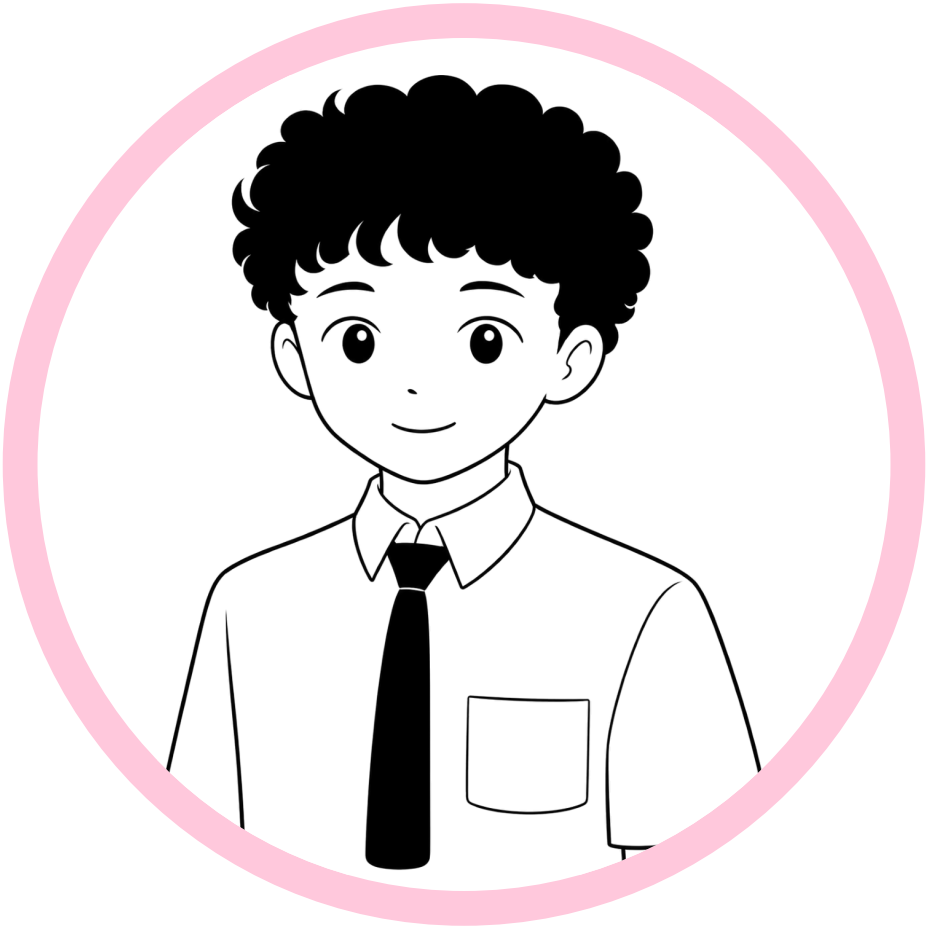
AQA A-LEVEL PSYCHOLOGY · 7182

PSYCHOLOGY



EXAM QUESTION PACK

3.2.3 EXPERIMENTAL METHOD

SCORE	PERCENTAGE
/496	%

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Q1.

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.

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Explain what is meant by ‘primary data’.

(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**.

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(2)

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

Task A _____

_____

_____

_____

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)

Q2.

In an experiment, researchers arranged for participants to complete a very personal and embarrassing questionnaire in a room with other people. Each participant was tested individually. The other people were confederates of the experimenter.

In condition 1: the confederates completed the questionnaire.

In condition 2: the confederates refused to complete the questionnaire and asked to leave the experiment.

The researchers tested 15 participants in condition 1, and 15 different participants in condition 2.

The researchers recorded the number of participants who completed the questionnaire in each condition.

(a) Identify the type of data in this experiment. Explain your answer.

(2)

(b) Using your knowledge of social influence, explain the likely outcome of this experiment.

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(3)

(c) For this study, the researchers had to use different participants in each condition and this could have affected the results.

Outline **one** way in which the researchers could have addressed this issue.

(4)

(d) In order to analyse the difference in the number of participants who completed the questionnaire in each condition, the researchers used a chi-squared test.

Apart from reference to the level of measurement, give **two** reasons why the researchers used the chi-squared test.

(2)

(e) The calculated value of chi-squared in the experiment described above is **3.97**

Critical values for the chi-squared test

Level of significance				
df	0.1	0.05	0.02	0.01
1	2.71	3.84	5.41	6.64

The calculated value of chi-squared should be equal to or greater than the critical value to be statistically significant.

With reference to the critical values in **the table** above, explain whether or not the calculated value of chi-squared is significant at the 5% level.

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(2)

(Total 13 marks)

Q3.

A psychologist wanted to test whether listening to music improves running performance.

The psychologist conducted a study using 10 volunteers from a local gym. The psychologist used a repeated measures design. Half of the participants were assigned to condition A (without music) and half to condition B (with music).

All participants were asked to run 400 metres as fast as they could on a treadmill in the psychology department. All participants were given standardised instructions. All participants wore headphones in both conditions. The psychologist recorded their running times in seconds. The participants returned to the psychology department the following week and repeated the test in the other condition.

(a) Identify the type of experiment used in this study. Shade **one** box only.

A Laboratory ⬭

B Natural ⬭

C Quasi ⬭

D Research ⬭

(1)

(b) Identify the operationalised dependent variable in this study.

(2)

(c) The results of the study are given in **Table 1** below.

Table 1: Mean number of seconds taken to complete the 400m run and the standard deviation for both conditions

	Condition A (without music)	**Condition B** (with music)
Mean 400m time (s)	123	117

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Standard deviation	9.97	14.5

Explain why a histogram would **not** be an appropriate way of displaying the means shown in **Table 1**.

(2)

(d) Name a more appropriate graph to display the means shown in **Table 1**. Suggest appropriate X (horizontal) and Y (vertical) axis labels for your graph choice.

Name of graph: _____

X axis label: _____

Y axis label: _____

(3)

(e) What do the mean and standard deviation values in **Table 1** suggest about the participants' performances with and without music? Justify your answer.

(4)

(f) Calculate the percentage decrease in the mean time it took participants to run 400 metres when listening to music. Show your workings. Give your answer to three significant figures.

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(4)

(g) The researcher used a directional hypothesis and analysed the data using a related t-test. The calculated value of t where degrees of freedom (df) = 9 was 1.4377. He decided to use the 5% level of significance.

Table 2: Table of critical values of t

Level of significance for a one-tailed test	0.05	0.025
Level of significance for a two-tailed test	0.10	0.05
df = 1	6.314	12.706
2	2.920	4.303
3	2.353	3.182
4	2.132	2.776
5	2.015	2.571
6	1.943	2.447
7	1.895	2.365
8	1.860	2.306
9	1.833	2.262
10	1.812	2.228

Calculated value of t must be equal to or greater than the critical value in this table for significance to be shown.

Give **three** reasons why the researcher used a related t-test in this study and, using **Table 2**, explain whether or not the results are significant.

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(5)

(h) What is meant by a Type II error? Explain why psychologists normally use the 5% level of significance in their research.

(3)

(i) Identify **one** extraneous variable that could have affected the results of this study. Suggest why it would have been important to control this extraneous variable and how it could have been controlled in this study.

