test.

In your answer, refer to:

- an appropriate method of investigation
- materials/apparatus and procedure.

Justify your design decisions.

(12)

(Total 35 marks)

Q16.

A psychologist investigated the relationship between type of attachment in childhood and success in later adult relationships. He published a questionnaire in a local newspaper. The participants were people who read the newspaper, filled in the questionnaire and sent it to the psychologist. Participants' answers to the questions were used to decide whether they had been securely or insecurely attached as children. The participants who were identified as securely attached children were more likely to have successful adult relationships than those identified as insecurely attached children.

(a) Identify the sampling technique used in this study. Outline **one** weakness of using this sampling method.

(3)

(b) Identify **one** ethical issue the researcher would need to consider in this research. Suggest how the researcher could deal with this ethical issue.

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(3)
(Total 6 marks)

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