1 Read the item and then answer the questions that follow.

> A behaviourist researcher studying reinforcement carried out a laboratory experiment. He put a cat in a puzzle box. The cat was able to escape from the puzzle box by pulling on a string which opened the door. Each time the cat escaped it was given a food treat. At first, the cat escaped quite slowly, but with each attempt the escape time decreased.

(a) Explain which type of conditioning is being investigated in this experiment?

.....

.....

.....

.....

(2)

Read the item and then answer the questions that follow.

The data from the laboratory experiment are shown in the table below.

Time taken for the cat to escape from the puzzle box

Attempt	**Time taken for the cat to escape from the puzzle box (seconds)**
1	63
2	60
3	45
4	37
5	18
6	15
7	5
8	3

(b) Calculate the mean time taken for the cat to escape from the puzzle box. Show your calculations.

.....

.....

.....

.....

(2)

(c) The researcher compared the time taken for the cat to escape at the first attempt, with the time taken for the eighth attempt. He found that after learning had taken place the cat's escape time was: Shade **one** box only.

A 9 times faster than it was at the start. ☐

B 11 times faster than it was at the start. ☐

C 15 times faster than it was at the start. ☐

D 21 times faster than it was at the start. ☐

(1)
(Total 5 marks)

2 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.

.....

.....

.....

.....

(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)

(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.....

.....

.....

(6)
(Total 24 marks)

3 Read the item and then answer the questions that follow.

A child psychologist carried out an overt observation of caregiver-infant interaction. She observed a baby boy interacting separately with each of his parents. Using a time sampling technique, she observed the baby with each parent for 10 minutes. Her findings are shown in the table below

Frequency of each behaviour displayed by the infant when interacting with his mother and when interacting with his father

	Gazing at parent	**Looking away from parent**	**Eyes closed**	**Total**
Mother	12	2	6	20
Father	6	10	4	20
Total	18	12	10	40

(a) Using the data in the table, explain the procedure used for the time sampling technique in this study.

.....

.....

.....

.....

.....

.....

(3)

(b) In what percentage of the total observations was the baby gazing at his mother? Show your calculations.

.....

.....

.....

.....

(2)

(c) Which **one** of the following types of data best describes the data collected in this study? Shade **one** box only.

A Primary data ☐

B Qualitative data ☐

C Secondary data ☐

D Continuous data ☐

(1)
(Total 6 marks)

4

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)

5 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)

(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.

.....

.....

.....

.....

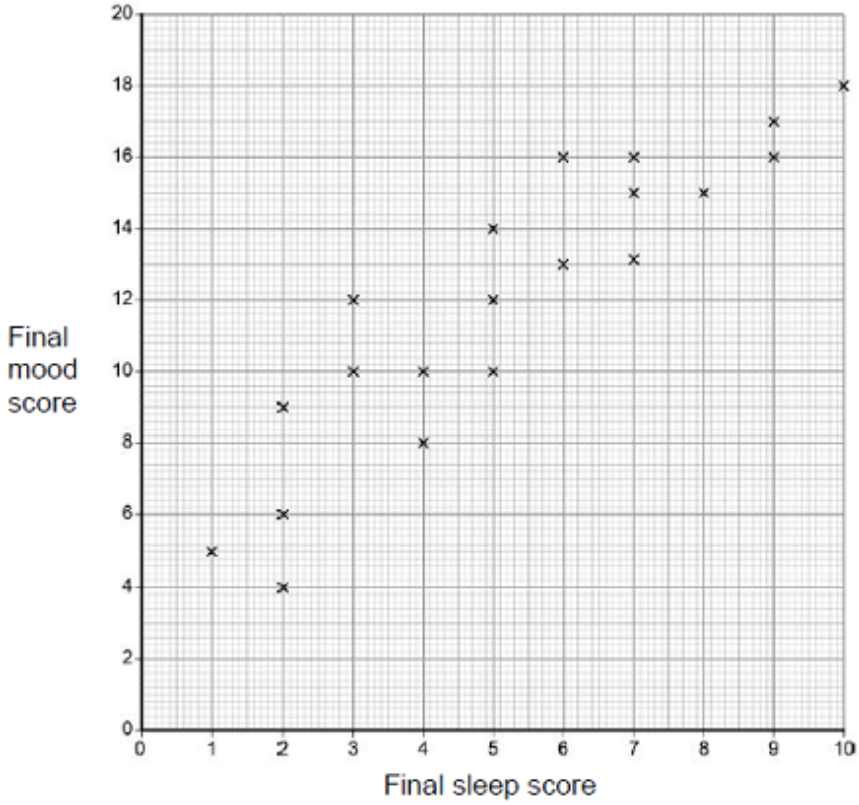
(2)
(Total 8 marks)

6 Read the item and then answer the questions that follow.

Twenty depressed patients were treated using cognitive behavioural therapy. Over the course of the six-week treatment, each patient's mood was monitored every week using a self-report mood scale (where a score of 20 = extremely positive mood and a score of 0 = extremely negative mood). Each week they also completed a quality of sleep questionnaire which was scored from 10 = excellent sleep to 0 = very poor sleep.

At the end of the study the researchers correlated each patient's final mood score with his or her final sleep score. The results are shown in the graph below.

Scattergram to show the relationship between final mood scores and final sleep scores for 20 patients at the end of therapy



(a) Outline the type of relationship shown in the graph above and suggest why it would not be appropriate for the researchers to conclude that better sleep improves mood.

.....

.....

.....

.....

(2)

(b) Outline **one** way in which the researchers should have dealt with ethical issues in this study.

.....

.....

.....

.....

(2)

(c) The sleep questionnaire used by the researchers had not been checked to see whether or not it was a reliable measure of sleep quality.

Explain how this study could be modified by checking the sleep questionnaire for test-retest reliability.

.....

.....

.....

.....

.....

.....

.....

.....

(4)
(Total 8 marks)

7 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 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.

(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)

8

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 presentation and then counted the number of verbal errors made by each participant.

The results of the study are given in the table.

Mean number of verbal errors and standard deviations for both conditions

	Condition A (believed audience of 5 listeners)	**Condition B (believed audience of 100 listeners)**
Mean	11.1	17.2
Standard deviation	1.30	3.54

(a) What conclusions might the psychologist draw from the data in the table? Refer to the means **and** standard deviations in your answer.

(6)

(b) Read the item and then answer the question that follows.

> The psychologist had initially intended to use the range as a measure of dispersion in this study but found that one person in **Condition A** had made an exceptionally low number of verbal errors.

Explain how using the standard deviation rather than the range in this situation, would improve the study.

(3)

(c) Name an appropriate statistical test that could be used to analyse the number of verbal errors in the table. Explain why the test you have chosen would be a suitable test in this case.

(4)

(d) The psychologist found the results were significant at $p<0.05$. What is meant by 'the results were significant at $p<0.05$'?

(2)

(e) Briefly explain one method the psychologist could use to check the validity of the data she collected in this study.

(2)
(Total 17 marks)

9 Read the item and then answer the questions that follow.

Researchers used a test to measure the mathematical reasoning ability of pairs of identical and non-identical twins. If both members of a pair had a similar score on the test, they were said to be 'concordant'. This type of study is known as a concordance study.

Outcome of the research with the concordance rates expressed as a percentage

Genetic relationship group	**Concordance rate for mathematical reasoning ability**
Identical twins (100% shared genes)	58%
Non-identical twins (50% shared genes)	14%

(a) Briefly explain the outcome of the study in relation to the nature-nurture debate.

(2)

(b) Some ways of establishing validity involve the use of a statistical test.

Outline how these researchers could have used a statistical test to establish **concurrent** validity of the mathematical reasoning ability test.

(4)
(Total 6 marks)

10 Read the item and then answer the questions that follow.

> A psychologist investigating the investment model of relationships, devised a self-report Investment Scale for use with a group of 100 female participants. The scale gave an investment score for each participant on a scale of 0–20, with 0 representing no investment in relationships and 20 representing extreme investment in relationships.
>
> The psychologist calculated measures of central tendency for the investment scores. He found that the mean investment score was 8.6, the median investment score was 9.5 and the mode investment score was 13.

(a) Sketch a graph to show the most likely distribution curve for the investment scores in this study. Label the axes of your graph and mark on it the positions of the mean, median and mode

(3)

(b) What sort of distribution does your graph show?

(1)
(Total 4 marks)

11 Read the item and then answer the questions that follow.

> In a study of androgyny, a group of 100 18-year-old students completed a self-report sex-role inventory. The inventory gave two sets of scores: a femininity score and a masculinity score. Each set of scores was on a scale of 0–20, with 0 representing no masculinity or no femininity and 20 representing extreme masculinity or extreme femininity.
>
> The researchers calculated measures of central tendency for the masculinity scores. They found that the mean masculinity score was 10.3, the median masculinity score was 9.5 and the mode masculinity score was 7.

(a) Sketch a graph to show the most likely distribution curve for the masculinity scores in this study. Label the axes of your graph and mark on it the positions of the mean, median and mode.

(3)

(b) What sort of distribution does your graph show?

(1)
(Total 4 marks)

12 Read the item and then answer the questions that follow.

> A psychologist investigating egocentrism interviewed 100 parents, each of whom had a four-year-old child. She asked each parent to rate his or her child's egocentrism on a scale of 0–10, with 0 representing no egocentrism and 10 representing extreme egocentrism.
>
> The psychologist calculated measures of central tendency for the egocentrism scores. They found that the mean egocentrism score was 4.8, the median egocentrism score was 5 and the mode egocentrism score was 6.

(a) Sketch a graph to show the most likely distribution curves for the egocentrism scores in this study. Label the axes of your graph and mark on it the positions of the mean, median and mode.

(3)

(b) What sort of distribution does your graph show?

(1)
(Total 4 marks)

13 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	+		
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.

.....

.....

.....

.....

.....

.....

.....

.....

(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.

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)

14 Read the item and then answer the questions that follow.

Researchers were interested in the spatial awareness skills of motorists. They decided to investigate a possible relationship between different aspects of spatial awareness. Motorists who had between ten and twelve years of driving experience and held a clean driving licence with no penalty points were asked to complete two sets of tasks.

Set 1: To follow a series of instructions and using a map, to identify various locations correctly. This provided a map reading score for each motorist with a maximum score of 20.

Set 2: To complete a series of practical driving tasks accurately. This involved tasks such as driving between cones, driving within lines and parking inside designated spaces. Each motorist was observed completing the **Set 2** tasks by a single trained observer who rated each performance by giving the driver a rating out of 10.

The following results were obtained.

The map reading scores and driver ratings of motorists

Participant driver	Map reading score	Driver rating
1	17	9
2	8	4
3	15	7
4	12	6
5	3	2
6	4	4
7	6	8
8	14	6
9	19	10

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

.....

.....

.....

.....

.....

(2)

(b) Write a suitable hypothesis for this investigation.

.....

.....

.....

.....

.....

.....

.....

(3)

(c) Identify a suitable graphical display for the data in the table and briefly explain why this display would be appropriate.

.....

.....

.....

.....

(2)

(d) Using the data in the table, comment on the relationship between the map reading scores and the driver rating scores of the participants.

.....

.....

.....

.....

.....

.....

.....

(3)

(e) Briefly outline **one** problem of using a single trained observer to rate the participants' driving skills in the practical task. Briefly discuss how this data collection method could be modified to improve the reliability of the data collected.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(6)

(f) The researchers decided to analyse the data using a Spearman's rho test. Explain why this is a suitable choice of test for this investigation.

.....

.....

.....

.....

.....

.....

(3)

Table of critical values for a Spearman's rho test

		Level of significance for a two-tailed test			
		0.10	**0.05**	**0.02**	**0.01**
		Level of significance for a two-tailed test			
		0.05	**0.025**	**0.01**	**0.005**
N=	**8**	**0.643**	**0.738**	**0.833**	**0.881**
	9	**0.600**	**0.700**	**0.783**	**0.833**
	10	**0.564**	**0.648**	**0.745**	**0.794**

Calculated r_S must EQUAL or EXCEED the critical value for significance at the level shown.

(g) After analysis of the data the researchers obtained a calculated value of **r_S= 0.808.**

Using the information in the table above, what conclusion can the researchers draw about the relationship between the map reading and driving skills of the motorists? Explain your answer.

.....

.....

.....

.....

.....

.....

.....

.....

(4)
(Total 23 marks)

15 Distinguish between a Type I error and a Type II error.

.....

.....

.....

.....

.....

.....

.....

.....

(Total 4 marks)

16 Researchers studying male and female map reading ability calculated the following statistics

	Map reading scores	
	Males	Females
Mean	15.4	5.25
Sd	2.70	2.22

(a) What do the mean and standard deviation values suggest about the male and female performances in the investigation?

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(b) In a replication of the part of the study in which map reading skills were investigated, 20 men and 20 women completed the original map reading task and the researchers obtained the following data:

Male map reading scores	17, 20, 13, 12, 13, 11, 8, 17, 12, 15, 14, 18, 20, 17, 17, 15, 13, 10, 5, 9.
Female map reading scores	12, 8, 10, 11, 4, 2, 11, 18, 17, 12, 13, 10, 3, 15, 11, 9, 10, 11, 16, 10.

The mean map reading score for both groups together was 12.23.

What percentage of the male group scored above the mean score and what percentage of the female group scored above the mean score? Show your calculations.

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(c) Using your answers to both **question (a)** and **question (b)**, comment on the performances of the male and the female participants in this study.

.....

.....

.....

.....

(2)
(Total 10 marks)

17 A researcher investigated the effectiveness of typical and atypical psychotics in schizophrenia patients with either negative or positive symptoms.

Percentages of patients with either negative or positive symptoms, responding well to typical or atypical antipsychotics.

	Number of patients responding well to atypical antipsychotics	Number of patients responding well to typical antipsychotics
Patients with negative symptoms	30	16
Patients with positive symptoms	60	60

What does the data in the table seem to show about the effectiveness of typical and atypical antipsychotics in the treatment of schizophrenia?

(Total 4 marks)

18

A psychologist was interested in the effects of violent computer games on aggression in young boys. Following appropriate ethical procedures she set up a study in which she identified ten boys who played violent computer games for at least two hours a day (Group A), and another group of ten boys who did not play violent computer games (Group B). The boys were systematically observed in their school playground on five separate occasions and the total number of aggressive behaviours they demonstrated was recorded. The data are given in the table below:

The effects of playing violent computer games on aggressive behaviour in boys

Group A	**Number of aggressive acts**	**Group B**	**Number of aggressive acts**
1	19	1	8
2	9	2	7
3	3	3	11
4	18	4	7
5	13	5	6
6	16	6	24
7	5	7	9
8	3	8	10
9	7	9	5
10	35	10	10
Median		**Median**	

Complete the table by calculating the median for the two groups. Why did the psychologist use the median as a measure of central tendency rather than the mean?

(Total 4 marks)

19

Prison staff compared two methods of managing anger in offenders. One group of offenders took part in cognitive therapy. Another group of offenders took part in discussion therapy.

After one month following the training, levels of anger for each individual were rated by prison staff on a scale of 0 – 100. The results are given in the table below:

Ratings of anger in offenders given either systematic CBT anger management training or general advice

Cognitive Group	Anger rating	Discussion group	Anger rating
1	37	1	44
2	45	2	22
3	23	3	74
4	17	4	36
5	41	5	66
6	32	6	63
7	27	7	44
8	26	8	81
9	38	9	56
10	52	10	45
Median		**Median**	

Complete the table by calculating the median for the two groups. Show your working.
Why did the psychologist use the median as a measure of central tendency rather than the mean?

(Total 4 marks)

20

A psychologist was interested in the role of sensation-seeking in the development of addictive behaviour. She tested ten participants addicted to smoking (Group A) and ten participants who had no addictive behaviours (Group B). Each participant was given a questionnaire that measured sensation-seeking. Scores on the questionnaire are given in the table below:

Sensation seeking scores for those with addictive behaviours and for those with no addictions

Group A (Addicted to smoking)	Score on sensation-seeking questionnaire	Group B (No addictive behaviours)	Score on sensation-seeking questionnaire
1	65	1	16
2	32	2	25
3	25	3	27
4	29	4	24
5	28	5	59
6	30	6	26
7	18	7	33
8	30	8	21
9	35	9	18
10	28	10	23
Median		**Median**	

Complete the table by calculating the median and range for the two groups. Why did the psychologist use the median rather than the mode?

(Total 4 marks)

21

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 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 .....

.....

.....

.....

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)

22

A researcher investigated obedience. The table shows the percentages of people who obeyed a simple request from a confederate who was either smartly dressed or casually dressed.

Request	**Smartly dressed confederate**	**Casually dressed confederate**
Pick up some litter	80%	61%
Post a letter lying near a post box	61%	40%
Carry a heavy box up some stairs	30%	30%

What do these results suggest about obedience?

.....

.....

.....

.....

.....

.....

.....

.....

Extra space .....

.....

.....

.....