(3)

(j) The report was submitted for peer review and a number of recommendations were advised.

Describe the process and purposes of peer review.

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(6)
(Total 33 marks)

Q4.

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).

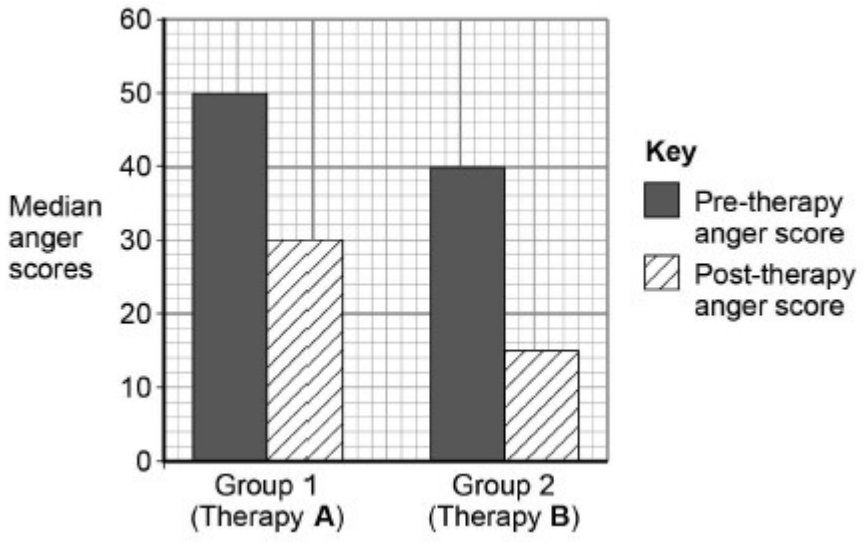
Each participant's anger was assessed before and after therapy. For the **pre-therapy anger score** they completed an Anger Scale questionnaire and their responses were scored. A high score indicated extreme anger and a low score indicated mild anger.

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)

Q5.

Read the item and then answer the questions that follow.

Participants in an experiment were shown a film of a robbery. The participants were then divided into two groups. One group was interviewed using a standard interview technique and the other group was interviewed using the cognitive interview technique. All participants were then given an 'accuracy score' (out of 20) based on how closely their recall matched the events in the film (20 = completely accurate, 0 = not at all accurate).

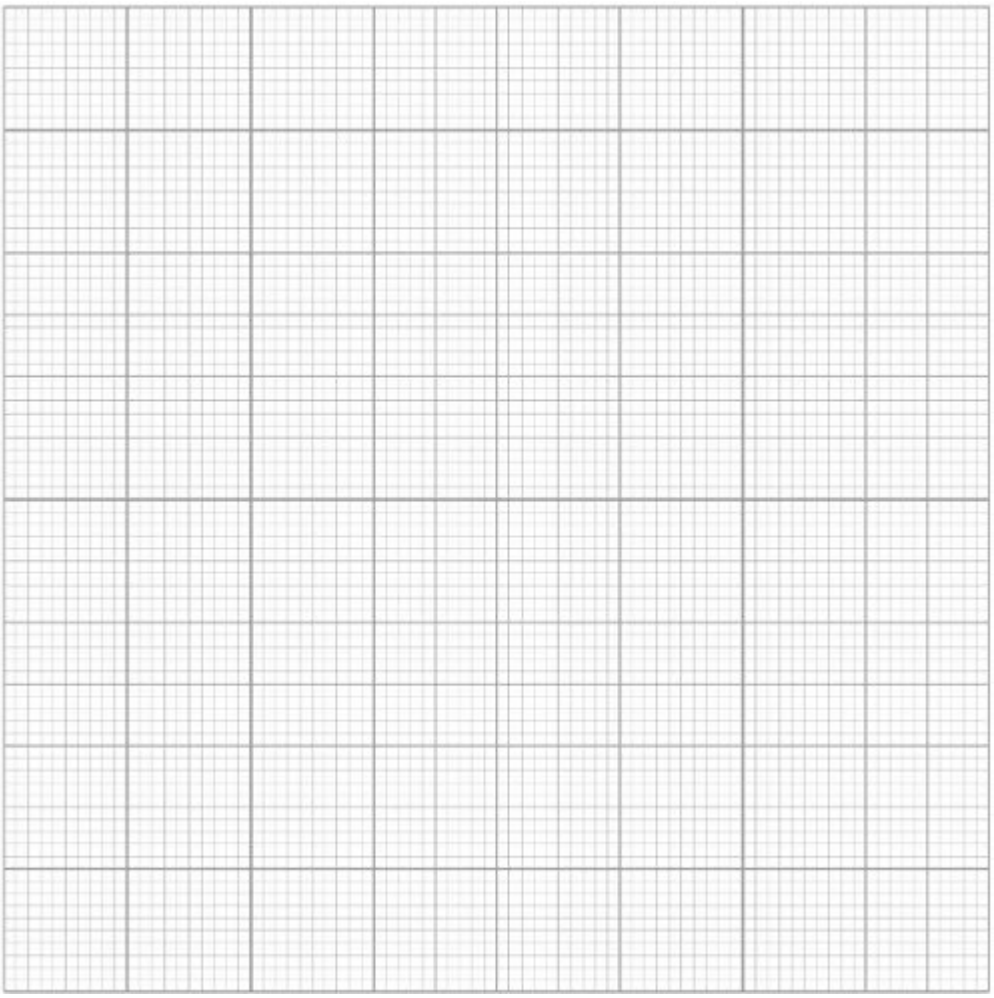
The results of the experiment are shown in the table below.

The median accuracy score for the standard interview and the cognitive interview

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	Standard interview	Cognitive interview
Median	10	15

(a) Sketch an appropriate graphical display to show the median accuracy scores in the table above.



(6)

(b) The experiment used an independent groups design.

Explain how this study could have been modified by using a matched pairs design.

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(4)

(Total 10 marks)

Q6.

Read the item and then answer the questions that follow.

A psychologist wanted to see if creativity is affected by the presence of other people. To test this he arranged for 30 people to participate in a study that involved generating ideas for raising funds for a local youth club. Participants were randomly allocated to one of two conditions.

Condition A: there were 15 participants in this condition. Each participant was placed separately in a room and was given 40 minutes to think of as many ideas as possible for raising funds for a local youth club. The participant was told to write down his or her ideas and these were collected in by the psychologist at the end of the 40 minutes.

Condition B: there were 15 participants in this condition. The participants were randomly allocated to 5 groups of equal size. Each group was given 40 minutes to think of as many ideas as possible for raising funds for a local youth club. Each group was told to write down their ideas and these were collected by the psychologist at the end of the 40 minutes.

The psychologist counted the number of ideas generated by the participants in both conditions and calculated the total number of ideas for each condition.

Total number of ideas generated in Condition A (when working alone) and in Condition B (when working in a group)

	Condition A Working alone	**Condition B Working in a group**
Total number of ideas generated	110	75

(a) Identify the experimental design used in this study **and** outline **one** advantage of this experimental design.

(3)

(b) Describe **one other** experimental design that researchers use in psychology.

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(2)

(c) Apart from using random allocation, suggest **one** way in which the psychologist might have improved this study by controlling for the effects of extraneous variables. Justify your answer.