(Total 4 marks)

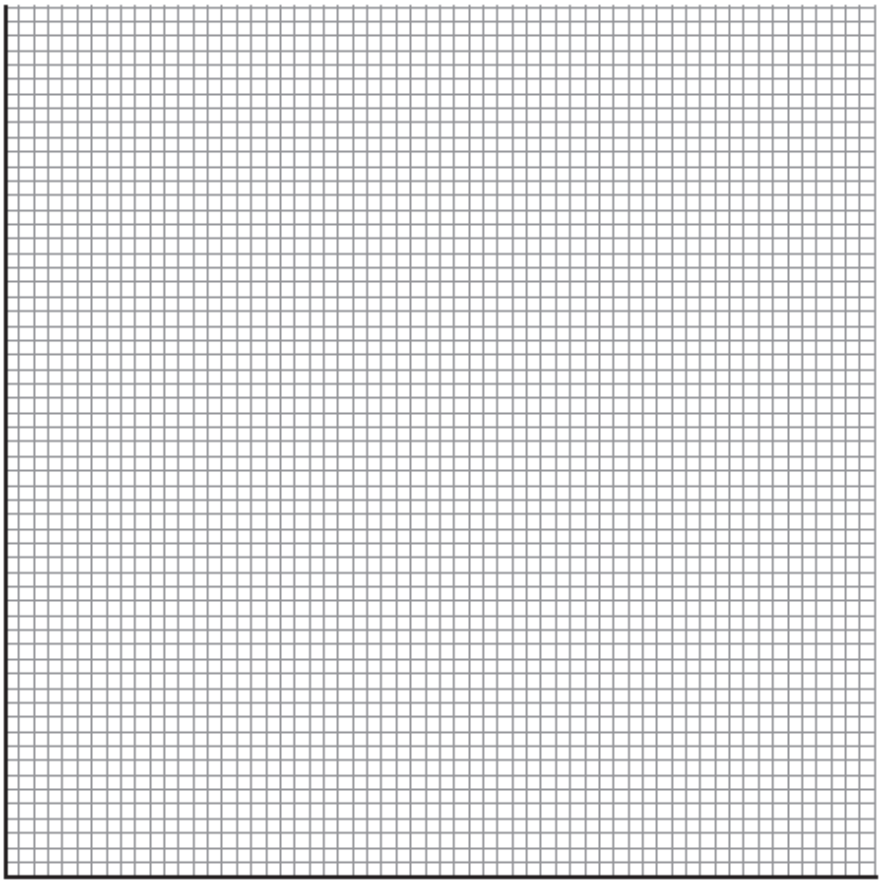
23

Two groups of patients took part in a trial to compare the effectiveness of two different drug therapies. One of the groups was given **Drug A** and the other group was given **Drug B**. All patients completed a rating scale at the start of a ten-week course of treatment and again at the end of the course. This scale measured the severity of symptoms.

The **Drug A** group had an average score of 9 before the therapy and an average score of 4 at the end of the course.

The **Drug B** group had an average score of 7 before the therapy and an average score of 5 at the end of the course.

Sketch and label a bar chart to illustrate the data.



(Total 4 marks)

24

In an observational study, 100 cars were fitted with video cameras to record the driver's behaviour. Two psychologists used content analysis to analyse the data from the films. They found that 75% of accidents involved a lack of attention by the driver. The most common distractions were using a hands-free phone or talking to a passenger. Other distractions included looking at the scenery, smoking, eating, personal grooming and trying to reach something within the car.

(a) What is content analysis?

(2)

(b) Explain how the psychologists might have carried out content analysis to analyse the film clips of driver behaviour.

(4)

(c) Explain how the two psychologists might have assessed the reliability of their content analysis.

The psychologists then designed an experiment to test the effects of using a hands-free phone on drivers' attention. They recruited a sample of 30 experienced police drivers and asked them to take part in two computer-simulated driving tests. Both tests involved watching a three-minute film of a road. Participants were instructed to click the mouse as quickly as possible, when a potential hazard (such as a car pulling out ahead) was spotted.

Each participant completed two computer-simulated driving tests:

- Test A, whilst chatting with one of the psychologists on a hands-free phone
- Test B, in silence, with no distractions.

The order in which they completed the computer tests was counterbalanced.

(3)

(d) Explain why the psychologists chose to use a repeated measures design in this experiment.

(3)

(e) Identify **one** possible extraneous variable in this experiment. Explain how this variable may have influenced the results of this experiment.

(3)

(f) Explain **one or more** ethical issues that the psychologists should have considered in this experiment.

(4)

(g) Write a set of standardised instructions that would be suitable to read out to participants, before they carry out Test A, chatting on a hands-free phone.

The computer simulator measured two aspects of driver behaviour:

- the number of hazards detected by each driver
- the time taken to respond to each hazard, in seconds.

The mean scores for each of these measures is shown in the table below.

Table to show the mean number of hazards detected and mean reaction times in seconds for Test A and Test B

Mean scores	**Test A: with hands-free phone**	**Test B: in silence**
Number of hazards detected	26.0	23.0
Reaction time in seconds	0.45	0.27

The psychologists then used an inferential statistical test to assess whether there was a difference in the two conditions.

(5)

(h) Identify an appropriate statistical test to analyse the difference in the number of hazards detected in the two conditions of this experiment. Explain why this test of difference would be appropriate.

They found no significant difference in the number of hazards detected ($p > 0.05$), but there was a significant difference in reaction times (p . 0.01).

(3)

(i) Explain why the psychologists did not think that they had made a Type 1 error in relation to the difference in reaction times.

(2)

(j) Replication is one feature of the scientific method. The psychologists decided to replicate this experiment using a larger sample of 250 inexperienced drivers.

Explain why replication of this study would be useful.

(3)
(Total 32 marks)

25 As part of a study into gender schema, an opportunity sample of 50 boys aged 6 years from a primary school watched a film. In the film, a man was seen watching TV, mowing the lawn and doing the ironing.

One week later, all the boys were asked to recall what they had seen in the film.

The results are shown in the table below.

Number of boys who recalled each activity shown in the film

Activity shown in the film	Number of boys who recalled seeing the activity
Man watching TV	47
Man mowing the lawn	49
Man doing the ironing	23

(a) Use your knowledge of gender schema theory to explain the results shown in the table above.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

(b) The sampling method used in the study was opportunity sampling.

What is meant by *opportunity sampling*?

.....

.....

(1)

(c) In a follow-up study, the researchers had parental consent to interview the boys in the sample. The researchers wanted to find out which occupations the boys thought were suitable for men and which they thought were suitable for women.

Explain why it would be appropriate to use unstructured interviews in this study.

.....

.....

.....

.....

.....

.....

.....

.....

(3)
(Total 8 marks)

26

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**.

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.

.....

.....

.....

.....

.....

.....

.....

.....

(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.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)

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

.....

.....

.....

.....

(2)
(Total 20 marks)

27

A student teacher was interested in the relationship between empathy (consideration and feelings for others) and the time spent reading fiction. She decided to investigate whether or not such a relationship was present in children.

The student teacher designed her own questionnaire to measure empathy in 8-year-old children. The higher the score achieved, the greater the empathy. Twenty children, all from one school, took part. Each child completed the questionnaire individually.

The student teacher designed another questionnaire to measure ‘time spent reading fiction’. Each child was given this questionnaire to take home and complete with his or her parents over a four-week period. ‘Time spent reading fiction’ included the time spent by parents reading to the child as well as the time the child spent reading independently. Using the responses to this questionnaire, the student teacher calculated how much time per week, on average, each child spent reading fiction.

The data obtained are shown in the graph below.

Scattergram of children’s scores on a test of empathy and the average number of hours spent reading fiction per week.

(a) Outline the relationship between empathy and the average number of hours spent reading fiction per week shown in the graph above.

(1)

(b) Name an appropriate test to determine whether or not there is a significant relationship between the two variables in the graph above. Justify your answer with reference to levels of measurement.

(2)

The student teacher decided to use a two-tailed test.

(c) Outline **one** way in which the student teacher could have assessed the validity of the empathy questionnaire.

(2)

(d) Apart from the issue of validity, identify and briefly explain **one** methodological limitation of the study.

(2)

(e) Explain why it was appropriate for the student teacher to use a correlation study rather than an experiment.

(3)

(f) The student teacher noticed that some students on her course commented that they were better able to recall information if they could read the information rather than listen to it in lectures.

Design an experiment to test the following hypothesis:

'People who are given written information will recall more than people who hear information in spoken form.'

In your answer, you should refer to the following and justify your design decisions:

- the variables to be considered
- the experimental design to be used
- the sample
- relevant materials
- an outline of the proposed procedurr.

(8)
(Total 18 marks)

28

(a) One technique used in cognitive interviews is 'report everything'. When using this technique, the police officer in this investigation read the following instructions to the participants:

"Please tell me everything you can remember about what you saw in the film. Do not leave anything out, even the small details you think may be unimportant."

Identify **one other** technique which could have been used by the police officer in this cognitive interview. Write down the instructions that he could have read out to the participants.

Technique .....

.....

Instructions to participants .....

.....

.....

.....

.....

.....

(3)

(b) The psychologist also recorded the number of correct items recalled and the number of incorrect items recalled in each type of interview. The following results were obtained:

	Cognitive Interview	**Standard Interview**
Mean number of correct items recalled	45	32
Mean number of incorrect items recalled	8	8

From these results, what might the psychologist conclude about the effectiveness of cognitive interviews?

.....

.....

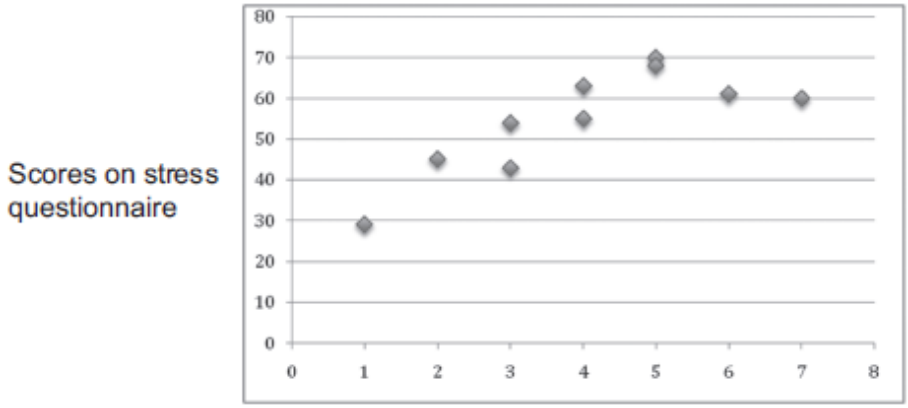
.....

.....

(2)
(Total 5 marks)

29 Research has shown that there is a relationship between stress and illness.
The figure below shows the number of days off work through illness in a year and scores on a stress questionnaire, where a high score indicates more stress.

Relationship between days off work in a year through illness and stress scores



Number of days off work in a year through illness

What does the figure above tell you about the relationship between stress and illness?

.....

.....

.....

.....

Extra space .....

.....

(Total 2 marks)

30 Some studies have suggested that there may be a relationship between intelligence and happiness. To investigate this claim, a psychologist used a standardised test to measure intelligence in a sample of 30 children aged 11 years, who were chosen from a local secondary school. He also asked the children to complete a self-report questionnaire designed to measure happiness. The score from the intelligence test was correlated with the score from the happiness questionnaire. The psychologist used a Spearman's rho test to analyse the data. He found that the correlation between intelligence and happiness at age 11 was +0.42.

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

(2)

(b) Identify an alternative method which could have been used to collect data about happiness in this study. Explain why this method might be better than using a questionnaire.

(4)

(c) A Spearman's rho test was used to analyse the data. Give **two** reasons why this test was used.

(2)

Extract from table of critical values from Spearman's rho(r_s) test

N (number of participants)	Level of significance for a two-tailed test	
	0.10	**0.05**
	Level of significance for a one-tailed test	
	0.05	**0.025**
29	0.312	0.368
30	0.306	0.362
31	0.301	0.356

Calculated r_s must equal or exceed the table (critical) value for significance at the level shown.

(d) The psychologist used a non-directional hypothesis. Using the table above, state whether or not the correlation between intelligence and happiness at age 11 (+0.42) was significant. Explain your answer.

(3)

(e) Five years later, the same young people were asked to complete the intelligence test and the happiness questionnaire for a second time. This time the correlation was –0.29.

With reference to **both** correlation scores, outline what these findings seem to show about the link between intelligence and happiness.

(4)
(Total 15 marks)

31

A researcher investigated gender development. The researcher asked children aged five years the following question:

Question 1 'Are you a boy or a girl?'

The same children were then shown a picture of a young man who was wearing a dress. The researcher said to each child, 'This is John. John is wearing a dress.' The children were then asked a second question.

Question 2 'Is John a boy or is John a girl?'

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

Number of children giving correct and incorrect answers to Question 1 and Question 2

	Question 1 'Are you a boy or a girl?'	**Question 2** 'Is John a boy or is John a girl?'
Number of children giving a correct answer	20	3
Number of children giving an incorrect answer	0	17

Use your knowledge of Kohlberg's theory of gender development to explain the results in the table above.

.....

.....

.....

.....

.....

.....

.....

.....

(Total 3 marks)

32

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.

.....

.....

.....

.....

(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.

.....

.....

.....

.....

.....

.....

(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.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4)
(Total 20 marks)

33

A maths teacher wondered whether there was a relationship between mathematical ability and musical ability. She decided to test this out on the GCSE students in the school. From 210 students, she randomly selected 10 and gave each of them two tests. She used part of a GCSE exam paper to test their mathematical ability. The higher the mark, the better the mathematical ability. She could not find a musical ability test so she devised her own. She asked each student to sing a song of their choice. She then rated their performance on a scale of 1–10, where 1 is completely tuneless and 10 is in perfect tune.

(a) Suggest a suitable non-directional hypothesis for this study.

(3)

(b) Why might the measure of musical ability used by the teacher lack validity?

(3)

(c) Explain how the teacher could have checked the reliability of the mathematical ability test.

(3)

(d) Explain why the teacher chose to use a random sample in this study.

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

Mathematical ability test scores and musical ability ratings for 10 students

Student	Mathematical ability test score	Musical ability rating
1	10	10
2	2	9
3	9	3
4	6	6
5	3	9
6	10	2
7	2	1
8	1	8
9	8	4
10	4	7

(2)

(e) In your answer book, sketch a graph to show the data in the table above. Give the graph an appropriate title and label the axes.

(3)

(f) Discuss what the data in the table above and the graph that you have sketched seem to show about the relationship between mathematical ability and musical ability.

(3)

(g) The teacher noticed that most of the students who were rated highly on musical ability were left-handed. The teacher is aware that her previous definition of musical ability lacked validity.

Design a study to test whether there is a difference in the musical ability of left-handed students and right-handed students. You have access to a sixth form of 200 students.

You should:

- identify the design that you would use
- explain an appropriate sampling method and justify your choice
- describe the procedure that you would use, including details of how you would assess musical ability
- write a suitable debrief for these participants.

(10)

(h) In your answer book, draw a table to show how you would record your results. Identify an appropriate statistical test to analyse the data that you would collect. Justify your choice.

(3)
(Total 30 marks)

34

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

	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 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.

.....

.....

.....

.....

.....

.....

(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)

35 When investigating the conditioning of behaviour, Behaviourists such as Pavlov and Skinner collected quantitative data.

Outline what is meant by *quantitative data*. Give an example of quantitative data collected by a psychologist who has studied conditioning.

(Total 2 marks)

36

A study was carried out to test the effectiveness of a new anger management programme. The programme had been designed by a team of psychologists working in a young offenders' institution.

Fifteen male offenders aged 17– 21 years took part in the programme. An anger score for each offender was obtained before the start of the programme. This score was based on a questionnaire designed by the psychologists. The questionnaire had 10 items. The maximum score was 50; the higher the score, the greater the level of anger.

The month-long programme of anger management involved 8 two-hour sessions.

Throughout the programme, the offenders were told to keep a diary of situations that made them angry and to record their anger in these situations. After the programme had ended, they were told to continue to keep their diary.

Two weeks later, after the programme had ended, a second anger score was obtained for each offender. The same questionnaire was used.

The data obtained are shown in **Table 1** below.

Table 1: Median anger scores and the ranges before and after the programme

	Before	**After**
Median	**35**	**24**
Range	**15**	**17**

(a) Explain why measures of dispersion are often used in addition to measures of central tendency to summarise data. Refer to the results of this study in your answer.

(2)

(b) A Wilcoxon signed ranks test was used to test for a significant difference between the anger scores at the start of the programme and after the programme had ended.

The calculated value of *T* was found to be 22.

Table 2: Critical values of *T*

Level of significance for two-tailed test	0.1	0.05	0.02
Critical value of *T* (when *N* = 15)	30	25	19

T must be equal to or less than the critical value to be significant.

Using **Table 2** above, explain whether or not the result is significant.

(2)

(c) Explain why the psychologists decided to use a Wilcoxon signed ranks test to analyse the data.

(3)

(d) Explain **two** possible reasons for asking each offender to keep a diary.

(4)

(e) An independent researcher reviewed the design of the study and noted that there was no control group.

Explain how having a control group could have improved this study.

(3)

(f) The independent researcher was also concerned that the psychologists had not checked the reliability and validity of the questionnaire used to measure the level of anger.

Outline how the psychologists could check the reliability **and** the validity of the questionnaire.

(5)
(Total 19 marks)

37

A researcher investigated the effect of age of starting day care on levels of aggression. Four-year-old children attending a day nursery were used. Each child was assessed by the researcher and given an aggression score. A high score indicated a high level of aggression. A low score indicated a low level of aggression. The maximum score was 50.

Mean aggression scores for four-year-old children who had started day care before the age of two or after the age of two

	Started day care before the age of two	**Started day care after the age of two**
Mean score	25	23

(a) Identify the operationalised independent variable **and** the operationalised dependent variable in this study.

Operationalised independent variable .....

.....

Operationalised dependent variable .....

.....

(4)

(b) What do the mean scores in the table above suggest about the effect of age at which children started day care on children's aggression?

.....

.....

.....

.....

(2)

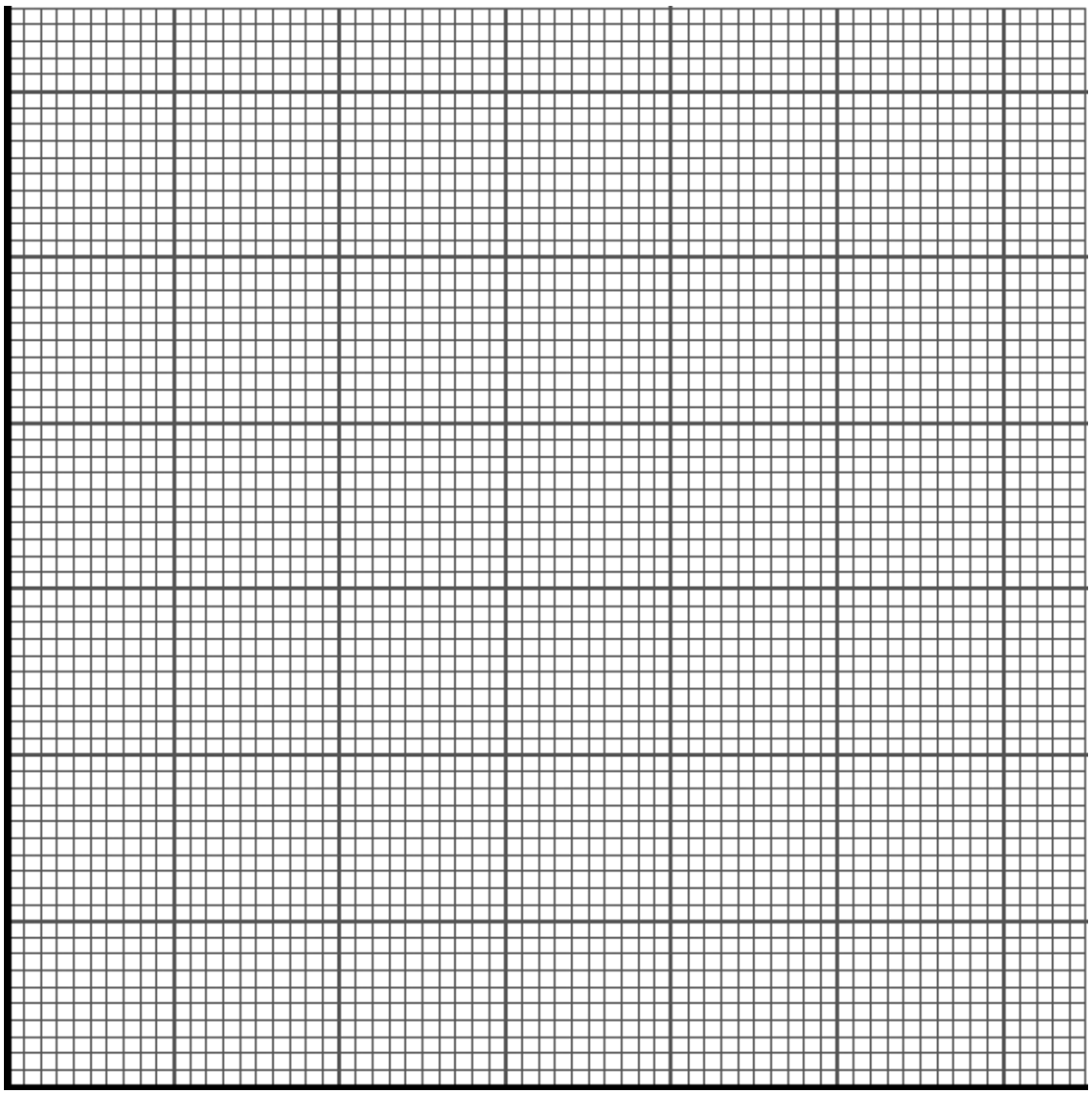
(c) Name **one** measure of dispersion that the researcher could have used to describe the data.

.....

.....

(1)

(d) Draw an appropriate bar chart to display the data presented in the table above. Correctly label your bar chart.



(3)

(e) State an appropriate directional hypothesis for this study.

.....

.....

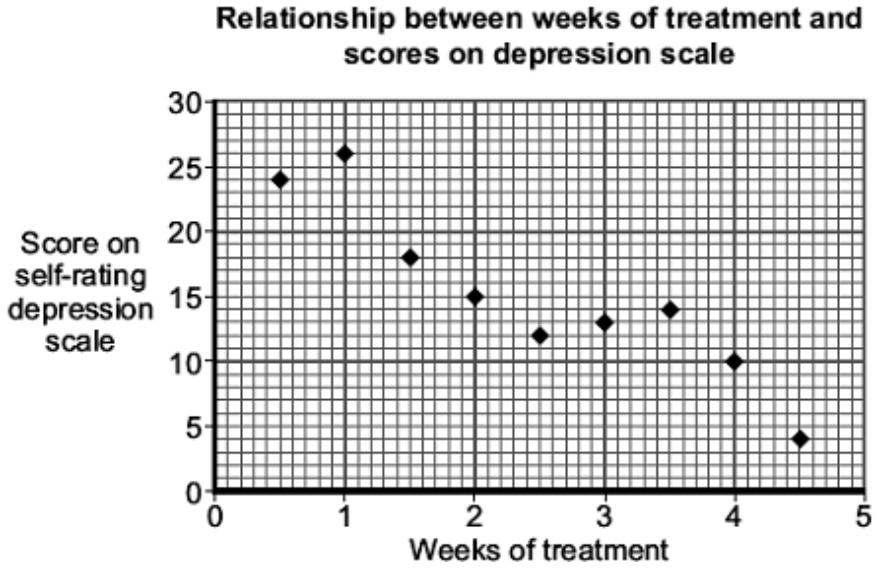
.....

.....

(2)

(Total 12 marks)

38 The following scattergram shows the relationship between the number of weeks of treatment with ECT and the score on the Self-Rating Depression Scale (on this scale, a high score indicates depression).



Outline what the scattergram seems to show.

.....

.....

.....

.....

.....

.....

.....

.....

(Total 4 marks)

39

Two psychologists investigated the relationship between age and recall of medical advice. Previous research had shown that recall of medical advice tended to be poorer in older patients. The study was conducted at a doctor's surgery and involved a sample of 30 patients aged between 18 and 78 years. They all saw the same doctor, who made notes of the advice that she gave during the consultation.

One of the psychologists interviewed each of the patients individually, immediately after they had seen the doctor. The psychologist asked each patient a set of questions about what the doctor had said about their diagnosis and treatment. The patients' responses were recorded and then typed out. Working independently the psychologists compared each typed account with the doctor's written notes in order to rate the accuracy of the accounts on a scale of 1 – 10. A high rating indicated that the patient's recall was very accurate and a low rating indicated that the patient's recall was very inaccurate.

(a) The psychologists decided to propose a directional hypothesis. Why was a directional hypothesis appropriate in this case?

(1)

(b) Write a suitable directional hypothesis for this investigation.

(3)

(c) The psychologists were careful to consider the issue of reliability during the study. What is meant by reliability?

(1)

(d) Explain how the psychologists might have assessed the reliability of their ratings.

(3)

(e) This study collected both qualitative and quantitative data. From the description of the study above, identify the qualitative data and the quantitative data.

The psychologists used Spearman's rho to analyse the data from their investigation. They chose to use the 0.05 level of significance. The result gave a correlation coefficient of −0.52.

(2)

(f) Give **two** reasons why the psychologists used Spearman's rho to analyse the data.

(2)

(g) Using the table below, state whether the result is significant or not significant and explain why.

(2)

Extract from a table of critical values of Spearman's rho (r_S)

Level of significance for a one-tailed test		
	0.05	0.01
Level of significance for a two-tailed test		
	0.10	0.02
N=29	0.312	0.433
30	0.306	0.425
31	0.301	0.418

Calculated r_S must equal or exceed the table (critical) value for significance at the level shown.

(h) Explain what is meant by a Type 1 error.

(2)

(i) Use the information in the table above to explain why the psychologists did not think that they had made a Type 1 error in this case.

(3)
(Total 19 marks)

40

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.

(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)

41

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.

.....

.....

.....

.....

(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.

.....

.....

.....

.....

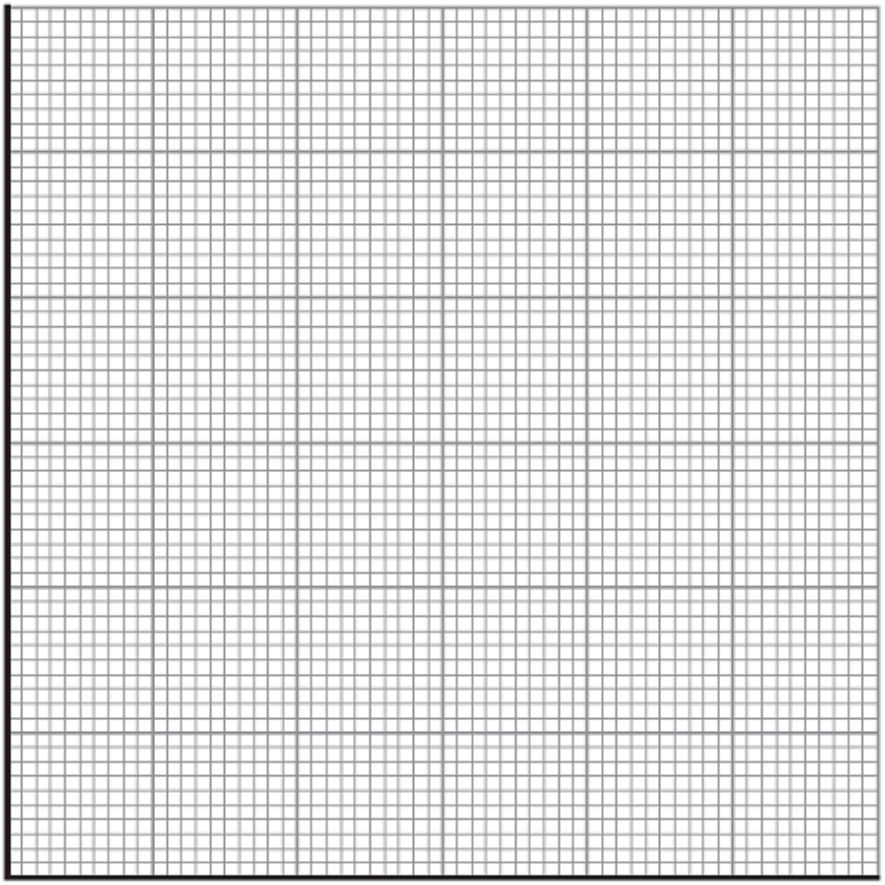
.....

(2)

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

.....

.....



(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)** 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 .....

.....

.....

.....

(4)
(Total 20 marks)

42 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)

43

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.

(2)

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

(2)
(Total 6 marks)

44

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 .....

.....

.....

.....

.....

(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)

45

Two different drug therapies were tested on a group of patients. All the patients suffered with the same anxiety disorder. Half the patients were given **Therapy A** and the other half were given **Therapy B**. Improvement was assessed on a scale from 0-25, where 0 = no improvement.

The table below shows the improvement made between the start and the end of the treatment.

Average and range of improvement scores

	Average	**Range**
Therapy A	6.5	2 – 19
Therapy B	6	4 – 9

Explain what these findings suggest about the different therapies?

.....

.....

.....

.....

.....

.....

.....

.....

Extra space .....

.....

.....

.....

(Total 4 marks)

46

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.

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.

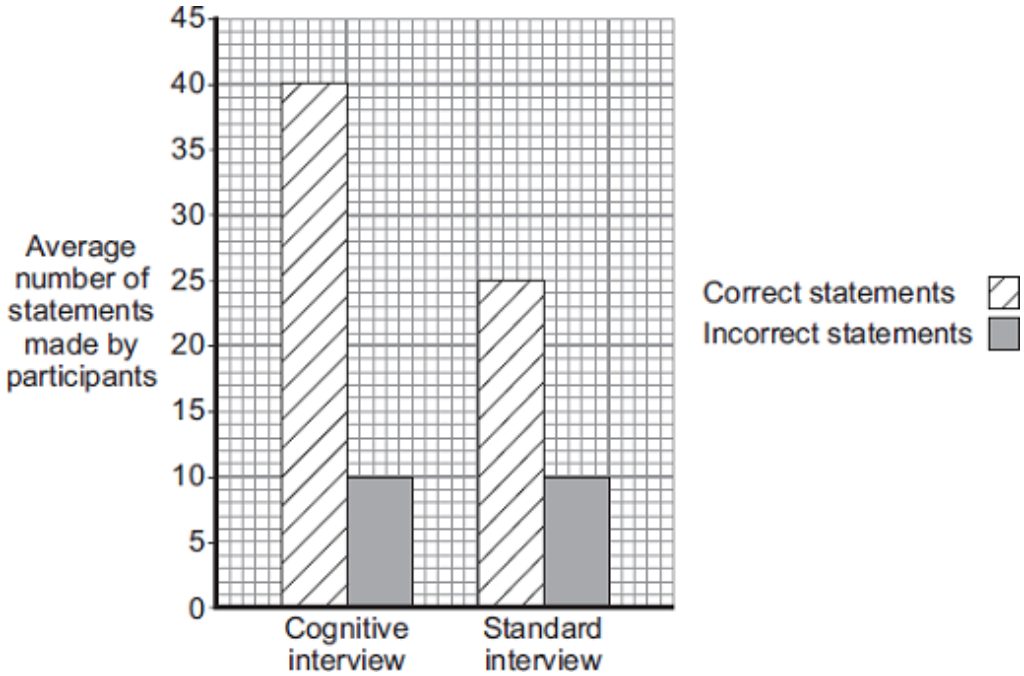
(12)
(Total 17 marks)

47

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.

.....

.....

.....

.....

(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)

48

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 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)

49

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 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.

.....

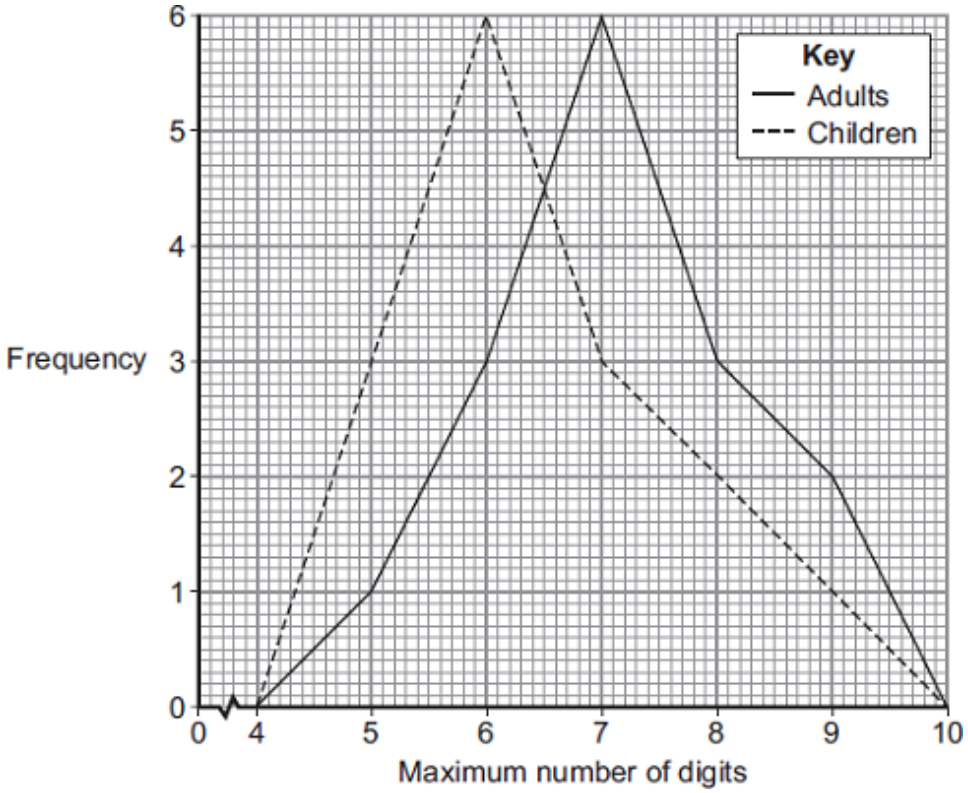
.....

.....

.....

(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.

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)

50

(a) The psychologist was also interested in the effects of a restricted diet on memory functioning and he expected memory to become impaired. The psychologist's hypothesis was that participants' scores on a memory test are lower after a restricted diet than before a restricted diet. He gave the volunteers a memory test when they first arrived in the research unit and a similar test at the end of the four-week period. He recorded the memory scores on both tests and analysed them using the Wilcoxon signed ranks test. He set his significance level at 5%.

His calculated value was $T = 53$.

State whether the hypothesis for this study is directional or non–directional.

(1)

(b) **Table: Extract from table of critical values from the Wilcoxon signed ranks test**

Level of significance for a one-tailed test	0.05	0.025
Level of significance for a two-tailed test	0.1	0.05
N	*T*≤	
19	53	46
20	60	52
21	67	58
22	75	65

Calculated *T* must be equal to or less than the critical value (table value) for significance at the level shown

Using the table above, state whether or not the psychologist's result was significant. Explain your answer.

(3)
(Total 4 marks)

51 Read the text below and answer the questions that follow.

A psychologist is using the observational method to look at verbal aggression in a group of children with behavioural difficulties. Pairs of observers watch a single child in the class for a period of one hour and note the number of verbally aggressive acts within ten-minute time intervals. After seeing the first set of ratings, the psychologist becomes concerned about the quality of inter-rater reliability. The tally chart for the two observers is shown in the table below.

Table: Observation of one child – number of verbally aggressive acts in ten-minute time intervals

Time slots	0–10	11–20	21–30	31–40	41–50	51–60
Observer A	2	5	0	6	4	3
Observer B	4	3	2	1	6	5

(a) Use the data in the Table above to sketch a scattergram. Label the axes and give the scattergram a title.

(4)

(b) Using the data in the Table above, explain why the psychologist is concerned about inter-rater reliability.

(4)

(c) Identify an appropriate statistical test to check the inter-rater reliability of these two observers. Explain why this is an appropriate test.