(2)

(d) Write a suitable hypothesis for this study.

(3)

(e) From the information given in the description, calculate the number of participants in each group in Condition B.

(1)

Read the item and then answer the questions that follow.

> The psychologist noticed that the number of ideas generated by each of the individual participants in **Condition A** varied enormously whereas there was little variation in performance between the 5 groups in **Condition B.** He decided to calculate a measure of dispersion for each condition.

(f) Name a measure of dispersion the psychologist could use.

(1)

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(g) The psychologist uses the measure of dispersion you have named in your answer to **question (f)**. State how the result for each condition would differ.

(1)

(h) Explain how the psychologist could have used random allocation to assign the 15 participants in **Condition B** into the 5 groups.

(3)

(i) Using the information given in the table above, explain how the psychologist could further analyse the data using percentages.

(2)

(j) At the end of the study the psychologist debriefed each participant. Write a debriefing that the psychologist could read out to the participants in **Condition A.**

Extra space

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(6)

(Total 24 marks)

Q7.

A cognitive psychologist investigating how memory works gave participants the same word list to recall in one of two conditions. All the words were of equal difficulty.

Condition 1: Ten participants recalled the words in the same room in which they had learned the words.

Condition 2: Ten different participants recalled the words in a room that was not the same room as that in which they had learned the words.

The following results were obtained:

Mean values and standard deviations for Condition 1 and Condition 2 in a memory experiment.

	Condition 1	**Condition 2**
Mean	15.9	10.6
Standard deviation	3.78	1.04

(a) Why are the standard deviation values found in the study above useful descriptive statistics for the cognitive psychologist?

(2)

(b) Outline **one** problem of studying internal mental processes like memory ability by conducting experiments such as that described in part (a) above.

(2)

(Total 4 marks)

Q8.

Read the item and then answer the questions that follow.

Twenty primary school teachers were sent by their individual head teachers to attend a

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training course in classroom behaviour management run by educational psychologists at a local university. Before the training course, and again after training, the teachers were asked to say how confident they were in managing difficult classroom behaviour.

The researchers compared the before and after answers to see how many teachers rated their confidence as 'better', 'worse', or 'the same' as it had been at the start of the course.

The results are shown in the table below:

	Confidence Better	**Confidence Worse**	**Confidence Same**
Number of teachers	16	2	2

(a) Which of A, B, C or D best describes this study? Shade **one** box only.

A laboratory experiment ⬭

B pilot experiment ⬭

C natural experiment ⬭

D controlled experiment ⬭

(1)

(b) What fraction of the teachers thought that their confidence was better after the course? Show your workings.

(2)

(c) What might the researchers conclude about the training course on the basis of the data in the table? Explain your answer.

(2)

(d) What is the operationalised dependent variable in this study?

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(2)

(e) Which experimental design is being used in this study and why would it be an appropriate design in this case?

(3)

(f) The psychologists conducting the training decided to use the Sign Test to see whether there was a significant difference in confidence in managing difficult classroom behaviour before and after the course.

Give the calculated value of S in this study and explain how you arrived at this figure.

(3)

(g) Explain why statistical testing is used in psychological research.

(2)

(h) Following the training course, one of the researchers carried out an overt classroom observation of each teacher's primary school class. The researcher wanted to record the frequency of difficult classroom behaviours shown by the pupils during a normal lesson.

He identified six categories of disruptive behaviour and decided to record the frequency of each of the six behaviours during the first ten minutes and the last ten minutes of the lesson.

Suggest **two** behavioural categories that the researcher could record during his observation.

(2)

(i) Design a tally chart/record sheet the researcher could use to record his observations.

Show your tally chart/record in the box below.

(3)

(j) Identify **one** problem that might have occurred during this observation and explain how the observation would be improved by addressing this problem.

(4)

(Total 24 marks)

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Q9.

Read the item and then answer the questions that follow.

An experiment was carried out to test the effects of learning similar and dissimilar information on participants' ability to remember.

In **Stage 1** of the experiment, 10 participants in **Group A**, the 'similar' condition, were given a list of 20 place names in the UK. They were given two minutes to learn the list. 10 different participants in **Group B**, the 'dissimilar' condition, were given the same list of 20 place names in the UK. They were also given two minutes to learn the list.

In **Stage 2** of the experiment, participants in **Group A** were given a different list of 20 more place names in the UK, and were given a further two minutes to learn it. Participants in **Group B** were given a list of 20 boys' names, and were given a further two minutes to learn it.

In **Stage 3** of the experiment, all participants were given five minutes to recall as many of the 20 place names in the UK, from the list in **Stage 1**, as they could. The raw data from the two groups is below.

Number of place names recalled from the list in Stage 1

Group A	Group B
5	11
6	10
4	11
7	13
8	12
4	14
5	15
4	11
6	14
7	14

(a) What is the most appropriate measure of central tendency for calculating the average of the scores, from the table, in each of the **two** groups? Justify your answer.

_____

_____

_____

_____

(2)

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(b) Calculate the measure of central tendency you have identified in your answer to **part (a)** for **Group A** and **Group B.** Show your calculations for each group.

(4)

(c) In **Stage 3** of the experiment, several participants in **Group A**, the 'similar' condition, recalled words from the **Stage 2** list rather than the **Stage 1** list.

Use your knowledge of forgetting to explain why this may have occurred.

(2)

(Total 8 marks)

Q10.

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 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

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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.

(2)

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

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(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)

Q11.

A researcher wanted to see whether cognitive behaviour therapy was an effective treatment for depression. Twenty depressed patients who had all recently completed a course of cognitive behaviour therapy were involved in the investigation. From their employment records, the researcher kept a record of the number of absences from work each patient had in the year following their treatment. This was compared with the number of absences from work each patient had in the year prior to their treatment.

Those patients who had fewer absences from work in the year following their treatment than in the year prior to their treatment were classified as 'improved' (+). Those patients who had more absences were classified as 'deteriorated' (-). Those patients who had the same number of absences were classified as 'neither' (0).

The results of the investigation are included in **Table 1** below.

Table 1

Patient	Improved	Deteriorated	Neither
1	+		

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2			0
3		–	
4	+		
5	+		
6	+		
7		–	
8		–	
9			0
10	+		
11		–	
12	+		
13	+		
14	+		
15	+		
16		–	
17	+		
18	+		
19	+		
20			0

The researcher decided to use the sign test to analyse the data.

(a) Explain **two** factors that the researcher had to take into account when deciding to use the sign test. Refer to the investigation above in your answer.

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(4)

(b) Calculate the sign test value of s for the data in **Table 1**. Explain how you reached your answer.

(2)

Table 2: Critical values for the sign test

n	0.005 (one tailed) 0.01 (two tailed)	0.01 (one tailed) 0.02 (two tailed)	0.025 (one tailed) 0.05 (two tailed)	0.05 (one tailed) 0.10 (two tailed)
16	2	2	3	4
17	2	3	4	4
18	3	3	4	5

For significance, the value of the less frequent sign is equal to, or less than, the value of the table.

(c) With reference to the critical values in **Table 2**, explain whether or not the value of s that you calculated in response to **question (b)** is significant at the 0.05 level for a two tailed test.

(2)

(d) The investigation above is based on secondary data.