(3)

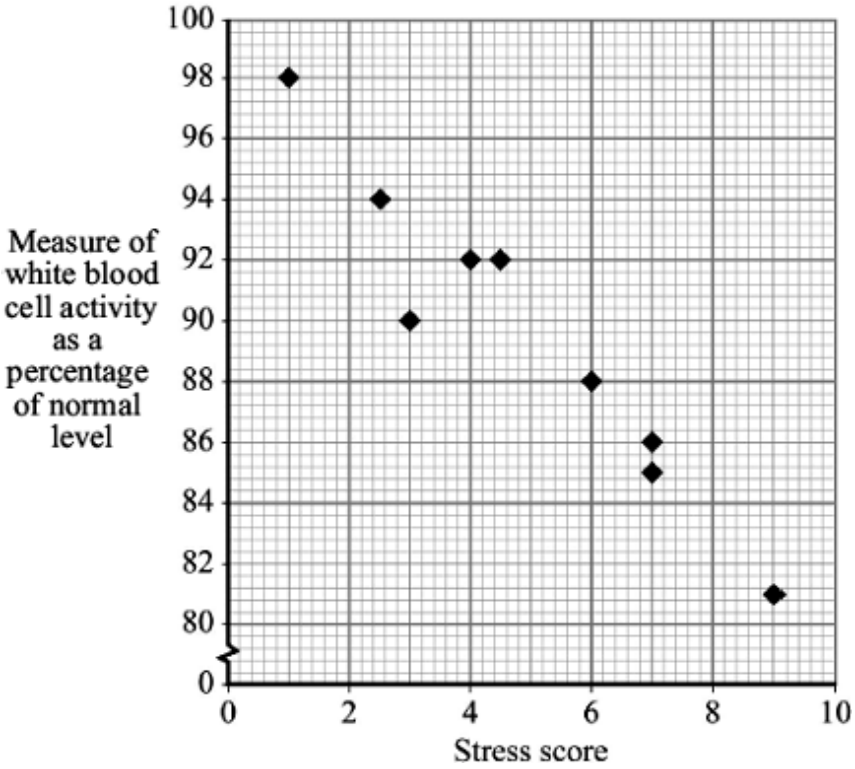
(d) If the psychologist does find low reliability, what could she do to improve inter-rater reliability before proceeding with the observational research?

(4)
(Total 15 marks)

52 One measure of the functioning of the immune system is the level of activity of white blood cells.

What does the graph below tell you about the relationship between stress and the level of activity of white blood cells?

Relationship between stress and the level of activity of white blood cells



.....

.....

.....

.....

(Total 2 marks)

53 Outline **one** strength **and one** weakness of using correlations in stress research.

Strength .....

.....

.....

.....

Weakness .....

.....

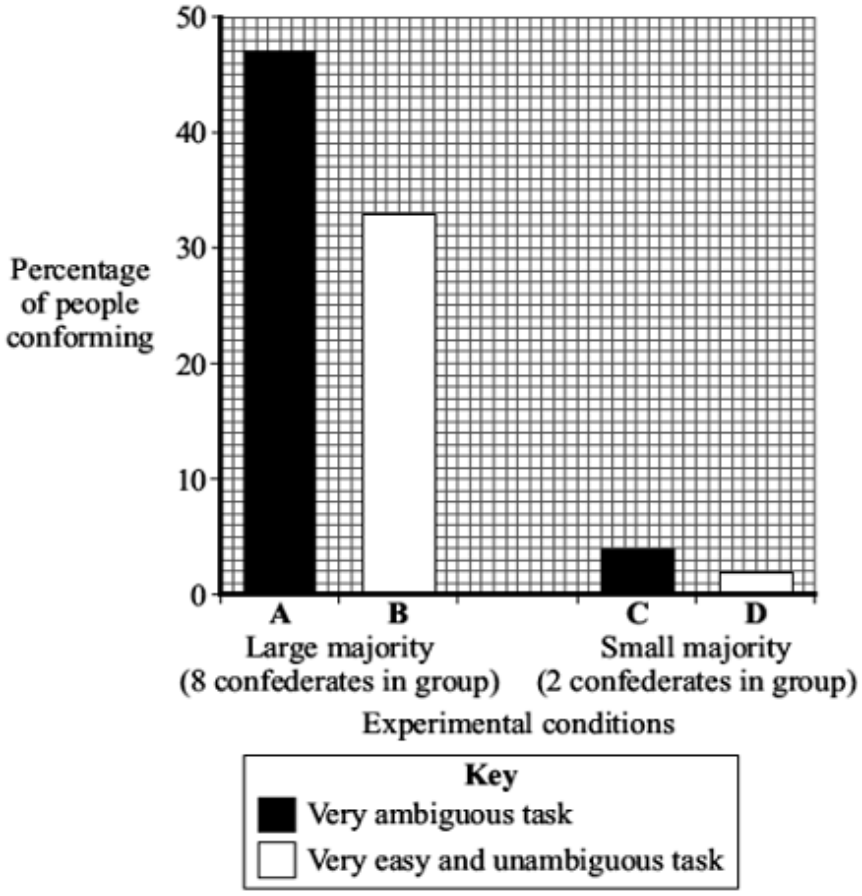
.....

.....

(Total 4 marks)

54 In an experiment into conformity, an experimenter varied both the number of confederates (stooges) and the ambiguity of the task. The bar chart below shows the findings.

Percentages of conformity for different tasks and size of majority



What does the bar chart show about conformity?

.....

.....

.....

.....

.....

.....

.....

.....

(*Extra space*) .....

.....

.....

.....

(Total 4 marks)

55

A psychologist was interested in testing a new treatment for people with eating disorders. She put up adverts in several London clinics to recruit participants. Thirty people came forward and they were all given a structured interview by a trained therapist. The therapist then calculated a numerical score for each participant as a measure of their current functioning, where 50 indicates excellent, healthy functioning and zero indicates failure to function adequately. The psychologist then randomly allocated half the participants to a treatment group and half to a no-treatment group. After eight weeks, each participant was re-assessed using a structured interview conducted by the same trained therapist, and given a new numerical score. The trained therapist did not know which participants had been in either group.

For each participant, the psychologist calculated an improvement score by subtracting the score at the start of the study from the score after eight weeks. The greater the number, the better the improvement.

Median and range of improvement scores for the treatment group and for the no-treatment group

	Treatment group	**No–treatment group**
Median	10.9	2.7
Range	2.1	0.8

(a) With reference to the data in the table above, outline what the findings of this investigation seem to show about the effectiveness of the treatment.

(2)

(b) The psychologist used a statistical test to find out whether there was a significant difference in improvement between the 'treatment' and 'no-treatment' groups. She found a significant difference at the 5% level for a one-tailed test ($p \leq 0.05$).

Identify an appropriate statistical test for analysing the participants' scores.
Explain why it would be a suitable test to use in this study.

(4)

(c) What is the likelihood of the psychologist having made a Type 1 error in this study? Explain your answer.

(2)

(d) The psychologist assumed that improvements in the treatment group were a direct result of the new type of treatment. Suggest **two** other reasons why people in the treatment group might have improved.

(4)

(e) The psychologist could have used self-report questionnaires to assess the participants instead of using interviews with the therapist. Explain **one** advantage and **one** disadvantage of using self-report questionnaires in this study rather than interviews.

(4)

(f) The psychologist needed to obtain informed consent from her participants. Write a brief consent form which would be suitable for this study. You should include some details of what participants could expect to happen in the study and how they would be protected.

(5)

(g) What is meant by reliability? Explain how the reliability of the scores in this study could be checked.

(4)

(h) The psychologist noticed that female and male participants seemed to have responded rather differently to the treatment.

She decided to test the following hypothesis:

> Female patients with an eating disorder will show greater improvement in their symptoms after treatment with the new therapy than male patients.

She used a new set of participants and, this time, used self-report questionnaires instead of interviews with a therapist.

Imagine that you are the psychologist and are writing up the report of the study.
Write an appropriate methods section which includes reasonable detail of design, participants, materials and procedure. Make sure that there is enough detail to allow another researcher to carry out this study in the future.

(10)
(Total 35 marks)

56

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
	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.

.....

.....

.....

.....

(2)
(Total 7 marks)

57

A recent study recorded the amount of time that children spent in day care from birth to four years, and asked each child's mother to rate her child for aggression and disobedience. The study found that, as the time spent in day care went up, the mothers' rating of aggression and disobedience also went up.

(a) What kind of correlation is this research showing?

.....

.....

(1)

(b) Outline **one** strength and **one** weakness of using correlational research to investigate the effects of day care.

Strength .....

.....

.....

.....

Weakness .....

.....

.....

.....

(4)
(Total 5 marks)

58 A psychologist analysed the results of 'Strange Situation' studies from different countries. Some of the results are shown below.

Country (and number of studies)	**% of each type of attachment**		
	Secure	**Insecure-Avoidant**	**Insecure-Resistant**
Country One (2)	64	7	29
Country Two (18)	65	21	14
Country Three (4)	67	26	7

(a) Outline what the table above shows about cultural variations in attachment.

.....

.....

.....

.....

.....

.....

(3)

(b) Explain **one** criticism of investigating cultural variations in attachment using the 'Strange Situation.'

.....

.....

.....

.....

.....

.....

(3)
(Total 6 marks)

Mark schemes

1

(a) **[AO2 = 2]**

1 mark for operant conditioning.

Plus

1 mark for an explanation of how this is operant conditioning, ie performance of desired response, pulling strings, results in a positive consequence, escape and treat.

(b) **[AO2 = 2]**

2 marks for a correct answer 30.75 with workings (eg total time (246) divided by number of trials).

1 mark for correct answer without workings.

1 mark for partial workings (eg total time (246) divided by…) with incorrect answer.

(c) **[AO3 = 1]**

D

2

(a) **[AO1 = 1 and AO3 = 2]**

1 mark for identification of the correct experimental design – independent groups / independent measures.

Plus

2 marks for a clear and coherent outline of an advantage using appropriate terminology.

OR

1 mark for a brief / vague / muddled outline of an advantage.

Possible advantages:

- performances not affected by order effects as people only do one condition
- demand characteristics less likely as participants only aware of own condition
- same task / materials can be used in both conditions as participants are always naïve to the task.

Credit other relevant advantages.

(b) **[AO1 = 2]**

2 marks for a clear and coherent outline of how participants are used in either a repeated measure or a matched pairs design.

1 mark for a vague, muddled or incomplete outline of a repeated measure or a matched pairs design.

If the answer to **(a)** is incorrect, credit a different design to that given.

(c) **[AO3 = 2]**

1 mark for an appropriate and plausible suggestion.

Plus

1 mark for an appropriate justification.

Likely suggestions:

- testing all participants in the same room
- making sure that all participants hear the same instructions
- ensuring that all participants are tested by the same researcher.

Credit other relevant suggestions.

(d) **[AO2 = 3]**

3 marks for an appropriate non-directional (or directional) operationalised hypothesis: 'There is a difference in the number of ideas generated when participants work alone and when they work in groups.'

2 marks for a statement with both conditions of the IV and DV that lacks the clarity or has only one variable operationalised.

1 mark for a muddled statement with both conditions of the IV and DV where neither variable is operationalised.

0 marks for expressions of aim / questions / correlational hypotheses or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.

(e) **[AO2 = 1]**

1 mark: 3 (in each group)

(f) **[AO1 = 1]**

1 mark for naming a suitable measure of dispersion (range or standard deviation).

(g) **[AO2 = 1]**

1 mark for stating that the statistic calculated (either the range or the SD) would be greater in **Condition A** than in **Condition B**.

or written as

1 mark for stating that the statistic calculated (either the range or the SD) would be less in C**ondition B** than in **Condition A**.

(h) **[AO2 = 3]**

Marks for a clear description of a practical way as follows:

1 mark – all the participants allocated a number from 1 to 15.
1 mark – the 15 numbers are put in a hat.
1 mark – assign first three numbers drawn to a group and repeat process for other 4 groups.

Accept other valid descriptions that would be practical and produce the same outcome.

(i) **[AO3 = 2]**

1 mark : for each condition, the overall number of ideas generated should be divided by the overall total of 185.

Plus

1 mark : the result for each condition should then be multiplied by 100 to give the percentage.

(j) **[AO2 = 6]**

Level	Marks	Description
3	5 – 6	Both elements of required content are clear and mostly well detailed. The debrief is all in verbatim format.
2	3 – 4	Both elements of required content are present. The answer lacks detail and / or clarity in places. Some of the answer is in verbatim format.
1	1 – 2	There is some information about at least one element of required content. The answer lacks clarity. Verbatim format is lacking. For one mark there must be some relevant content, eg an optional point about ethics.
	0	No relevant content.

Required content:

- explanation of the aim: to see if creativity is affected by the presence or absence of others
- information about the other condition – in an independent design people need to know about the condition in which they did not take part.

Optional content:

- specific ethical issues, eg right to withdraw data / be informed of results / check of welfare
- general ethical considerations, eg respect for participants.

3

(a) **AO2 = 3**

1 mark for each of the following points:

- The total observation time for each parent was 10 minutes.
- The psychologist made 20 observations for each parent.
- To generate 20 observations for each parent she must therefore have recorded her observation every ½ minute or every 30 seconds.

(b) **AO2 = 2**

1 mark for the correct answer: 30%.

Plus

1 mark for showing correct workings: 12 divided by 40 multiplied by 100.

(c) **AO2 = 1**

1 mark for primary data.

4

(a) **AO2 = 2**

2 marks for a clear and coherent explanation of the usefulness of the standard deviation in this study.

1 mark for a weak or muddled answer in which the impact of the difference in the SDs is alluded to.

- Useful to inform about the spread of scores.
- Indicates participant variables – as a group the people in Condition 1 are quite different / are more variable than those in Condition 2.

Credit answers which suggest that the SDs can be used to look for similarity or differences in variance.

(b) **AO3 = 2**

2 marks for a clear, coherent outline of a relevant problem.

1 mark for a weak, muddled or very limited outline.

Possible problems:

- Direct observation of memory is not possible and must be inferred from the results / behaviour of the participants – this inference could be mistaken.
- The task given is rarely how normal memory functioning occurs because it is specifically designed to make measurement possible – the researcher therefore collects data that is only related to memory processing under experimental conditions.

Credit other valid problems.

5 (a) **[AO2 = 2]**

1 mark for naming the mean.

Plus

1 mark for justification: the mean is the most sensitive method as it takes all the scores in each data set into account OR there are no anomalous results / outliers / freak scores in either set of scores, so the mean will not be distorted.

(b) **[AO2 = 4]**

Full credit can be awarded for answers based on the mean or the median.
A maximum of **2 marks** can be awarded for answers based on the mode.

Using the Mean

- **For 4 marks**, the **mean** is accurately calculated for both conditions (Group A = 5.6, Group B = 12.5) and calculations are included for both groups, ie totals in both conditions divided by 10 (number of scores).
- **For 3 marks**, there are two correct means and one set of calculations or vice versa.
- **For 2 marks**, there are two correct means and no calculations, **OR** one correct mean with calculations **OR** two sets of calculations but no correct mean.
- **For 1 mark**, there is one correct mean or one set of calculations.

Using the Median

- **For 4 marks**, answers for each condition are correct (Group A = 5.5, Group B = 12.5) and for each condition scores are arranged in ascending order with middle values indicated.
- **For 3 marks**, there is one correct median and two sets of scores correctly arranged as calculations, or vice versa.
- **For 2 marks**, there are two correct medians and no calculations, or one correct median and one set of scores correctly arranged as calculations.
- **For 1 mark**, there is one correct median or one set of scores correctly arranged as calculations.

Using the Mode

- **For 2 marks**, there are correct modes for each group (Group A = 4, Group B = 11 and 14).
- **For 1 mark**, there is one correct mode.

(c) **[AO2 = 2]**

1 mark for stating that this is due to retroactive interference.

Plus

1 mark for either of the following explanation / elaboration points:

- because the material is similar in both conditions
- new / recently learnt / acquired information has disrupted / interfered with / affected the recall of old / previously learnt / acquired information
- response competition has occurred.

6

(a) **[AO3 = 2]**

Award **1 mark** for outline of a positive correlation / as one variable increases, so does the other.

and

1 mark – It would not be appropriate because correlation only shows a relationship between the two variables, not cause.

(b) **[AO3 = 2]**

2 marks for a clear, coherent outline of an appropriate way of dealing with a relevant ethical issue.

1 mark for a vague / muddled or incomplete outline of an appropriate way of dealing with a relevant ethical issue.

0 marks if the ethical issue is irrelevant or the way is inappropriate.

Relevant issues would include:

- asking for consent
- preferably written and on more than one occasion
- offering the right to withdraw from the study
- maintaining confidentiality
- treating with respect.

(c) **[AO3 = 4]**

Award **one mark** for each of the relevant points below:

- the same participants would complete the sleep questionnaire on more than one occasion
- each participants' scores from the first occasion should be correlated with his / her results from the later occasion to be shown on a scattergraph to describe the correlation, with scores from the first test plotted on one axis and the scores from the second test plotted on the other axis
- the strength of the correlation should then be assessed using either a Spearman's rho test (or a Pearson's r test)
- the degree of reliability is then determined by comparing the correlation with the statistical table to determine the extent of correlation – there should be a (strong) positive correlation between the two sets of scores.

7

(a) **[AO2 = 2]**

2 marks for identification of dependent variable operationalised: number of verbal errors.

1 mark for dependent variable not operationalised: verbal errors or fluency or mistakes.

(b) **[AO2 = 3]**

3 marks for an appropriate non-directional (or directional) operationalised hypothesis:

'There is a difference in number of verbal errors made by participants who perceive / think / believe there are 5 listeners (there is a small audience) and by participants who perceive / think / believe there are 100 listeners (there is a large audience)'.

2 marks for a statement with both conditions of the IV and a DV that lacks clarity or has only one variable operationalised.

1 mark for a muddled statement with both conditions of the IV and a DV where neither variable is operationalised.

0 marks for expressions of aim / questions / correlational hypotheses or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.

(c) **[AO2 = 3]**

1 mark for identification of **one** appropriate extraneous variable.

Plus

2 marks for explanation of why the variable should have been controlled – for full marks this should include clear explanation of how it would have affected the DV. Award one mark only for muddled or incomplete explanations, eg unelaborated reference to 'avoiding confounding'.

Appropriate variables: can be controlled and need to stay constant to avoid affecting the dependent variable, eg same article / conditions / instructions for each participant.

Do not credit gender (this is controlled) or time to complete task (cannot be controlled).

(d) **[AO2 = 2]**

2 marks for clear and coherent explanation of one advantage of using a stratified sample in this study.

1 mark for a muddled answer with a relevant advantage and some explanation in relation to the study.

Possible advantage: ensures that this sample is truly representative because different types of people (males / females) working in this company are represented in the sample in the correct proportions.

Accept other relevant advantages.