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In what ways would the use of primary data have improved this investigation?

(3)

(e) Outline the implications of psychological research for the economy. Refer to the investigation above in your answer.

(5)

(Total 16 marks)

Q12.

A psychologist wanted to test the effects of biological rhythms on the ability to solve maths problems. She used random sampling to form two groups each of 20 students.

She tested one group on one set of maths problems at 3 am in the morning. The other group were tested on another set of maths problems at 3 pm in the afternoon. She found that performance of the group tested at 3 pm was significantly better than the group tested at 3 am.

When submitted for peer review the paper was rejected because of serious design problems.

Explain **one** problem with the design of this study and suggest ways of dealing with this problem.

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_____

_____

_____

_____

_____

_____

(Total 4 marks)

Q13.

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
- **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)

Q14.

Design an experiment to investigate the effect of indoor plants on mood in office workers. For your measure of mood you should devise a measure that would give data suitable for testing at the ordinal level of measurement.

In your answer you should provide details of:

- Design – include reference to the experimental design, variables and controls
- Materials/Apparatus – describe any special materials required
- Data analysis that could be used – include reference to descriptive and inferential analysis.

Justify your choices.

You may use this space to plan your answer.

(Total 12 marks)

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Q15.

Read the item and then answer the questions that follow.

A psychologist was investigating the effect of prison conditions on institutional aggression.

He selected a sample of 12 prisoners and counted the number of aggressive acts of each prisoner over one day in the exercise yard.

The prison conditions were then changed, such that the number of prisoners per cell was reduced and regular exercise periods introduced.

After three months of these new conditions the psychologist observed the same 12 prisoners and again counted the number of aggressive acts of each prisoner over one day in the exercise yard.

This study involves a repeated measures design.

(a) Explain **one** advantage of using a repeated measures design in this study.

(2)

(b) The psychologist obtained the following results:

- For two of the prisoners the number of aggressive acts increased
- For eight of the prisoners the number of aggressive acts decreased
- For two of the prisoners the number of aggressive acts stayed the same

The psychologist decides to use a sign test to see if his data are significant.

What is the calculated value of the sign test statistic 'S'? Explain your answer.

(2)

(c) Look at the table of critical values of 'S' below and then answer the question that follows.

N	.10	.05	.025	.01
4	0			
5	0	0		
6	0	0	0	
7	1	0	0	0
8	1	1	0	0
9	2	1	1	0
10	2	1	1	0
11	2	2	1	1
12	3	2	2	1

To be significant, the calculated/observed value must be equal to or less than the critical/table value.

Using the table of critical values of 'S' above, state whether the findings of the study are significant at $p < 0.05$. Explain your answer.

(2)

(Total 6 marks)

Q16.

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Read the item and then answer the questions that follow.

A psychologist wanted to see if a combination of behaviour modification and anger management would be effective in reducing levels of aggression in people given custodial sentences.

She selected a sample of 12 prisoners immediately after sentencing and counted the number of aggressive acts of each prisoner over one day.

The prisoners were then given one month of daily sessions of behaviour modification combined with anger management.

At the end of this month, they were again observed, and the number of aggressive acts of each prisoner was recorded over one day.

This study involves a repeated measures design.

(a) Explain **one** advantage of using a repeated measures design in this study.

(2)

(b) The psychologist obtained the following results:

- For two of the prisoners the number of aggressive acts increased
- For eight of the prisoners the number of aggressive acts decreased
- For two of the prisoners the number of aggressive acts stayed the same

The psychologist decides to use a sign test to see if her data are significant.

What is the calculated value of the sign test statistic 'S'? Explain your answer.

(2)

(c) Look at the table of critical values of 'S' below and then answer the question that follows.

N	.10	.05	.025	.01
4	0			
5	0	0		
6	0	0	0	
7	1	0	0	0
8	1	1	0	0
9	2	1	1	0
10	2	1	1	0
11	2	2	1	1
12	3	2	2	1

To be significant, the calculated/observed value must be equal to or less than the critical/table value.

Using the table of critical values of 'S' above, state whether the findings of the study are significant at $p < 0.05$. Explain your answer.

(2)

(Total 6 marks)

Q17.

Read the item and then answer the questions that follow.

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A psychologist wanted to see if even a brief period of aversion therapy would help smokers reduce their level of smoking. A group of 12 volunteers who smoked regularly recorded the number of cigarettes smoked over a one week period.

The psychologist then exposed them to aversion therapy for one week.

The participants were then allowed to smoke freely recording the number of cigarettes smoked during the week following therapy.

This study involves a repeated measures design.

(a) Explain **one** advantage of using a repeated measures design in this study.

(2)

(b) The psychologist obtained the following results:

- For two of the volunteers the number of cigarettes smoked increased
- For eight of the volunteers the number of cigarettes smoked decreased
- For two of the volunteers the number of cigarettes smoked stayed the same

The psychologist decides to use a sign test to see if the data are significant.

What is the calculated value of the sign test statistic 'S'? Explain your answer.

(2)

(c) Look at the table of critical values of 'S' below and then answer the question that follows.

N	.10	.05	.025	.01
4	0			
5	0	0		
6	0	0	0	
7	1	0	0	0
8	1	1	0	0
9	2	1	1	0
10	2	1	1	0
11	2	2	1	1
12	3	2	2	1

To be significant, the calculated/observed value must be equal to or less than the critical/table value.

Using the table of critical values of 'S' above, state whether the findings of the study are significant at $p < 0.05$. Explain your answer.

(2)

(Total 6 marks)

Q18.

A researcher investigated whether memory for words presented with pictures was better than memory for words presented without pictures. The researcher used an independent groups design.

In **Condition 1**, participants were given a limited time to learn a list of 20 words. They

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were then asked to recall the 20 words in any order.

In **Condition 2**, participants were given the same time to learn the same 20 words, but this time each word was presented with a picture. For example, the word 'apple' was presented alongside a picture of an apple. They were then asked to recall the 20 words in any order.

(a) A pilot study is a small-scale investigation carried out before the main study.

Explain why it would be appropriate for this researcher to use a pilot study. In your answer you must refer to details of the experiment given above.

Extra space

(4)

(b) State a non-directional hypothesis for this experiment.

(2)

(c) Explain **two** reasons why it was more appropriate to use an independent groups design than a repeated measures design.

Reason 1

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Reason 2 _____

_____

_____

_____

(4)

The range and median number of words correctly recalled for participants shown words without pictures and for participants shown words with pictures

	Condition 1 Words without pictures	**Condition 2 Words with pictures**
Median number of words correctly recalled	13	16
Range	11	13

(d) What do the scores in the table above show?

_____

_____

_____

_____

(2)

After he had carried out the experiment, the researcher noticed that one participant in **Condition 1** had recalled all 20 words. The researcher thought that this participant might have used a strategy for memory improvement, even though he had not been told to do so.

(Total 12 marks)

Q19.

A psychologist wanted to see whether or not there is a difference in the expectations that men and women have of their own numeracy skills. She obtained a sample of 15 men and 15 women from a factory. She conducted her study in two parts.

In the **first part** of the study, the psychologist said to each participant: “I want you to estimate how many marks you think you will get on a maths test that is suitable for 14-year-old children. If the test has a maximum score of 50, what mark do you think you will get?”