(e) **[AO2 = 3]**

1 mark for each point as follows:

Manual method:

- put all 60 male names in a hat (or similar)
- determine the proportion of males needed to mirror the number of males in the target population as follows: 60%
- calculate 60% of 20 = 12 and draw out 12 names.

Random number table or computer method:

- assign each of the 60 men a number between 1 and 60
- determine the proportion of males needed to mirror the number of males in the target population as follows: 60%
- calculate 60% of 20 = 12 and moving horizontally or vertically through random number tables find 12 numbers between 1 and 60 for the sample **OR** generate 12 numbers between 1 and 60 using random number generation function on computer.

(f) **[AO2 = 4]**

Marks for a clear description of a practical way of randomly allocating the 12 men and 8 women to the two conditions as follows:

- give each man a number 1 – 12 (1 mark)
- put 12 numbers in a hat (1 mark)
- assign first six numbers drawn to Condition A with the remainder for Condition B (1 mark)
- repeat process for women – eight numbers in the hat and draw four for Condition A and remaining four go to Condition B (1 mark).

Accept other valid descriptions that would be practical and produce the same outcome.

8

(a) **[AO2 = 2 and AO3 = 4]**

Level	Marks	Description
3	5 – 6	Conclusions in respect of both means and standard deviations are presented with clarity. Understanding of the relevance of each statistic is demonstrated. Justifications for each make good use of the values given.
2	3 – 4	Conclusions and justification in respect of both means and standard deviations are relevant, but there is some lack of clarity in both. Or, one is done well and justified appropriately (most usually this will be the mean).
1	1 – 2	One conclusion is drawn or two are partially correct. Any justification is limited. The answer lacks clarity.
	0	No relevant content.

Means

- Conclusion: when people believe they are presenting to a large audience they are less fluent in their spoken communication than when they believe the audience is small (or vice versa).
- Justification / Application: this is supported by the difference in the mean fluency scores which show more verbal mistakes (on average 6 more mistakes) when the audience is believed to be large (or vice versa).

Standard deviations

- Conclusion: performances of participants in Condition A where audience is believed to be small are less varied / dispersed / spread out than in Condition B where audience is believed to be large (or vice versa).
- Justification / Application: lower SD in Condition A suggests that individual performances in Condition A were more similar to each other and / or all quite close to the mean of 11.1.

(b) **[AO3 = 3]**

1 mark – this would be an improvement because the SD is a measure of dispersion that was less easily distorted by a single extreme score.

Plus

1 mark – one that takes account of the distance of all the verbal error scores from the mean.

Plus

1 mark – not just the distance between the highest verbal error score and the lowest verbal error score.

(c) **[AO2 = 4]**

1 mark for naming the t-test for independent / unrelated groups or a Mann-Whitney test.

Plus

Up to 3 marks for explanation for unrelated t-test. Credit relevant points as follows:

- can assume interval data because verbal errors can be assumed to be of equal size (ie one verbal error is equivalent to any other verbal error)
- the experimental design is independent groups
- the psychologist is looking for a difference between the two conditions.

OR

Up to 3 marks for explanation for Mann-Whitney test. Credit relevant points as follows:

- data should be treated as ordinal. Cannot assume interval data because verbal errors cannot be assumed to be of equal size (ie one verbal error is not equivalent to any other verbal error)
- the experimental design is independent groups
- the psychologist is looking for a difference between the two conditions
- SDs are quite different.

(d) **[AO1 = 2]**

2 marks for a clear and appropriate definition as follows:

This means that there is a less than 5% likelihood that this difference would occur if there is no real difference between the conditions **OR** the researchers would have a 95% confidence level.

1 mark for a less clear answer which shows some understanding, eg this means the researcher can conclude that the difference was not due to chance.

Accept any other valid answer.

(e) **[AO2 = 2]**

2 marks for a clear and detailed explanation applied to this study.

1 mark for a partial or muddled explanation or one that is only loosely applied to the study.

Credit answers based on any type of validity. Most answers will refer to either face or concurrent as follows:

- asking other people if verbal errors are a good measure of verbal fluency (face validity)
- giving participants an alternative / established verbal fluency test and checking to see that the two sets of data are positively correlated (concurrent validity).

9

(a) **[AO2 = 2]**

1 mark appears to support the nature side of the debate.

Plus

1 mark because the concordance rate is stronger in the identical twins where there is greater genetic relatedness (or nurture must also play a role – not 100% concordance).

Full credit can be awarded to answers which argue for mathematical ability being partly due to nurture as both percentage concordance rates are less than degree of genetic relatedness.

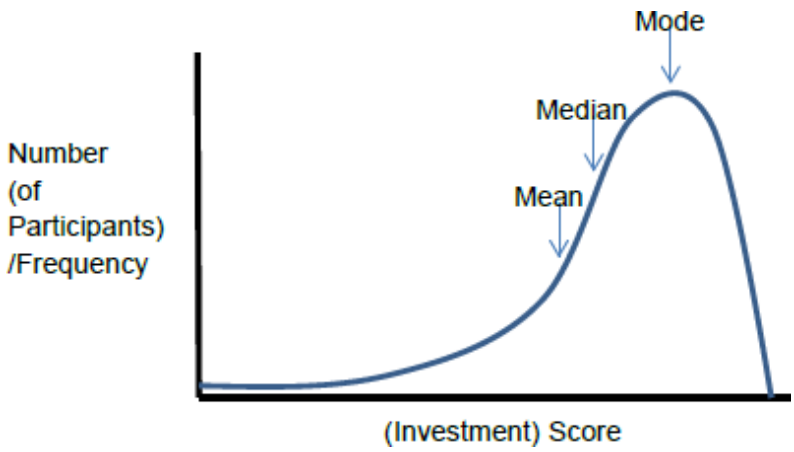
(b) **[AO2 = 4]**

Level	Marks	Description
2	3 – 4	Answer focuses clearly on concurrent validity. How a correlational test would be used to determine the relationship between the two sets of scores is clearly described with reference to calculation of a correlation coefficient and need for a significant positive correlation.
1	1 – 2	Answer focuses on validity. How a correlational test would be used to determine the relationship between the two sets of scores is partly described. The answer lacks accuracy and detail.
	0	No relevant content.

Content:

- concurrent validity would involve correlating the results on the maths test with results for the same group of people on an established maths reasoning test
- A Spearman's rho or Pearson's r test should be used for the two sets of test results
- if the mathematical ability test is valid then there should be a significant positive correlation between the two sets of test scores at the 0.05 level.

10 (a) **[AO2 = 3]**



Credit a rough sketch of a negatively skewed distribution as follows:

1 mark for shape of curve with tail to the left.

1 mark for axis labels – '(Investment) Score' on horizontal axis, 'Number (of Participants)' / 'Frequency' on vertical axis.

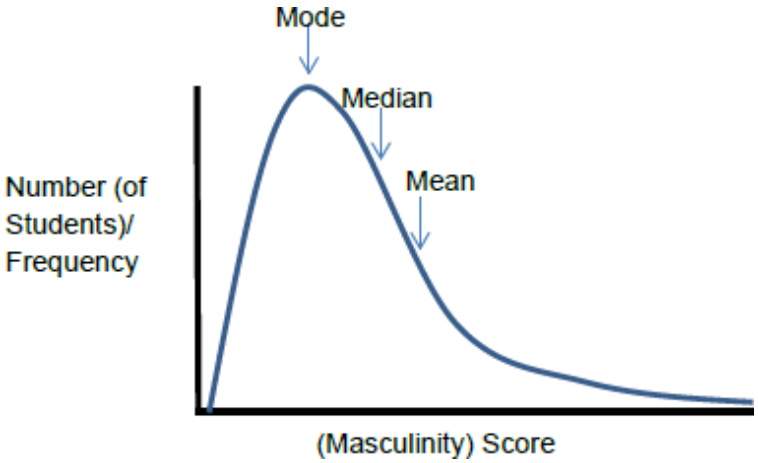
1 mark for positioning the mean, median and mode appropriately in relation to one another.

(b) **[AO2 = 1]**

1 mark for stating negative skew.

If graph sketched in (a) does not show a negative skew, credit answers that match the sketch given.

11 (a) **[AO2 = 3]**



Credit a rough sketch of a positively skewed distribution as follows:

1 mark for shape of curve with tail to the right.

1 mark for axis labels – '(Masculinity) Score' on horizontal axis, 'Number (of Students)' / 'Frequency' on vertical axis.

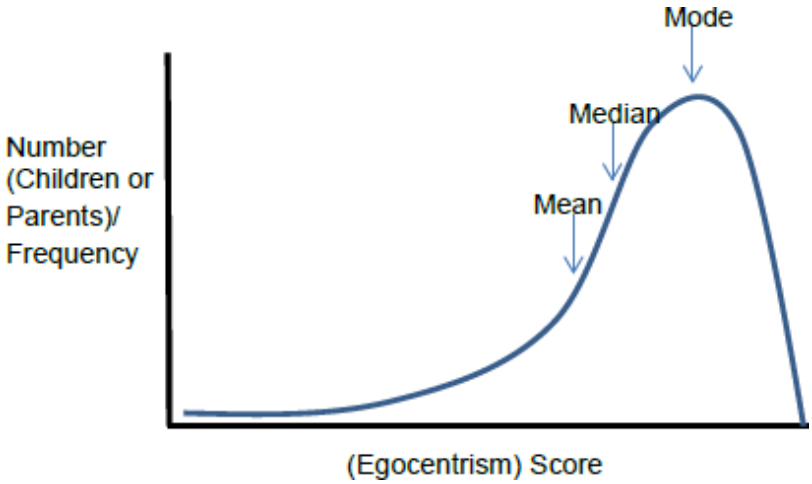
1 mark for positioning the mean, median and mode appropriately in relation to one another.

(b) **[AO2 = 1]**

1 mark for stating a positive skew.

If the graph sketched in (a) does not show a positive skew, credit answers that match the sketch given.

12 (a) **[AO2 = 3]**



Credit a rough sketch of a negatively skewed distribution as follows:

1 mark for shape of curve with tail to the left.

1 mark for axis labels – '(Egocentrism) Score' on horizontal axis, 'Number (Children or Parents)' / 'Frequency' on vertical axis.

1 mark for positioning the mean, median and mode appropriately in relation to one another.

(b) **[AO2 = 1]**

1 mark for stating a negative skew.

If the graph sketched in part (a) does not show a negative skew, credit answers that match the sketch given.

13 (a) **AO2 = 4**

2 marks for identifying two factors that are relevant for use of the sign test: nominal/categorical data; test of difference; related design/repeated measures.

Plus

Up to 2 marks for application of these to the investigation described:

- Nominal data as patients are assigned to one of three categories – 'improved', 'deteriorated' or 'neither'.
- Testing for difference in the number of absences in the year following and prior to treatment.
- Repeated measures as the same patients' work records are compared before and after treatment.

(b) **AO2 = 2**

1 mark for identifying the correct value of s as 5

Plus

1 mark for explanation/calculation of how this was arrived at:

- The most commonly occurring sign is + (12) and the least frequently occurring sign is – (5). The 0s are disregarded.
- The total for the least frequently occurring sign is the value of s = 5

(c) **AO2 = 2**

1 mark for stating that the value of s (5) is not significant at the 0.05 level.

Plus

1 mark for explanation:

- The critical value is 4. As the calculated value is higher than/exceeds the critical value, the result is significant not at the 0.05 level.

Accept alternative wording

(d) **AO3 = 3**

Marks may be awarded for a single point that is expanded/elaborated or more than one point briefly stated.

1 mark only if there is no reference to the investigation described.

Possible points:

- Primary data are obtained ‘first-hand’ from the participants themselves so are likely to lead to greater insight: e.g. into the patients' experience of treatment, whether they found it beneficial, negative, etc.
- Secondary data, such as time off work, may not be a valid measure of improvement in symptoms of depression. Primary data are more authentic and provide more than a surface understanding: e.g. participants may have taken time off work for reasons not related to their depression.
- The content of the data is more likely to match the researcher’s needs and objectives because questions, assessment tools, etc. can be specifically tailored: e.g. an interview may produce more valid data than a list of absences.

(e) **AO1 = 3 and AO2 = 2**

Level	Marks	Description
3	4 – 5	Knowledge of the implications of psychological research for the economy is clear. Application to the investigation described is effective. The answer is coherent with effective use of terminology.
2	2 – 3	Some knowledge of the implications of psychological research for the economy is present but there is a lack of detail/clarity. Application to the investigation described is limited or absent. Terminology is used appropriately on occasion.
1	1	An implication of psychological research for the economy is briefly stated.
	0	No relevant content.

AO1 – possible content:

- Psychological research may lead to improvements in psychological health/treatment programmes which may mean that people manage their health better and take less time off work.
- Absence from work costs the economy an estimated 15 billion a year annually and much of this absence is due to 'mild' mental illness: e.g. stress, anxiety.
- Psychological research may lead to better ways of managing people whilst they are at work to improve productivity: e.g. research into motivation and workplace stress.
- 'Cutting-edge' scientific research may encourage investment from overseas companies into this country.

Credit other relevant points/implications, including examples not linked to psychopathology.

AO2 – application

- If research (such as the investigation described) suggests that depressives are better able to manage their condition following CBT and return to work, then it may benefit the economy to make treatment more widely available, improve funding, etc.
- Psychological research such as this plays an important role in sustaining a healthy workforce and reducing absenteeism.

Credit other relevant application points.

14 (a) **AO2 = 2**

2 marks for explanation that a non-directional hypothesis is suitable or 'it should not be directional,' (1) as there is no reference to evidence that allows the researchers to predict the direction of the results (1).
1 mark for a muddled/limited explanation of why the hypothesis should be non-directional or **1 mark** for stating non-directional.

(b) **AO2 = 3**

3 marks for an appropriate non-directional operationalised hypothesis:
'There is a relationship between the map reading scores and the driving error ratings of motorists'.
2 marks for a non-directional statement with both key variables that lacks clarity or has only one variable operationalised.
1 mark for a muddled statement with some reference to variables.
0 marks for expressions of aim/questions/causal statements or statements with only one condition.

Full credit can be awarded for a hypothesis expressed in a null form.

(c) **AO2 = 2**

1 mark for stating scattergraph or scattergram.

Plus

1 mark for explanation – because it shows a relationship between two variables.

(d) **AO2 = 3**

Possible content

- General pattern - if a participant scored highly on the map reading task then they are also rated highly on the practical driving task, (or vice versa)
- This suggests a person who has good map reading ability also has good driving skills so these spatial abilities are (positively) related/correlated

Accept other relevant comments

(e) **AO2 = 2 and AO3 = 4**

Level	Marks	Description
3	5 – 6	Outline of the problem is clear and coherent. Discussion of how the method could be modified is appropriate and effective. The answer is clear and coherent. Specialist terminology is used effectively. One modification in detail can access this level.
2	3 – 4	Outline of the problem is clear. Discussion of how the method could be modified is mostly appropriate and effective. There is some appropriate use of specialist terminology.
1	1 – 2	Outline of the problem is vague/muddled. Discussion of how the method could be modified either lacks detail or is muddled. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible problems:

- Researcher bias – using one observer means objectivity/reliability/validity cannot be checked

Possible modifications:

- Increasing the number of observers of the driving task because then the data is less subject to individual bias – the observations could then be correlated
- Recording the driver performance so that the data is not lost but can be reviewed as often as required.

Credit other relevant information.

(f) **AO2 = 3**

Possible content

- The test determines the strength of a relationship between two variables which is what the researchers were looking for in their initial aim
- The data are in related pairs
- The variables under test are both ratings measured at the ordinal level.

Credit other relevant information

(g) **AO2 = 2 and AO3 = 2**

Level	Marks	Description
2	3 – 4	Explanation of an appropriate conclusion for this study is clear and mostly accurate. There is appropriate justification of the conclusion with reference to the critical values table. The answer is generally coherent with effective use of specialist terminology.
1	1 – 2	Some explanation of an appropriate conclusion is evident. There may be some justification of this with reference to the critical values table. The answer lacks accuracy and detail. Use of specialist terminology is either absent or inappropriate.
	0	No relevant content.

Possible content:

Conclusion

- The null hypothesis should be rejected and the alternative hypothesis accepted
- There is a significant (positive) relationship between the map reading ability and the driving ability of the participants
- Drivers who are skilled at map reading are also skilled at driving

Justification

- This relationship is a strong positive one as the calculated value of r_s of 0.808 exceeds the critical value for a two tailed test at p=0.05 where n=9 of 0.700.

15

AO1 = 4

1 mark each for a correct definition of both a Type I and a Type II error
Plus
Up to 2 marks for a clear distinction between these two errors.

Possible content:

- A Type I error occurs when a researcher claims support for the research hypothesis with a significant result when the results were caused by random variables
- A Type II error occurs when the effect the researcher was attempting to demonstrate does exist but the researcher claims there was no significance in the results/erroneously accepts the null hypothesis
- The difference is that in a Type I error the null hypothesis is rejected when it is true and in a Type II error it is retained when it is false.

16

(a) **AO2 = 2 and AO3 = 2**

2 marks for an accurate comment about the means for both males and females
Plus
2 marks for an accurate comment about the standard deviations for both sets of data

Means: the mean score for males is almost 3 times larger than that of the females which suggests they are very much better at map reading than the females

Standard deviations: sds are quite similar to each other suggesting the spread of performances of the male participants and the female participants is similar within each group.

(b) **AO2 = 4**

Award 2 marks for a correct calculation of the percentage for the male participants and 2 marks for a correct calculation of the percentage for the female participants.

If the calculation for one or both of the groups is incorrect but the procedure used is correct award 1 mark for each time this occurs to a maximum of 2 marks.

Males – 13/20 = 65%

Females 5/20 = 25%

(c) **AO2 = 2**

Up to 2 marks for a clear comment on the data

Possible content: the difference in the percentages confirms the earlier suggestion that men are much better at map reading than women.

17

AO2 = 4

Level	Marks	Description
2	3 – 4	Knowledge of the effectiveness of atypical and typical antipsychotics on positive and negative symptoms is clear and mostly accurate. The findings in the table are used appropriately. The answer is generally coherent with effective use of terminology.
1	1 – 2	Some knowledge of the effectiveness of atypical and typical antipsychotics and positive and negative symptoms is evident. Use of findings from the table is not always effective. The answer lacks accuracy and detail. Use of terminology is either absent or inappropriate.
	0	No relevant content.

- Atypical and typical antipsychotics are equally effective against positive symptoms with more than half of patients responding well
- The main difference is that negative symptoms respond better to atypical antipsychotics, 30% improve compared with typical antipsychotics 16%
- Atypical antipsychotics are more effective against negative symptoms
- These findings support the view that they act on different neurotransmitters

18

AO2 = 4

Content

- Median is 11 for Group A (9 + 13/2) and 8.5 for Group B (8 + 9/2)

1 mark for <u>each</u> accurately calculated median

Plus

2 further marks for explaining that the median is used because of the outlying/extreme scores (one in each group) which would have distorted the mean.

Also accept answers based on unsafe level of measurement.

19

AO2 = 4

Content:

- Median is 34.5 for Group A (32 + 37/2) and 50.5 for Group B (45 + 56/2)

1 mark for each accurately calculated median

Plus

2 further marks for explaining that the median is used because the level of measurement is not interval – ratings data with units of variable size.

20

AO2 = 4

Possible content:

- Median is 29.5 (29 + 30/2) for Group A and 24.5 (24 + 25/2) for Group B

1 mark for each accurately calculated median
2 further marks for explaining the median is the more appropriate measure because of the outlying extreme scores in each group which could have distorted the mean.

Accept answers based on unsafe level of measurement.

21

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **AO3 = 4**

In this experiment a pilot study could be used to:-

- check how long the participant should be given to look at the stimulus material
- check whether the pictures were appropriate and clear
- check whether 20 is an appropriate number of words to use
- check whether the words were appropriate
- check the participants understand the instructions and what they are required to do
- ask a few participants about their experience of taking part

Changes can then be made to the procedure if necessary, to avoid wasting time / money.
There is a depth / breadth trade off. Candidates may cover one point in detail or more than one in less detail.

Vague or general statements which simply state “to save time / money” , “to see of it works” ,
“to see if there is a difference” = 0
To test / change the hypothesis = 0

AO3 Application of knowledge of research methods
4 marks Accurate and reasonably detailed Accurate and reasonably detailed explanation that demonstrates sound knowledge and understanding of why a pilot study would be appropriate, including at least one detail from the experiment.
3 marks Less detailed but generally accurate Less detailed but generally accurate answer that demonstrates sound knowledge and understanding of why a pilot study would be appropriate, including at least one detail from the experiment.
2 marks Basic Basic answer that demonstrates some understanding of why a pilot study would be appropriate in this study, but lacks detail and may be muddled.
1 mark Very brief / flawed Very brief or flawed answer demonstrating very little understanding of why a pilot study would be appropriate in this study.
0 marks No creditworthy material.

(b) **AO3 = 2**

0 marks for a directional / correlational / null hypothesis.
1 mark for an appropriate non directional hypothesis where either or both variables are not operationalised e.g. memory will be different in the two conditions and / or when the hypothesis is not written as a statement e.g. " To see if ..." or " Is there.....?"
2 marks for an appropriate non directional hypothesis where both variables are operationalised e.g. there will be a difference in the number of words correctly recalled when words are presented with pictures and without pictures.

(c) **AO3 = 4**

Reasons for using an independent groups design rather than repeated measures include:-
There are no order effects because participants only do the task once.
The same words can be used in both conditions so one set of words is no easier to recall than the other set of words.
Demand characteristics are less likely because participants will be unaware of the other condition.
Credit other appropriate reasons.
Simply stating IGD is quicker / saves time = 0.
In each case 1 mark for a very brief / slightly muddled potentially relevant reason that could explain the use of IGD.
2nd mark for some elaboration of a reason that is relevant / appropriate to this study.

(d) **AO3 = 2**

The focus of this question is on understanding the outcome of this experiment.
Simply re-stating the data in table 1 = 0
e.g. The range for Condition 1 is 11 and for Condition 2 is 13.
Or The range is higher for Condition 1 than for Condition 2.
Or The median for Condition 1 is 13 and Condition 2 is 16.
Or The median for Condition 2 is higher than Condition 1.
1 mark for accurate reference to either median or range
e.g. more words were correctly recalled with pictures than without pictures.
Or The spread / dispersion of scores is larger with pictures than without pictures.
Or There is more individual variation with pictures than without.
2 marks for accurate reference to both difference and dispersion (spread) as above.

22

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

AO3 = 4

- A smartly dressed confederate elicits more obedience (1 mark) than a casually-dressed confederate (second mark)
- The type of task (request) also influences rate of obedience (1 mark)
- If told to do something that requires effort (e.g. heavy task) obedience levels are not affected by what the person is wearing (2 marks)

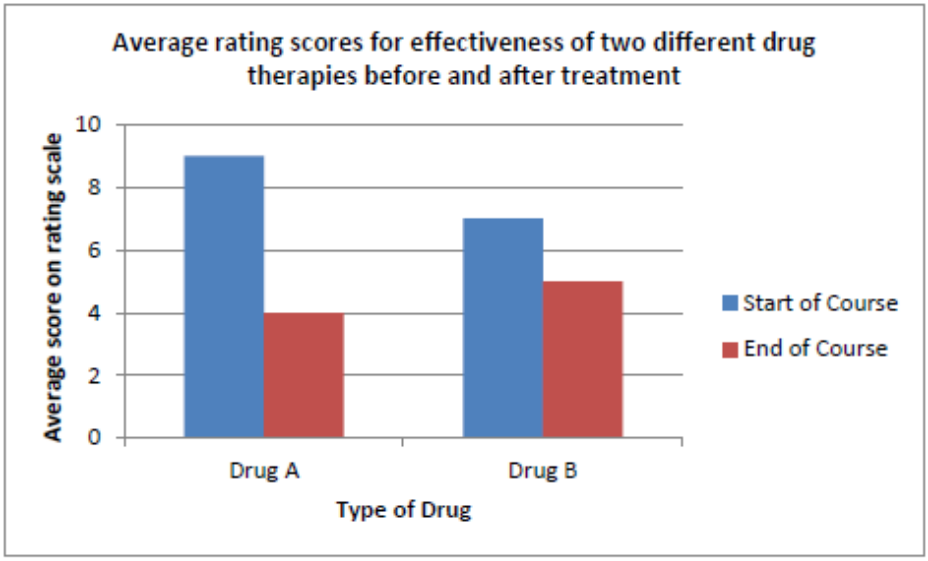
AO3 Interpretation of data
4 marks Effective interpretation of data Effective interpretation that demonstrates sound knowledge of what the data shows, with reference to both what the confederate is wearing and type of task.
3 marks Reasonable interpretation of data Reasonable interpretation of what the data shows, with reference to what the confederate is wearing and the type of task, but one in more detail.
2 marks Basic interpretation of data Basic interpretation of what the data shows; in terms of, for example “more” or “less”.
1 mark Rudimentary interpretation of data Rudimentary, muddled interpretation of the data, demonstrating very limited knowledge.
0 marks No creditworthy material.

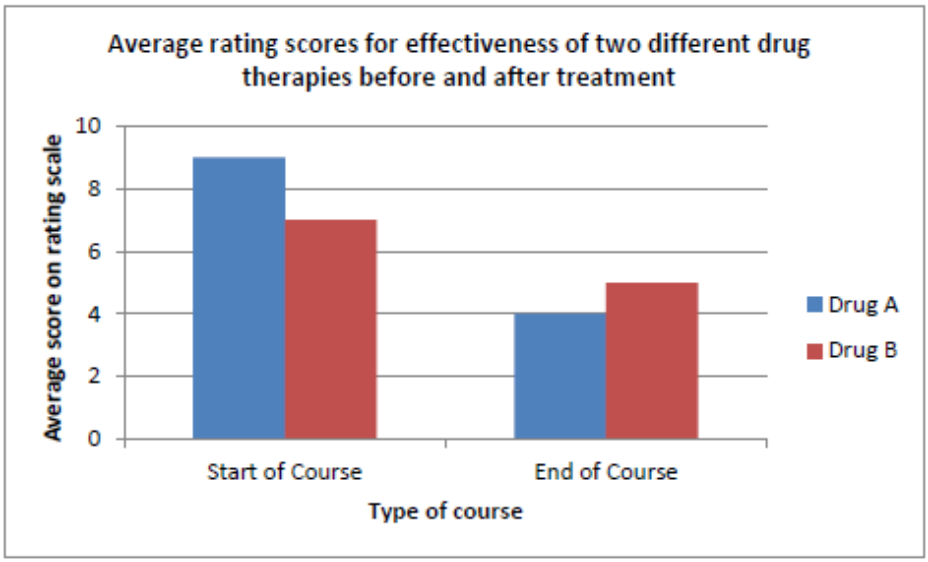
23

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

AO3 = 4





1 mark for correctly labelled x-axis: either with over-arching label, e.g. Type of Drug, or by clearly labelling the 2 conditions e.g. Start and End of course.

1 mark for correctly labelled y-axis: average score on (rating) scale.

Up to 2 marks for clearly sketching a bar chart. For full marks, there needs to be an appropriate use of graph paper and bars labelled correctly.

24

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **AO1 = 2**

Content analysis is a technique for analysing qualitative data of various kinds. Data can be placed into categories and counted (quantitative) or can be analysed in themes (qualitative).

Award 1 mark for a brief statement and a further mark for elaboration.

(b) **AO3 = 4**

- The psychologist could have begun by watching some of the film clips of driver behaviour.
- This would enable the psychologist to identify potential categories which emerged from the data of the different types of distractions seen in the film.
- Such categories / themes might include: passenger distractions, gadget distractions, etc.
- The psychologists would then have watched the films again and counted the number of examples which fell into each category to provide quantitative data.

Credit variations in so far as they explain the process.

Note: maximum 1 mark if no engagement with the stem.

AO3 Mark bands
4 marks Effective Effective explanation of the processes involved in content analysis referring to some or all of the above points.
2 – 3 marks Reasonable Reasonable accurate coverage of the processes involved.
1 mark Basic Basic identification of the processes involved in content analysis ('watching the films and counting').
0 marks No creditworthy material.

(c) **AO3 = 3**

1 mark for identification of an appropriate way of assessing reliability in this investigation. By far the most likely answers here are inter-rater reliability or test-retest reliability.

2 marks for some explanation / elaboration: ‘the two psychologists could carry out content analysis of the films separately and compare their answers’ or ‘they could re-code the films at a later date and compare the two sets of data’.

3 marks for an accurate and clear explanation which refers to deriving the categories and checking the data. ‘The two psychologists could watch the films separately and devise a set of categories. They could compare these and use categories they both agreed on. They could carry out content analysis of the films separately and compare their answers looking for agreement’.

(d) **AO3 = 3**

Candidates can cover one reason explained in detail here or several reasons in less detail.

A repeated measures design was chosen in this experiment:

- to remove the effects of individual differences in reaction times which would occur if an independent groups design was used
- to avoid the potential difficulties involved in matching participants
- to reduce the number of participants required for the experiment.

(e) **AO3 = 3**

This is a repeated measures design and is counter-balanced hence points about order effects and individual differences will not gain credit.

There are a range of potential extraneous variables here including:

- the nature and content of the conversation with the psychologist on the hands-free phone
- interaction between the sex of the psychologist and sex of participant which could influence the type of conversation
- the number of hazards in the computer-based test, hence difficulty of the tests
- the presence of the hands-free headset could have produced distraction.

Award 1 mark for basic identification of a confounding variable and a further 2 marks for elaboration of how this could have affected the dependent variable.

Example: The chat with the psychologist was not controlled (1 mark) so the difficulty or number of questions could have varied (2 marks). This would influence the DV as more or less attention would be required (3 marks).

(f) **AO3 = 4**

There are several potential ethical issues here. Candidates can focus on one in detail or several in less detail.

- Protection of participants from harm whilst studying the effects of a hands-free phone on driving. Two key issues here are the use of a computer-based test with no risk attached and of an experienced sample of police drivers.
- Informed consent: Participants should be given full information about the nature of both tasks before deciding whether or not to participate.
- Debriefing: A full debriefing should take place at the end of the experiment. This should provide feedback on performance and allow participants to ask questions if they wish to.
- Freedom to withdraw: Participants should be made aware of their freedom to withdraw before and during the experiment. They should be made aware of their right to withdraw their data after the experiment.
- Confidentiality: Individuals should not be identified, but should retain anonymity (use of numbers or initials instead of names).

Lists of ethical issues with no elaboration 1 mark.

AO3 Mark bands
4 marks Sound An appropriate ethical issue is identified and explained in detail. Material is accurate – or several issues are identified and discussed accurately in less detail.
2 – 3 marks Reasonable One or more appropriate ethical issues are identified and discussed. The answer is generally accurate.
1 mark Basic Basic identification of an ethical issue (e.g. ‘right to withdraw’) or very brief answers which lack detail.
0 marks No creditworthy material.

(g) **AO3 = 5**

The standardised instructions should include the following information:

a. You will take part in a simulated driving test which will last for three minutes.

b. Your task will be to identify potential hazards on the road ahead.

c. When you see a hazard, you should press the mouse button as quickly as possible.

d. Whilst you are doing the test, I will chat to you on a mobile phone and I would like you to reply using the hands-free mobile phone headset.

e. Do you have any questions?

For full marks, the instructions should adopt an appropriate formal tone. Instructions which are not suitable to be read out should be awarded a maximum mark of 2.

AO3 Marks bands	**Standardised instructions**
5 marks Effective The standardised instructions provide accurate detail of the procedure in a clear and concise form and participants' understanding is checked.	
4 – 3 marks Reasonable The standardised instructions provide sufficient detail of the procedure in a reasonably clear form.	
2 marks Basic The standardised instructions provide some details of the procedure though these may not be clear.	
1 mark Rudimentary The standardised instructions provide few details of the procedure and may be muddled and or inaccurate. Omissions in the instructions compromise the procedure.	
0 marks No creditworthy material is presented.	

(h) **AO3 = 3**

Students are required to identify an appropriate test and are asked to justify their choice.

Award 1 mark for identification of the Wilcoxon (signed ranks) test. Candidates could receive credit for Sign test or related t test. Note that reasons / justification must be correct for the test supplied.

If an incorrect test is identified **no marks** can be awarded.

Award 1 mark for basic statement of a reason, and a further mark for elaboration, within the context of the experiment or a further reason.

e.g. for Wilcoxon test:

- A repeated measures design was used (1 mark) as drivers take part in both the hands-free phone and non-phone (silent) conditions (1 mark).
- A repeated measures design was used (1 mark) and the data can be treated as ordinal (1 mark).

Test of difference cannot gain credit.

(i) **AO3 = 2**

Students are told that the difference in reaction times was significant at the $p \leq 0.01$ level.

Award 1 mark for a basic understanding of this ('the result is highly significant') and a further mark for elaboration e.g. identifying that the probability of a Type 1 error here is less than 1 / 100.

(j) **AO3 = 3**

Replication is an important tool in the scientific method. It allows scientists to check findings and ensure that they are robust. In this study, replication is important, as the original sample is small (30 people) and specific (experienced police drivers). For this reason, replication on a larger sample will be used to check if findings apply outside this specific group.

Award 1 mark for a general answer on the importance of replication to check findings.

25

(a) **[AO3 = 1, AO2 = 3]**

AO3

One mark for a description of the results which might be embedded in the application of knowledge of gender schema theory below.

The recall of the activities of *watching TV* and *mowing the lawn* was almost perfect / extremely high, **but** recall for *ironing* was only 23 / 50 or just less than half.

AO2

Up to 3 marks for use of knowledge of gender schema theory to explain the results of the study.
Likely points:

- explaining what a gender schema is – mental representation about gender-related behaviours **OR** one mark for reference to formation of stereotypes – expectations about what certain genders do
- relating results to the above – recall of information that fits the schema and stereotype
- reference to not fully processing or 'forgetting' the ironing behaviour which does not fit the schema or stereotype.

(b) **[AO3 = 1]**

One mark for a clear definition of opportunity sampling.
Likely answer: a sampling method in which people who are available to the researcher are used in the study.

Accept alternative wording, such as convenient. Do not accept just 'willing participants.'

(c) **[AO3 = 3]**

Up to 3 marks for an explanation of why unstructured interviews would be appropriate in this study.

Full marks can be credited for one fully elaborated issue.

Credit the following likely points:

- an unstructured interview would allow the interviewer to respond to the answer given by a child with a specific follow-on question
- the interviewer may gain new insight / lines of enquiry not explored so far
- it would enable the researcher to explore further the reason(s) given by the child for his answer – depth and detail
- it may overcome interpretation / communication issues by allowing the child to be clear about what they are trying to say.

Credit other valid points.

Credit reference to increased validity if there is explanation of how this is achieved. Maximum of 2 marks if answer not specific to this study.

26

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **[AO3 = 1]**

A median score is calculated by putting all the scores in order from lowest to highest (or vice versa) and finding the middle score in the set.

Credit explanations that refer to sets with even numbers of values, ie by finding the numerical mid-point between the two middle scores.

(b) **[AO3 = 1]**

One mark for identification of the dependent variable:

The estimate of how many marks would be scored on the maths test.

Accept alternative wording.

(c) **[AO3 = 2]**

2 marks for a clear, testable statement containing both conditions of the IV and an operationalised DV.

There is a difference in the estimates men will give of their scores on a maths test and the estimates women will give of their scores on a maths test. (Accept a null version)

Men will give higher (or lower) estimates of their scores on a maths test than the estimates women will give of their scores on a maths test.

For 1 mark – a statement with both conditions of the IV and a DV which may not be operational or testable.

No marks for expressions of aim / questions / correlational hypotheses or statements with only one condition.

(d) **[AO3 = 2]**

One mark for identification of the experimental design as independent groups / measures / samples. No credit if incorrect design is chosen.

One mark for an explanation of this design.
The participants in the male group are different people from those in the female group or reference to only participating in one condition.