The psychologist recorded the estimate given by each participant and calculated the median estimates for the men and for the women.

The results of the study are given in **Table 1**.

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Table 1: Median estimated maths test scores for men and women

	Median estimated maths test score
Men	31
Women	19

(a) Explain how a median score is calculated.

(1)

(b) Identify the dependent variable in this study.

(1)

(c) Write a suitable hypothesis for this study.

(2)

(d) Identify and explain the experimental design used in this study.

(2)

(e) Explain how the psychologist could have obtained a random sample of 15 men and a random sample of 15 women for this study.

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(3)

(f) What conclusion could the psychologist draw from the median estimated scores in **Table 1**? Justify your answer.

(2)

In the **second part** of the study, each participant took a 30-minute maths test suitable for 14-year-old children. The test took place under examination conditions. The psychologist marked the test. The maximum mark was 50.

The results of the maths test are given in **Table 2**.

Table 2: Median maths test scores for men and women

	Median maths test score
Men	25
Women	25

(g) Taking the results from **both** parts of the study (Table 1 and Table 2), what can the psychologist now conclude?

(3)

(h) After both parts of the study had been completed, the psychologist needed to debrief the participants.

Write a debrief that the psychologist could read out to the participants.

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(4)

(i) This psychologist did not conduct a pilot study. Explain **one** reason why psychologists sometimes conduct pilot studies.

(2)

(Total 20 marks)

Q20.

A researcher investigated whether people with obsessive-compulsive disorder (OCD) are more aware of their own heartbeat than people who do not have OCD. A matched pairs design was used. This involved 10 people with OCD and 10 people without OCD. The researcher asked each participant to estimate how fast his or her heart was beating (in beats per minute) and this was compared to his or her actual heartbeat. It was found that people with OCD were more accurate at estimating their own heartbeat than people without OCD.

(a) Identify the independent variable in this study.

(1)

(b) This study is a quasi-experiment. Explain why this study is a quasi-experiment.

(2)

(c) The researcher used a matched pairs design. Identify **one** relevant variable that could have been used to match participants in this study.

(1)

(d) Outline **one** advantage of using a matched pairs design in this study.

(2)

(Total 6 marks)

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Q21.

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.

_____

_____

_____

_____

(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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_____

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_____

(3)

(Total 10 marks)

Q22.

A group of researchers conducted a survey about helping behaviour. They asked an opportunity sample of 200 university students to complete a questionnaire. The questionnaire contained open and closed questions. The following are examples of questions used in the questionnaire:

A Do you think that you are generally a helpful person? Yes No

B What do you think most people would do if they were driving in the rain and saw a woman standing alone next to her broken-down car?

C How would you react if someone walking in front of you slipped and fell over?

(a) Identify an open question from **A**, **B** or **C** above. Give **one** advantage of using open questions.

Example of open question (write **A**, **B** or **C**) _____

(1)

Advantage _____

_____

_____

(1)

The researchers then categorised the responses given to question **C** above. The results are shown in **Table 1**.

Table 1: The number of participants who gave the following responses to question C

Help the person	Ignore the person	Laugh at the person	Other reactions
137	23	31	9

(b) What conclusion might the researchers draw from the responses given in **Table 1** above? Justify your answer.

_____

_____

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(2)

On the basis of the responses to question **C**, the researchers decided to conduct a further investigation. The aim was to see whether an individual's helping behaviour might be affected by the presence of other people.

The participants were an opportunity sample of 40 first-year students. The students were told that they would be interviewed about university life. Each student was met by an interviewer and asked to wait. The interviewer then went into the next room. After two minutes there was a loud noise and a cry of pain from the next room.

Twenty participants took part in **Condition 1** and the other 20 participants took part in **Condition 2**.

Condition 1 Each participant waited alone.

Condition 2 Each participant waited with another person who had previously been told by the researchers not to react to the sounds from the next room.

The researchers counted the number of participants in each condition who went to help the interviewer in the next room.

(c) Write a suitable experimental hypothesis for the further investigation.

(2)

(d) Suggest **one** extraneous variable that might be present in the further investigation. Explain why this variable should be controlled and how it could be controlled.

(3)

(e) Identify the experimental design used in the further investigation. Explain why this is a suitable experimental design for this study.

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(3)

(f) Explain how random sampling might have been used to select the participants in the further investigation.

(2)

The results of the further investigation are given below.

Table 2: Number of participants who went to help the interviewer in Condition 1 and Condition 2

Condition 1 (Participant waiting alone)	Condition 2 (Participant waiting with another person)
20	9

(g) Suggest a suitable graphical display that could be used to represent the data in **Table 2**. Justify your choice.

(2)

(h) After the further investigation, the researchers debriefed the participants. Discuss **two** points that the researchers should have included when they debriefed the participants.

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(4)

(Total 20 marks)

Q23.

A researcher studied the effect of context on memory. He used an independent groups design. He tested participants in one of two conditions.

In **Condition 1**, a group of 20 schoolchildren learned a list of 40 words in a classroom. This group then recalled the words in the same classroom.

In **Condition 2**, a different group of 20 schoolchildren learned the same list of 40 words in a classroom. This group then recalled the words in the school hall.

The researcher recorded the results and compared the mean number of words recalled in each condition.

(a) Identify the independent variable in this study.

(1)

(b) Use your knowledge of retrieval failure to explain the likely outcome of this study.

(3)

(c) In this study, participants were randomly allocated to one of the two conditions. Explain how this might have been carried out.

(2)

(d) In this study, the researcher used an independent groups design. The researcher decided to repeat the study with different participants and to use a matched pairs design.

Explain how these participants could be matched and then allocated to the conditions.

(2)

(Total 8 marks)

Q24.

Dave, a middle-aged male researcher, approached an adult in a busy street. He asked the adult for directions to the train station. He repeated this with 29 other adults.

Each of the 30 adults was then approached by a second researcher, called Sam, who showed each of them 10 photographs of different middle-aged men, including a

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photograph of Dave. Sam asked the 30 adults to choose the photograph of the person who had asked them for directions to the train station.

Sam estimated the age of each of the 30 adults and recorded whether each one had correctly chosen the photograph of Dave.

(a) Identify **one** aim of this experiment.

(2)

(b) Suggest **one** reason why the researchers decided to use a field experiment rather than a laboratory experiment.

(2)

(c) Name the sampling technique used in this experiment. Evaluate the choice of this sampling technique in this experiment.

Sampling technique

Evaluation

Extra space

(4)

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(d) Identify **one** possible extraneous variable in this experiment. Explain how this extraneous variable could have affected the results of this experiment.

Extraneous variable _____

How this extraneous variable could have affected the results of this experiment

_____

_____

_____

_____

_____

_____

_____

_____

Extra space _____

_____

_____

_____

(4)

(Total 12 marks)

Q25.

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

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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

	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.

_____

_____

_____

_____

_____

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(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 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)

Q26.

A psychologist studying obedience conducted the following experiment.

A confederate (stooge) approached people in the street and instructed them to pick up a piece of litter and put it in a nearby bin. None of the people approached had dropped the litter.

There were two groups in the experiment.

Group A The confederate (stooge) was dressed in everyday clothing.

Group B The confederate (stooge) was dressed in a uniform.