(e) **[AO3 = 3]**

Up to 3 marks for a clear explanation of the procedure for obtaining a random sample in this study:

- put all the names / numbers of the men (from the factory) in a hat / computer (1)
- draw out 15 names for the sample or get computer to randomly generate 15 numbers (1).
- repeat for all the women (of the factory) (1) or vice versa.

Accept other ways that would clearly generate a random sample.

(f) **[AO3 = 2]**

Up to 2 marks for a suitable conclusion drawn from the data in **Table 2.**

One mark for the conclusion:
There is a difference in the expectations men and women have of their own numeracy skills.
Accept a directional statement such as:
Men think they are likely to achieve better scores on a maths test than women think they will achieve.

One mark for the justification:
The median estimate for men was much higher than that for the women.

(g) **[AO3 = 3]**

Up to 3 marks for what comparison of the estimated and actual maths scores of the men and women indicates.

Men overestimated their numeracy skills / numerical ability / score they would get (or similar) (1 mark)

Women underestimated their numeracy skills / numerical ability / score they would get (or similar) (1 mark)

Overall conclusions:

- People / Men / Women are not very good at estimating our ability
- Expectations were wrong
- (Although estimates are different) ability was the same
- Men are over confident re ability
- Women under confident re ability

(1 mark for any of these)

(h) **[AO3 = 4]**

Information must be written in verbatim form for more than 1 mark.

Essential points	Purpose / aim of the study Ethical point
Optional points	Background information / Elaboration of the aim and conditions Any questions? Thanking for participation Interest in the results?

4 marks	**Verbatim** Both essential and at least one optional point are addressed clearly such that an understanding of the study is achieved. Information should be clear, relevant, sensible and logically structured.
3 marks	**Verbatim** Both essential points are addressed such that there is reasonable understanding of the study. There may be deficiencies in clarity, some irrelevance, illogical sequencing or inappropriate content.
2 marks	**Verbatim** Any 2 points are addressed. There may be omissions / irrelevances / muddle such that understanding of the study might be limited.
1 mark	There must be at least one relevant point. Information may be unclear / inappropriate / irrelevant such that understanding of the study would be very limited or most points addressed but not in verbatim form.
0 marks	No relevant information. Understanding of the study would not be possible.

(i) **[AO3 = 2]**

One mark for a valid reason and a further mark for elaboration of the reason given.

Reason: to identify any possible flaws in (the design of) the study (1 mark).
Elaboration: to provide an opportunity to improve the study / or so that the researcher does not waste time collecting data that will have to be discarded (1 mark).

Accept any other valid answer.

27

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **[AO3 = 1]**

One mark for answers either:

- referring to the strength and the direction of the relationship – a positive correlation between the number of hours spent reading fiction and the empathy test score.
  or:
- describing the relationship – the more hours spent reading fiction, the greater the empathy test score.

No credit for just stating type of correlation eg strong positive.

(b) **[AO3 = 2]**

One mark for naming a test: Spearman's rank order correlation / rho or Pearson's product moment correlation.
One mark for justification. For Spearman's rank order correlation accept: not all data is interval – data collected for empathy test score most likely treated at ordinal level of measurement due to self-report.
For Pearson accept: Pearson's product moment correlation is a robust test, even if not all data can be treated as truly interval.

Just stating ordinal / interval no credit. Accept ordinal or interval providing this is justified with reference to at least one variable.

Unlikely but allow for an informed argument made for treating both sets of data at interval level.

(c) **[AO3 = 2]**

1 mark for a knowledge of a way (not just naming a type of validity) and 2nd mark for explaining how this would be implemented in this case. Most likely answers will address face validity or concurrent validity, but accept any other way such as construct validity, content validity, criterion validity and predictive validity.

For full marks, the answer must refer to either the empathy questionnaire or empathy test items. The 'way' need not be named or defined.

(d) **[AO3 = 2]**

One mark for the identifying a methodological limitation of the study.
Likely answers: size / composition of sample / one school only; for test of empathy – no evidence of testing reliability; parental involvement in 'time spent reading questionnaire'; self-report measures; correlation study.
One mark for a brief explanation.
Suggested explanations might cover: limits to generalisation; confidence in a test and its findings rests on it being deemed reliable; social desirability of parental responses and consequent bias; honesty of reporting / memory recall; cause and effect issues in correlation studies.
Accept any other plausible answers.

(e) **[AO3=3]**

Up to three marks for a discussion of reasons for correlation studies rather than experiments when investigating behaviour.
Likely answers: unethical / impossible to manipulate these variables (reading and empathy in children) to investigate cause and effect; impractical to sometimes do an experiment; may discover a link between two existing variables which might suggest future research ideas; interested in relationships **rather than** a causal explanation.
Accept comparison with the experimental approach.
For full marks, the answer must be coherent and applied to this study.
Maximum of two marks for general answers not applied to this study.

(f) **[AO3 = 8]**

Up to 8 marks for answers demonstrating an ability to design an experiment effectively. Answers should refer to:

- clearly identified independent and dependent variables and at least one extraneous variable identified and control suggested;
- the experimental design – independent groups, repeated measures or matched pairs;
- detail of sample;
- materials required for carrying out the research, eg task for assessing levels of recall, timing device if needed;
- sufficient procedural details to carry out a replication (might include standard instructions, ethics, etc.)

Note: standardised instructions and ethical issues are not required for full marks.

Mark bands

8 – 7 marks	**Very good answers** All 5 points well addressed and some sound justification. Answer shows sound knowledge and understanding and an ability to design an appropriate experiment. The proposal is coherent and feasible, and includes details of all the essential elements of the chosen design. Information allows for clear understanding of the proposed design. There may be some minor omission(s) at the bottom of the band.
6 – 5 marks	**Good answers** 3 or 4 points well addressed and some justification. The design shows knowledge and understanding and some ability to design an appropriate experiment. The proposal is feasible but may lack the clarity and coherence of the top band. There may be some inaccuracies and omissions.
4 – 3 marks	**Average to weak answers** At least 3 points are addressed and attempt at justification. The answer shows some knowledge and understanding but detail of the proposal may lack clarity. There are inaccuracies and omissions.
2 – 1 marks	**Poor answers** 1-2 points are addressed. There must be some relevant material. The experimental method may not be obvious. There may be substantial confusion, inaccuracy and / or irrelevance.
0 marks	**No relevant content**

28

(a) **AO2 = 3**

The answer must clearly relate to one or more of the main techniques used in a cognitive interview (other than report everything):-

Context reinstatement
Recall from a changed perspective
Recall in reverse order

Some of the main additional features of the enhanced cognitive interview could be relevant, as long as it could be explained to the participant: – eg Encourage to relax

1 mark for identification of a relevant cognitive technique.
1 mark for very brief statement eg “tell me what you saw in reverse order”.
Second mark for appropriate elaboration eg “Tell me what you saw on the film in a different order to how it actually happened.” If instructions are not suitable to be read out maximum 1 mark for this part.
For 3 marks technique and instructions must match.

(b) **AO3 = 2**

The researcher might conclude that the cognitive interview was effective because more correct items were recalled, but it did not affect the number of incorrect items recalled.

0 mark - the cognitive interview was effective with no explanation.
1 mark - it was effective because there were more correct items recalled or it was not effective because the number of incorrect items stayed the same.
2 marks - it was effective because there were more correct items recalled **and** the number of incorrect items stayed the same / didn’t increase.

1 mark for stating there were more correct items recalled with the cognitive interview than with the standard interview **and** the number of incorrect items recalled was the same. (There is no reference to effectiveness).

29

AO3 = 2

The graph indicates a fairly strong, positive correlation between scores on a stress questionnaire and days off through illness. The following can all receive a mark: direction, strength and a description of their relationship. Credit can also be given for mentioning the flattening of the graph at higher stress levels.

30

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **AO2 / AO3 = 2**

Award 2 marks for an appropriate non-directional hypothesis which is operationalised. 'There is a relationship between happiness scores on a questionnaire and intelligence test scores'.

Award 1 mark for a non-directional hypothesis which is not fully operationalised or lacks clarity ('there is a relationship between happiness and intelligence').
Award no marks for a null or directional hypothesis, or one that predicts a difference / link / association / connection.

(b) **AO2/AO3 = 4**

An interview is the most likely answer. An interview would be a more appropriate method than a questionnaire as it enables questions to be clarified and responses to be probed, thus overcoming the main disadvantages of questionnaires.

Students could also make a case for the analysis of diaries/written materials as a way of collecting data about happiness. These would generally overcome the problems of social desirability and demand characteristics inherent in questionnaires. Students could also make a case for the use of observation.

Award one mark for identifying an appropriate method. Award up to three further marks for an explanation of why this method would be better than a questionnaire.

(c) **AO2/AO3 = 2**

Award 1 mark each for any two of the following reasons:

- Study is looking for a correlation (relationship)
- Suitable for pairs of scores
- The data type obtained is ordinal, at least ordinal or interval level
- Linear relationship between scores.

(d) **AO2/AO3 = 3**

Students should state that the obtained value of + 0.42 exceeds the critical value for a twotailed test (.362) for N = 30. The results are therefore statistically significant ($p \leq 0.05$) Award 2 marks for a student who supplies two pieces of information. Award 1 mark for a student who states that the results are significant but does not provide an explanation OR the student who states results are significant but uses incorrect values from the table. Award 0 marks for students who argue that results are not significant.

(e) **AO2/AO3 = 4**

This question requires students to interpret a further correlation co-efficient (this time demonstrating a non-significant negative correlation) and put both findings together. For full marks, answers should cover the two key bullet points below:

- At age 11, there is a significant positive correlation between happiness and intelligence, demonstrating that more intelligent children tend to be happier
- At age 16, the correlation is not statistically significant.

Students may also make the point that there may be a weak tendency for more intelligent teenagers to be less happy at 16 years of age, although this is not statistically significant. Students may also refer to the contradiction in the results or provide an overall conclusion.

AO2 / AO3 Mark bands
4 marks Effective Effective analysis and understanding. The answer includes the findings of the two studies which are expressed clearly and fluently with appropriate reference to intelligence and happiness. Effective use of statistical terminology.
3 marks Reasonable Reasonable analysis and understanding. The answer is generally focussed and includes reference to both of the key findings which are reasonably clear. There is reasonable use of statistical terminology.
2 marks Basic Basic, superficial understanding. The answer is sometimes focussed OR covers only one of the key conclusions. Expression of ideas lacks clarity. Limited use of statistical terminology.
1 mark Rudimentary Rudimentary with very limited understanding. The answer is weak, muddled and may be mainly irrelevant. Deficiency in expression of ideas results in confusion and ambiguity. The answer lacks structure, often merely a series of unconnected assertions.
0 marks No creditworthy material is presented.

31

[AO2 = 3]

One mark for recognition that all the children have acquired gender identity / can label themselves (and others) as male or female accurately.

One mark for recognition that few have acquired gender constancy / understood that each person's gender is fixed across time and situations, despite superficial changes like clothing.

One mark for valid interpretation of the results in the table for both questions eg expressed as 'higher / fewer, more than.'
This mark might be embedded in the answers given above, ie the stage descriptions.

32

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **[AO3 = 2]**

One mark for either B or C.

One mark for an appropriate advantage of using open questions.
Likely points: open questions provide depth / detail / greater diversity of responses / more meaningful information in the response; they avoid participant frustration associated with fixed choice responses.

(b) **[AO3 = 2]**

One mark for an appropriate conclusion that might be drawn, eg: the majority of people **regard themselves** as kind and helpful people.(Accept alternatives such as 'see themselves, believe or think they are / say they would')

One mark for justification of the answer with reference to the data given, eg: the number of people who reported they would help the person is much higher than any other response given (about 75% said they would help the person).

Accept other valid conclusions with an appropriate matching justification.

(c) **[AO3 = 2]**

Up to 2 marks for an appropriate experimental hypothesis. For full credit the hypothesis must be a testable statement and contain both the IV and DV.

Possible answers for 2 marks:
Non-directional: There is a difference in the number of participants who go to help / help someone when the participant waits alone and when the participant waits with another person.

Directional: More participants who wait alone go to help / help someone than participants who wait with another person. (Accept 'Fewer'.)

Accept null version of the hypothesis.

Possible answers for 1 mark:

There will be a difference in the number of participants who go to help / help in Condition 1 and Condition 2

People who wait alone are more likely to go to help / help than people than people who wait with someone else.

(d) **[AO3 = 3]**

One mark for identification of a possible extraneous variable.
Likely answers: the behaviour of the interviewer who 'falls'; the behaviour of the confederate in the waiting room. Accept EVs based on participant variables eg gender and appropriate condition variables such as 'noise.'

One mark for explaining why the EV should be controlled.

One mark for explaining how it could be controlled.

Possible answers:
The behaviour of the interviewer who falls must be the same – the same sounds and cries so that each participant has the same incident to react to. This could be controlled by using a taped recording of the falling and crying out.
The behaviour of the confederate must be the same so that each participant has the same environment in the waiting room. This could be controlled by using the same person as a confederate who has a script he / she follows for each participant.

(e) **[AO3 = 3]**

One mark for identification of the experimental design as independent groups / measures.

Up to 2 marks for explanation of why this is a suitable design for this study.
Likely points: the participants can only be exposed to the person 'falling' once (1) as they will then have some understanding of what the study is trying to find out and their behaviour will be affected by this knowledge (lack of naivety) (1).

Maximum of 1 mark for generic explanations not linked explicitly to the study

(f) **[AO3 = 2]**

Up to 2 marks for an outline of the procedure of random sampling:

Possible answer:
Put the name of every first year student at the university into a hat (number every first year student)(1).
Draw out 40 names or numbers for the sample (use a random number table / computer program to generate a set of 40 numbers – this represents the sample) (1).

(g) **[AO3 = 2]**

One mark for an appropriate suggestion.
Likely answer: Bar chart / bar graph, frequency graph. Accept pie chart.

One mark for justification of the suggestion.
Likely point: the display clearly demonstrates the numerical difference between the two conditions. Credit discrete data / categorical data.

If more than one graphical display is listed – mark the first answer.

(h) **[AO3 = 4]**

For each of the TWO points, allow one mark for identification of the point and one further mark for discussion of why that point should be raised when the participants are debriefed. Max 2 marks for each point.

For full marks at least one of these points must focus on imparting the aim / purpose of the study or detail of the two conditions.

One further mark for discussion of the chosen point.

Maximum 2 marks if only ethical issue(s) discussed. These 2 marks can only be given for **one** ethical issue (1) that is appropriately discussed (1).

Likely points: explanation of the aim of the study; explanation of the use of independent groups; ethical issues, (these include deception, protection from harm / treating participants with respect; right to withdraw data from the study.)

Verbatim answers are likely to be credited with a maximum of two marks as there would be no discussion / explanation.

33

(a) **AO2 / AO3 = 3**

A suitable non-directional hypothesis would be ‘There is a correlation (relationship) between pupils’ scores on a test of mathematical ability and pupils’ scores on a test of musical ability’.

3 marks for a fully operationalised non-directional hypothesis.
2 marks for non-directional hypothesis that identifies both variables but does not operationalise them.
1 mark for non-directional hypothesis where the variables are not identified.
No marks for a null or directional hypothesis or one referring to association or difference.

(b) **AO2 / AO3 = 3**

The main issue is that the teacher has made up her own test:

- This involved subjective judgement on the part of the teacher who rates the students' musical ability. Her judgement may not reflect real differences in musical ability and is likely to differ from other people's judgement and / or any absolute criteria for tunefulness.
- Lack of reliability in rating musical ability would compromise the validity of the measure.
- As the students can choose the song they will sing, the rating of ability could reflect the teacher liking / dislike of the song rather than the student's ability.
- The rating may be invalid as the students selected songs which varied in difficulty so the tunefulness reflected the difficulty of the song not the students' ability.
- Operationalising musical ability as tuneful singing is a very narrow measure. Someone can have musical ability such as playing an instrument which would not be reflected by this measure.

1 mark for identifying an appropriate reason.
2 further marks for elaboration, explanation of why it is a problem, how it might affect the result or for further reason(s).
Note that 3 marks can be awarded for one reason elaborated or more than one reason in less detail.

(c) **AO2 / AO3 = 3**

In the case of the maths test candidates could refer to split half or test retest as methods of checking reliability. They could also refer to checking the reliability of scoring by using two separate markers for the test and comparing the scores. Credit any other appropriate suggestion.

1 mark for identifying an appropriate method or a brief explanation eg 'repeat the maths test'.
2 further marks for appropriate elaboration.

(d) **AO2 / AO3 = 2**

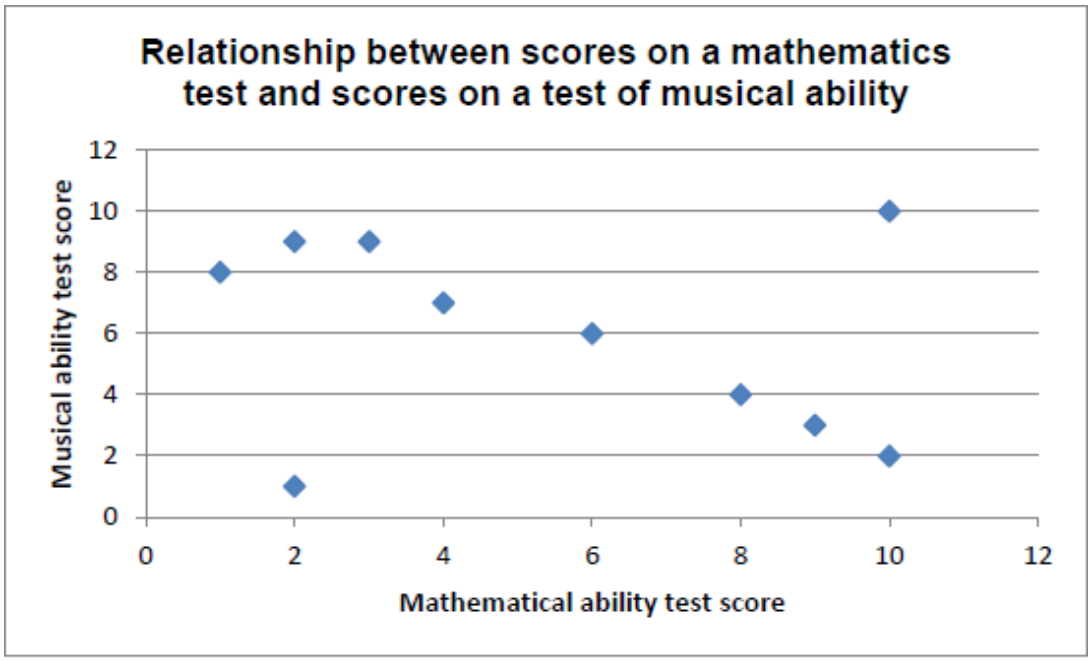
The teacher chose to use a random sample because it would probably be more representative of the whole GCSE group than if she had used an opportunity or volunteer sample. Candidates could also say that she had ready access to her target population making it convenient for her to select a random sample.