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The psychologist recorded how many people in each group obeyed the instruction of the confederate (stooge).

(a) Identify the experimental design that was used in this study. Briefly explain **one** advantage of using this experimental design in this study.

(3)

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

(2)

(c) Use your knowledge of research into obedience to explain the likely outcome of this experiment.

(3)

(d) Briefly outline **one** ethical issue that might have arisen in this experiment.

(2)

(Total 10 marks)

Q27.

A psychologist studying the primacy effect in impression formation conducted the following experiment.

Each participant was taken to the same room where they listened to a description of a person called 'Alex'. The participants were randomly allocated to one of two groups in the experiment. The psychologist gave each participant the same information about 'Alex', but the order of the information varied depending on the group.

Group A Five positive points about Alex's personality were followed by five negative points.

Group B Five negative points about Alex's personality were followed by five positive points.

After listening to the passage, each participant was asked to state whether they thought 'Alex' was a friendly person or not. The psychologist recorded how many participants in each group stated that Alex was 'friendly'.

(a) Identify the type of experiment that was conducted. Select **one** option from the list below.

- Laboratory experiment
- Field experiment
- Quasi-experiment

(1)

(b) Briefly explain **one** advantage of the type of experiment that you have identified in your answer to **part (a)**.

(2)

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

(2)

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(d) Identify the experimental design used in this study.

(1)

(Total 6 marks)

Q28.

A researcher carried out an experiment to investigate misleading information. Participants were shown a photograph in which a man and a woman were talking. The photograph was then taken away and the participants were asked questions about it. Participants were randomly allocated to condition one or condition two.

Participants in condition one were asked:
Question A "How old was the youth in the photograph?"

Participants in condition two were asked:
Question B "How old was the man in the photograph?"

(a) Why is **Question A** an example of misleading information?

_____

_____

_____

_____

(2)

(b) Name an appropriate experimental design which could be used in this experiment. Explain why a repeated measures design would be unsuitable to use in this experiment.

Experimental design _____

_____

Explanation _____

_____

_____

_____

_____

_____

Extra space _____

_____

_____

_____

(4)

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(c) Explain why it would be appropriate to use a pilot study as part of this experiment.

Extra space

(4)

(d) In this experiment, participants were asked to look at a photograph rather than watch a live conversation. Explain **one** strength and **one** limitation of carrying out the experiment in this way.

Strength

Extra space

Limitation

Extra space

(4)

(e) Describe **at least one** other research study into misleading information. In your answer you should include details of what participants were asked to do and what

results were found.

Extra space

(6)
(Total 20 marks)

Q29.

The psychologists then wanted to see whether the use of diagrams in medical consultations would affect recall of medical information.

In a laboratory experiment involving a medical consultation role-play, participants were randomly allocated to one of two conditions. In Condition A, a doctor used diagrams to present to each participant a series of facts about high blood pressure. In Condition B, the same doctor presented the same series of facts about high blood pressure to each participant but without the use of diagrams.

At the end of the consultation, participants were tested on their recall of facts about high blood pressure. Each participant was given a score out of ten for the number of facts recalled.

(a) In this case, the psychologists decided to use a laboratory experiment rather than a field experiment. Discuss advantages of carrying out this experiment in a laboratory.

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(4)

(b) Identify an appropriate statistical test that the psychologists could use to analyse the data from the follow-up study. Give **one** reason why this test is appropriate.

(2)

(Total 6 marks)

Q30.

Research has shown that music can affect the ability to concentrate. Design an experiment that could be carried out in a classroom to test the effects of two different kinds of music on a task requiring concentration (e.g. word search).

You **must** use a repeated measures design.

In your answer you should:

- fully operationalise the independent and dependent variables
- provide details of how you would control extraneous variables
- describe the procedure that you would use. You should provide sufficient detail for the study to be carried out.

(Total 10 marks)

Q31.

A psychologist wanted to investigate whether or not the presence of an audience had an effect on the performance of a task.

The task was to shoot netballs through a hoop. Each participant took 20 shots.

The experiment took place in a school sports hall.

The psychologist obtained the sample of participants from a local secondary school for girls. She drew the names of 40 participants at random from a list of girls who all played netball regularly. The first 20 participants drawn took part in the experimental condition and the next 20 participants took part in the control condition.

In the experimental condition, each participant took 20 shots. In this condition, 50 pupils from the school acted as an audience watching the performance.

In the control condition, the other 20 participants performed the same task, but this time without the audience watching.

The psychologist observed each girl's performance and recorded the number of netballs successfully shot through the hoop.

(a) State an appropriate hypothesis for this study.

_____

_____

_____

_____

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(2)

The results of the study are shown in the table below.

The mean number of netballs successfully shot through the hoop in the presence and absence of an audience.

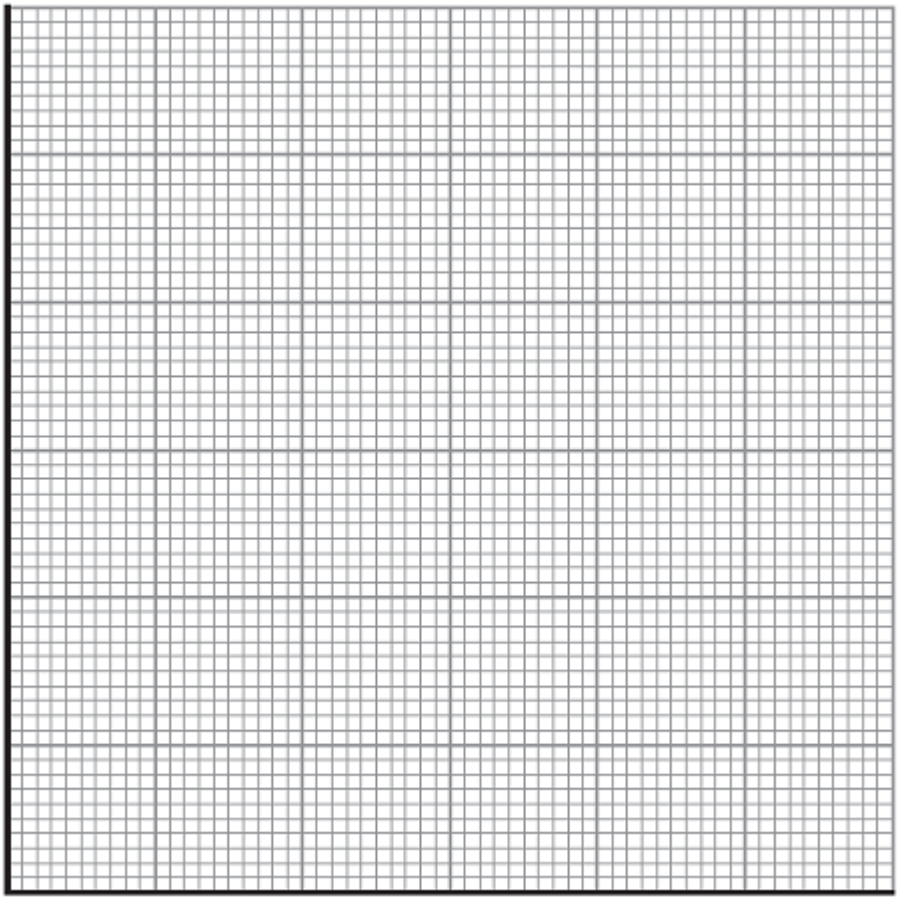
	Mean number of netballs successfully shot through the hoop
Presence of an audience	15
Absence of an audience	9

(b) What might the psychologist conclude from the data in the table above? Justify your answer.

(2)

(c) Sketch an appropriate graphical display of the data shown in **Table**.

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(3)

(d) The psychologist used random sampling to select the participants in this study.

Explain **one** strength of using a random sample.

_____

_____

_____

_____

(2)

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

Briefly explain **one** limitation of using an independent groups design in this study.

_____

_____

_____

_____

(2)

(ii) Explain how the limitation that you have identified in your answer to **(e) (i)**

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might have been overcome.

(2)

(f) (i) What is meant by an *extraneous variable*?

(1)

(ii) Explain why it is important to control extraneous variables in experimental research.

(2)

(g) Write a short set of instructions that the psychologist could have read to the participants in the experimental condition.

Extra space

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(4)

(Total 20 marks)

Q32.

A researcher wanted to investigate the effectiveness of therapy as a treatment for obsessive-compulsive disorder in children. Before the therapy started, the mothers of 10 children with obsessive-compulsive disorder each rated the anxiety of their child. They used a rating scale of 1–10, where 1 meant not at all anxious and 10 meant extremely anxious. Each child then attended a programme of therapy. At the end of the programme, each mother rated her child again, using the same anxiety scale. The scores for each child before and after therapy were used to calculate a median anxiety rating.

The data are shown in the table below.

Median ratings of children's anxiety before and after therapy

	Before therapy	**After therapy**
Median rating of anxiety	8.5	4.0

(a) Identify **two** symptoms of obsessive-compulsive disorder.

(2)

(b) Name and outline the experimental design used in this study.

(2)

(c) Explain **one** advantage of this experimental design.

(2)

(Total 6 marks)

Q33.

A researcher wanted to investigate the effectiveness of a language therapy for children with autism. Before the therapy started, the mothers of 10 children with autism each rated the verbal interaction of their child. They used a rating scale of 1–10, where 1 meant very poor verbal interaction and 10 meant very good verbal interaction. Each child then attended a programme of language therapy. At the end of the programme, each mother rated her child again, using the same verbal interaction scale. The scores for each child before and after therapy were used to calculate a median verbal interaction rating.

The data are shown in the table below.

Median ratings of children's verbal interaction before and after therapy

	Before therapy	**After therapy**
Median rating of verbal interaction	4.0	8.5

(a) Name and outline the experimental design used in this study.

(2)

(b) Explain **one** advantage of this experimental design.

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(2)

(c) Explain what the median ratings in the table above indicate about the effectiveness of the language therapy.

(2)

(Total 6 marks)

Q34.

A psychologist carried out an experiment using an independent groups design. The psychologist wished to investigate the effectiveness of a strategy for memory improvement. In one condition, participants were taught a memory improvement strategy. In the other condition, participants were not taught this memory improvement strategy. All participants were asked to memorise 10 pictures of familiar objects. For example, the first was a doll, the second was an apple. All participants were then given 50 pictures each, and asked to select the original 10.

The psychologist did a pilot study before carrying out the experiment. The results of the experiment are shown in the table below.

(a) Write a directional hypothesis for this experiment.

_____

_____

_____

_____

(2)

(b) Explain what is meant by an independent groups design.

_____

_____

(1)

(c) Explain **one** strength and **one** limitation of using an independent groups design.

Strength _____

_____

_____

_____

_____

Limitation _____

_____

_____

_____

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(4)

(d) Explain why the psychologist did a pilot study.

(3)

The mean number of pictures correctly identified and standard deviations for participants with the memory improvement strategy and without the memory improvement strategy

	With memory improvement strategy	Without memory improvement strategy
Mean	8	7
Standard Deviation	2.80	0.29

(e) What do the standard deviations in the table above tell us about the performance of the two groups?

(2)

(Total 12 marks)

Q35.

It is thought that colours might affect our performance when carrying out certain tasks. Research in this area has been inconclusive. Some studies have shown that red improves performance but others have found the opposite. It could be that these contradictory results have arisen because red is beneficial only for certain kinds of mental processing. Some psychologists tested this hypothesis in a series of independent-groups design experiments using students at a Canadian university.

The experiments involved computer tasks, with either a red, blue or neutral background appearing on the monitor. The researchers found that participants were better at a word-recall task and a spell-checking task when the screen background was red rather than blue or neutral. However, participants thought of more creative ideas when the screen was

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blue rather than red or neutral.

The researchers concluded that red is beneficial for tasks that require attention to detail whereas blue aids creativity.

(a) What were the researchers' aims in this study?

Imagine that you are writing up the report for this series of experiments.

(2)

(b) What is the purpose of the introduction section of a report?

A psychological report also contains a discussion section. Researchers are expected to consider their findings critically and discuss issues such as validity.

(2)

(c) What is meant by validity?

(1)

(d) In the discussion section, researchers are also expected to consider any possible applications of their research. Suggest **one** practical application that might arise from these findings.

In a further experiment, participants were given 20 blue shapes or 20 red shapes. They were then asked to pick 5 shapes and use them to make a toy suitable for a child aged between five and eleven years. They were given a limited time to carry out this task.
Participants given red shapes made toys that independent judges rated to be more practical but less original, whereas participants given blue shapes made more creative toys.

(2)

(e) Explain why the researchers asked independent judges to rate the toys.

(2)

(f) Write a set of standardised instructions that would be suitable to read out to participants in this experiment.

(5)

(Total 14 marks)

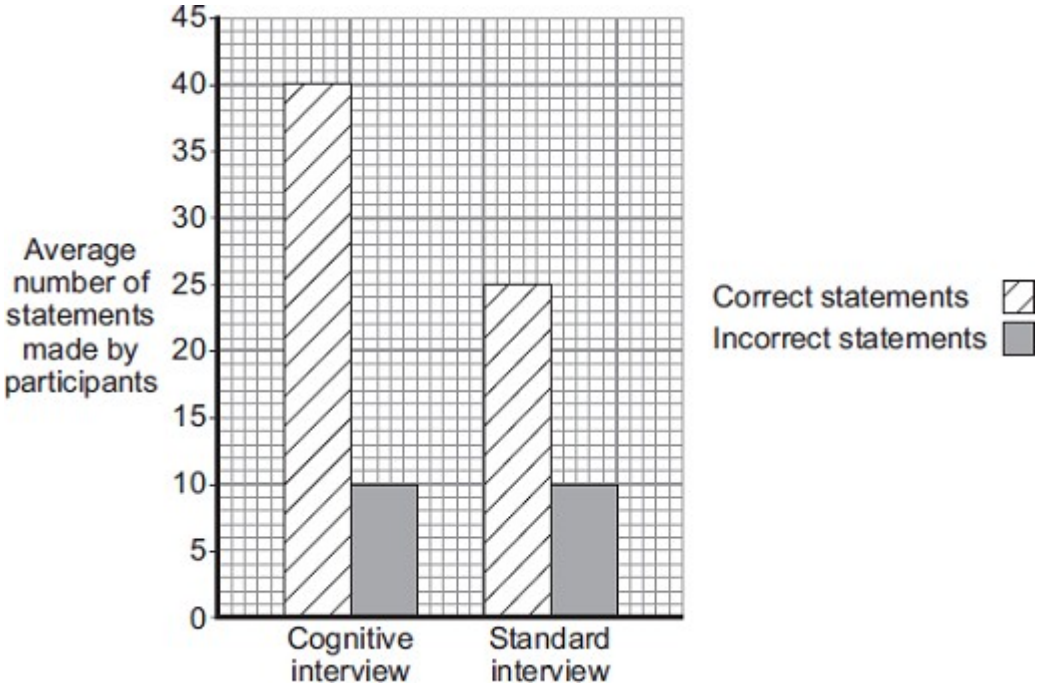
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Q1.

Psychologists carried out a laboratory experiment to investigate the effectiveness of cognitive interviews. All participants watched the same film of a robbery. They were randomly allocated to **Group One** or **Group Two**. Participants were then asked to recall the robbery. The investigators used a cognitive interview to access recall of participants in **Group One** and a standard interview to access recall of participants in **Group Two**.

The results of this experiment are summarised in the Figure below.

Average number of correct and incorrect statements made by participants under two different interview conditions



(a) What experimental design was used in this experiment?

_____

_____

(1)

(b) Explain **one** limitation of the design that was used in this experiment.

_____

_____

_____

_____

(2)

(c) Explain what the results suggest about the effectiveness of the cognitive interview.

_____

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(2)

(d) Participants in the standard interview were simply asked to describe what happened in the film.

Suggest **one** way in which participants in the cognitive interview condition could have been asked to recall what happened.

(2)

(e) What is meant by the term investigator effects? Explain possible investigator effects in this study.

Extra space

(4)

(Total 11 marks)

Q2.

A researcher carried out an experiment to investigate how many numbers could be held in short-term memory. The participants were 15 children and 15 adults. Participants were asked to repeat lists of random numbers, in the correct order, as soon as they were read out by the researcher. For example, when the researcher said, “3, 4, 2, 8” the participant

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immediately repeated “3, 4, 2, 8”. When the researcher then said,“7, 5, 9, 6, 4” the participant immediately repeated “7, 5, 9, 6, 4”. One number was added to the list each time until participants were unable to recall the list correctly.Each participant’s maximum digit span was recorded.

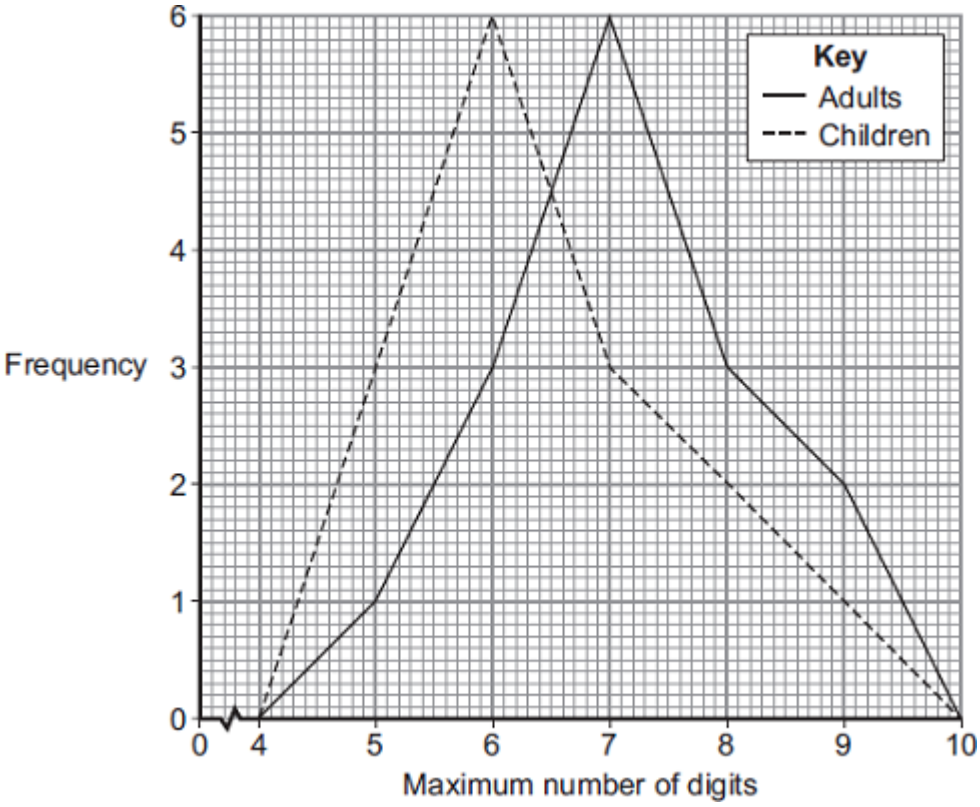
(a) Write an appropriate non-directional hypothesis for this experiment.

(2)

(b) Explain why the researcher used an independent groups design for this experiment.

(2)

(c) **Frequency distribution of the maximum number of digits correctly recalled by children and adults**



Write the mode for each group in the table below.

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Age group	Mode
Children	
Adults	

(2)

(d) What does the frequency distribution show about the results?

_____

_____

_____

_____

_____

_____

(3)

(e) Do the results of this experiment support the findings of other research into the capacity of short-term memory? Explain your answer.

_____

_____

_____

_____

(2)

(Total 11 marks)

Q3.

Some psychology students read about an experiment which suggested that organisation is a useful strategy for improving memory. The students carried out an experiment to investigate the effects of organisation on word recall. They made up a list of 50 items that could be bought in a supermarket. The participants were teachers at their school. One group of participants saw the words organised into categories such as fruit, vegetables, dairy products and cleaning materials. The other group saw the same words presented randomly.

The results are given in the **Table** below.

The number of words correctly recalled by participants who saw the organised list and participants who saw the random list

	Organised List	Random List
	20	15
	15	13

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	18	19
	45	14
	24	20
	23	10
	28	21
	21	6
	25	22
	30	25
Measure of central tendency		
Measure of dispersion		

(a) Identify a suitable measure of central tendency that could be used with these data. Justify your answer.

(2)

(b) The psychology students decided to use a volunteer sample. Suggest **one** way in which this sample could be obtained.

(2)

(c) Suggest **one** possible extraneous variable in this study.

(1)

(d) Suggest **one** way in which the students could control for this extraneous variable.

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(2)
(Total 7 marks)

Q4.

A psychologist showed participants 100 different cards, one at a time.

Each card had two unrelated words printed on it, e.g. DOG, HAT.

Participants in one group were instructed to form a mental image to link the words.
Participants in the other group were instructed simply to memorise the words.
After all the word pairs had been presented, each participant was shown a card with the first word of each pair printed on it. Participants were asked to recall the second word.

The following results were found.

Number of words correctly recalled

	Mental Image Group	**Memorising Group**
Mean Score	80	45

(a) What is the independent variable (IV) in this study?

(2)

(b) What is the dependent variable (DV) in this study?

(2)

(c) What experimental design was used in this study?

(1)

(d) Explain **one** strength of this experimental design in the context of this study.

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(2)

(e) Explain how a psychologist could find out whether these results are reliable.

(2)

(Total 9 marks)

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