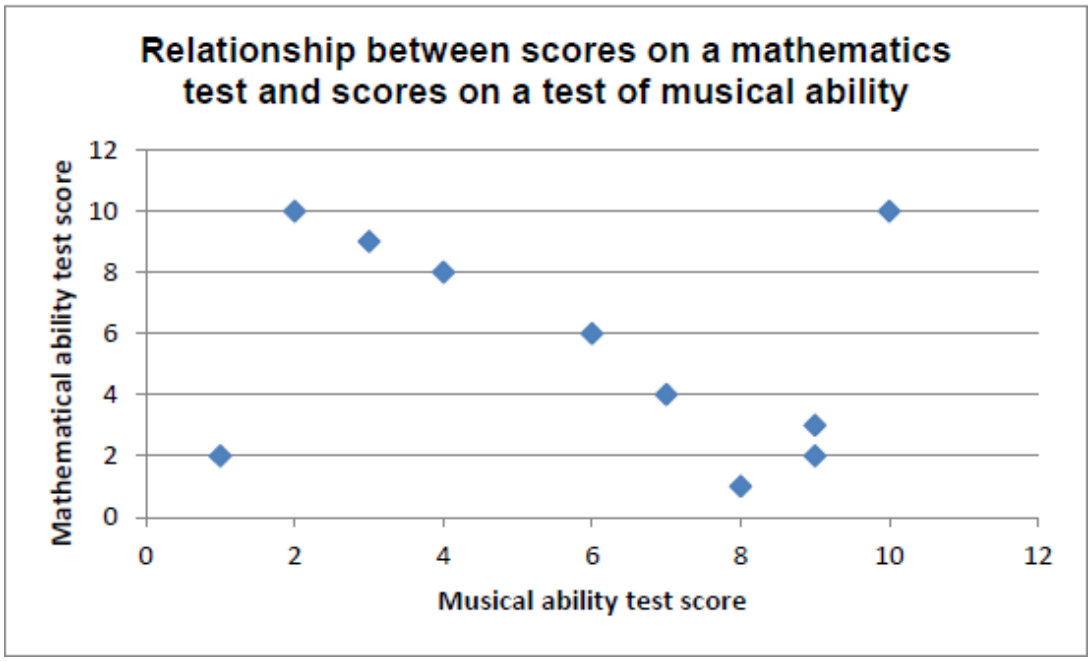
No credit for definition of a random sample.
1 mark for a brief or muddled reason (it is not biased).
2 marks for a reason that clearly points to an advantage of random sampling. This could be achieved through a comparison with another method (it is less likely to be biased than a volunteer sample).

(e) **AO2 / AO3 = 3**

Credit should only be awarded for scattergraphs. Other graphs gain 0 marks.

1 mark for appropriately plotted scores.
1 mark for an appropriate title.
1 mark for correctly labelled axes.





(f) **AO2 / AO3 = 3**

Up to 3 marks for a discussion of the relationship between mathematical and musical ability. Likely points include:

- The graph seems to show a negative correlation between mathematical and musical ability.
- This means that high scorers in mathematical ability tend to achieve low scores on musical ability and vice versa.
- The presence of two strong outliers, means that the actual correlation is very weak and closer to zero.
- Comment on the small sample size which limits the conclusions that could be drawn.
- Credit can be achieved for plausible interpretations of the strength of the correlation which are justified (ie looks moderate to strong or the outliers make it weak in practice) or those based on rough calculations (around -0.2).

1 mark for a very brief answer eg negative correlation or zero correlation.
2 further marks for elaboration/discussion this could be focused on one point in detail or several points in less detail.

(g) **AO2 / AO3 = 10**

In this question, candidates are asked to design a study to test if there is a difference between left-handed and right-handed students in musical ability.

Design – 1 mark

- Award 1 mark for identification of an appropriate design (independent measures or matched pairs).

Sampling – 2 marks

- Award 1 mark for explaining an appropriate sampling method and 1 further mark for justifying why this method would be appropriate. As left-handed people are less common in the population than right-handed people this needs to be addressed in the sampling method.

Procedure and assessment of musical ability – 4 marks

Award 1 mark for procedure, 1 mark for assessing musical ability and two further marks for elaboration of either or both of these.

- Description of the procedure eg each participant will be given a standardised musical ability test, participants should be tested within a controlled environment, with minimal noise or distraction.

- Students are required to suggest a plausible alternative method of assessing musical ability to the one in the stem (eg singing a short, novel phrase played on the piano). Further credit could be given for stating that the test should be identical for all students or for explaining how it will be assessed.

Debrief – 3 marks

- Award up to 3 marks for writing a debrief. This could include the aim of the study, thanking participants for taking part, asking if they have any questions, relevant ethical considerations.

- If this is not suitable to be read out to participants, maximum 1 mark.

(h) **AO2 / AO3 = 3**

Award 1 mark for a clear table appropriate for the study described in (h).

Musical ability scores:

Participant number	Left handed	Right handed
1		
2		
3		

Award 1 mark for the identification of an appropriate statistical test for the proposed design.
Award 1 mark for one correct justification eg a test of difference, at least ordinal level data.

34

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **[AO3 = 2]**

One mark for an appropriate conclusion. One further mark for explanation / justification of the conclusion.

Possible answer: Participants in Group B were influenced by / conformed to / went along with / were led by / affected by the other estimates they had seen (1 mark for conclusion) because the median estimate for Group B was closer to the scores on the list (1).
Accept 'higher than' Group A.

(b) **[AO3 = 2]**

One mark for identification of the IV, ie whether participants saw 5 other supposed estimates or not

OR

whether participants wrote their estimates on a blank piece of paper or below 'other' estimates.

One mark for identification of the DV, ie the estimated weight of the cake. Accept 'estimate'.

(c) **[AO3 = 3]**

Up to 3 marks for an explanation of how stratified sampling is achieved. Answer may be expressed in terms of pupils from a secondary school.

One mark each for reference to the following points:

- identification of strata
- proportions to be worked out
- random selection (within the strata)

(d) (i) **[AO3 = 2]**

Up to 2 marks for an explanation of how the psychologist could have allocated the participants randomly to the two groups.

Possible answer: Each participant in the sample could be given a number which is put into a hat. The first 50 numbers drawn out of the hat would be allocated to one of the groups.
Or
50 A's and 50 B's could be put in a hat and each participant draws out a letter. The letter designates the group.

Credit alternative method

(ii) **[AO3 = 2]**

One mark for an appropriate reason. One further mark for an explanation of that reason. Random allocation will reduce the likelihood of individual differences affecting the outcome.

Possible answer: Random allocation reduces researcher bias (1) and makes it more likely that the manipulation of the IV caused the results (1).

Accept increasing validity but do not accept reference to increasing reliability.

(e) **[AO3 = 2]**

One mark for a plausible reason.

Likely answers: to prevent the participants guessing aim of the study / naivety; to prevent order effects.
Credit reference to the illogical nature of using the same participants in both groups in this study.

One mark for relating the reason to the study.

(f) **[AO3 = 3]**

One mark for knowledge of an appropriate ethical issue.

Likely answers: deception; consent; confidentiality, etc.
One mark for elaboration of the ethical issue or why the issue is important.One mark for relating the issue explicitly to the study.

Note: INFORMED consent is only to be given **any** credit if candidate explains how it would be totally inappropriate in this study. Such a response could achieve full marks if candidate goes on to explain how use of debrief would be a way of compensating for lack of information beforehand.

(g) (i) **[AO3 = 2]**

Up to 2 marks for an outline depending on detail.
Likely answers: a structured interview (1) in which the questions asked are prepared and in a set order. (1)
An unstructured interview (1) in which the researcher has an aim but no predetermined questions. (1)

Accept other types of interview, eg face-to-face, group, one-to-one, telephone.

(ii) **[AO3 = 2]**

Up to 2 marks for a limitation of the chosen interview method that is elaborated.

Structured interview: possible answers – no deviation from predetermined questions is allowed (1) this means that an unexpected response cannot be pursued for more detail. (1)
Or, structured interviews are more formal (1) and this might make it a more uncomfortable experience for the interviewee. (1)

Unstructured interview: possible answers – the data are difficult to analyse (1) as all the responses are individual and therefore hard to collate / summarise. (1)
Or, unstructured interviews may produce irrelevant information (1) because it is easy for the interviewer and / or interviewee to go off the focus or point of the investigation (1).

Accept other valid responses eg comparison with other types of interview.

35

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

[AO3 = 2]

One mark for knowledge of what is meant by quantitative data: data in numerical form; data representing how much there is of something.
The second mark is for an example of a specific behaviour: such as Pavlov - a measure of the amount of saliva produced by the dog; or Skinner, the time taken to respond to a stimulus (to peck a button / press a lever / jump over a barrier / reach a goal box etc) or number of responses to a stimulus (pecks, lever presses in a given time period).

36

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **[AO3 = 2]**

One mark for an explanation.
Inform researcher of spread of scores.
One mark for link to the study.
The programme did not seem to affect people in each condition differentially as spread of scores in each condition is similar / large.
The offenders' anger behaviour showed a wide variation both before and after the programme.
Accept spread is greater in the after condition than before.

(b) **[AO3 = 2]**

One mark for statement that the result is significant.
One mark for rationale: the calculated value of *T* is 22 and is less than the critical value of 25 (at the 0.05 level of significance).
Can accept not significant at 0.02 level.

(c) **[AO3 = 3]**

Maximum of 3 marks can be obtained from: one mark for each reason or two marks for each reason with explanation.

- Reason – ordinal level of measurement / non-parametric
  Explanation – self reports / estimated scores of anger; data might not be normally distributed
- Reason – design of the study is related / repeated measure
  Explanation – same people before and after
- Reason – research involving differences between the 2 sets of scores
  Explanation – anger scores before and after

(d) **[AO3 = 4]**

Up to two marks for each reason and explanation. Likely points: as an aid to memory; a qualitative measure to supplement the quantitative data collected; to check the validity of the questionnaire; part of the therapeutic process / increased self-awareness.
Accept other valid reasons.
One mark for an appropriate reason and one mark for an explanation of the reason.

(e) **[AO3 = 3]**

Up to three marks for outlining how a control group could have improved this study: it is not possible to tell if the programme has caused the improvement; improvement could have been due to the programme or due to spontaneous recovery; by using a control group would make it more scientific; scores can be taken at the same times (pre-programme / post-programme) as in an experimental condition; post programme differences between the groups can inform if programme is effective; can be more confident in inferring cause and effect .

Allow a maximum of one mark for the general purpose of a control condition: acts as comparison / baseline measure where nothing changes

Accept ‘scientific’ and ‘validity’ only if justified.

(f) **[AO3 = 5]**

Up to 5 marks for addressing both reliability and validity. One of these marks must be for reference to statistical testing.

A maximum of three marks if only one of these is addressed.

One mark for identifying a type of validity: face validity; concurrent validity. Accept also content validity; criterion validity; predictive validity.
Only accept identification mark if it matches how the assessment would be carried out.

One mark for outlining how the assessment would be carried out. For example in concurrent validity, scores from the questionnaire are compared with those from an established but similar questionnaire known to have good validity to see if the results are similar.

One mark for the statistical testing (checking for a positive correlation / applying Spearman's rank order correlation).

One mark for identifying a way of assessing reliability. Most likely is test-retest but accept split-half reliability and item analysis.
Only accept identification mark if it matches how the assessment would be carried out.
Do not accept inter-rated / inter-observer reliability.

One mark for outlining how the assessment would be carried out. For example in test-retest, the same group of young offenders would be tested using the same questionnaire at a later date to see if the findings remained consistent.

One mark for the statistical testing (checking for a positive correlation / applying Spearman's rank order correlation).

The one mark for statistical testing can only be credited once.

37

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 4**

The independent variable is age at which the children started day care, or whether the children started day care before or after age 2.
1 mark for age.
2 marks where the IV is operationalised as above.
The dependent variable is aggression score as assessed by the researcher.
1 mark for aggression.
2 marks for aggression score, measure of aggression, level of aggression.

If either IV or DV is identified but not entirely clear – 1 mark.

(b) **AO3 = 2**

1 mark for pointing out the difference is small or the age of starting day care didn't make much difference to mean aggression score.
1 mark for stating the children who started day care before age 2 had a higher mean score than those who started after the age of 2.
1 mark for saying both groups mean score was approximately half the maximum.
Maximum 2 marks.
Eg "The mean aggression score was slightly higher for children who started day care before the age of 2." 2 marks
Candidates can gain 2 marks by two brief points or one point elaborated.

(c) **AO3 = 1**

1 mark for: range
semi-interquartile range
interquartile range
standard deviation or
variance.

Do not credit: deviation or interquartile.

(d) **AO3 = 3**

0 marks if the candidate has not drawn a bar chart.
1 mark if the candidate has drawn a bar chart but the scale is clearly inappropriate and not correctly labelled.
2 marks if the candidate has drawn a correctly labelled bar chart but the scale is clearly inappropriate; or the candidate has drawn an appropriate bar chart but the labelling is incomplete eg vertical axis refers to mean score or aggression score rather than mean aggression score.
For full marks the bar chart should indicate a small difference. Both bars and the vertical axis should be correctly labelled.

(e) **AO3 = 2**

0 marks for a non-directional hypothesis or a correlational hypothesis.
1 mark if either variable is not operationalised eg day care makes children more aggressive or the answer is slightly muddled.
2 marks for eg Children who start day care before age 2 have higher aggression scores than those who start day care after age 2, or Children who start day care at a younger age will be assessed as more aggressive than children who start day care at an older age.
Credit a directional hypothesis in the opposite direction.

38

AO3 = 4

The graph shows a strong negative correlation between score on depression scale and weeks of treatment. The more treatments the lower the depression. However, there also seems to be a plateau, where between 2-3.5 weeks there is very little change in depression.

1 mark for each of the following:

- Strength (it is a moderately strong / strong correlation)
- Direction (negative)
- Description of the relationship (the longer the treatment the lower the depression score)
- Indication of plateau / change in direction.

39

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO2 / AO3 = 1**

One mark for an accurate reason: The decision to use a directional hypothesis was based on findings of previous research which pointed to an effect in a particular direction ie memory is poorer with age.

(b) **AO2 / AO3 = 3**

A suitable directional hypothesis would be 'There is a negative correlation (relationship) between age and recall accuracy rating'.

- 3 marks for a fully operationalised hypothesis as above
- 2 marks for a directional correlational hypothesis that identifies age and recall as the two variables but is not fully operationalised
- 1 mark for a directional hypothesis where the variables are not identified (‘there will be a negative correlation’) or where the hypothesis lacks clarity.

Award zero marks for a non-directional or null hypothesis or any hypothesis predicting a difference or association.

(c) **AO1 = 1**

One mark for an accurate definition: The extent to which results or procedures are consistent or simply 'consistency'.

(d) **AO2 / AO3 = 3**

One mark for identification of a way of ensuring reliability. By far the most likely answer here is inter-rater reliability.

Two marks for some explanation/elaboration: using two separate psychologists and comparing them.

Three marks for an accurate and clear explanation: using two separate psychologists to rate the typed accounts for accuracy and comparing / correlating the ratings to see how similar they are.

Candidates could make a case for test retest which would involve the same psychologist re-examining the ratings after a period of time.

(e) **AO2 / AO3 = 2**

Award one mark for correct identification of one of each type of data.

- Qualitative data: the patient's responses, the typed accounts, the doctor's notes.
- Quantitative data: the ratings of recall accuracy on a scale of 1 – 10, ages of patients.

(f) **AO2 / AO3 = 2**

One mark for each accurate reason given:

- the researchers are testing for a correlation or a relationship between two variables.
- the data is to be treated as ordinal because the recall accuracy is in the form of ratings.

(g) **AO2 / AO3 = 2**

One mark for stating that the result is significant.

Second mark for explaining that -.52 exceeds .306 ($p \leq 0.05$, n=30 for a one-tailed test).

(h) **AO1 = 2**

One mark for a brief or muddled answer which hints at rejecting HO / accepting the H1 in error.

Two marks for explaining the term: where the researcher rejects the null hypothesis (or accepts the research / alternative hypothesis) when in fact the effect is due to chance – often referred to as an error of optimists.

(i) **AO2 / AO3 = 3**

3 marks for a clear explanation which is based on comparison of the calculated value of rs with the critical value at the 0.01 level of significance and indicates competence in use of statistical tables as follows:

- A Type 1 error is unlikely because the calculated value of rs (-0.52) exceeds the critical table value at both the 0.05 and 0.01 level for a one-tailed test.
- The chance of a Type1 error occurring is therefore less than 1%.
- This means that the researchers can be 99% certain that the results obtained are not due to chance.

Award one mark for a brief explanation (it is significant at 0.01).
Award two further marks for an explanation which refers to two of the above points.

Award one mark for stating that the obtained value (-0.52) exceeds the critical value (0.306) by a reasonable margin.

40

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO2 / AO3 = 4**

Up to four marks are awarded for discussing
advantage(s) of using a laboratory experiment in this case.

The most likely advantages of the laboratory setting in this experiment include:

- Control over extraneous variables. The lab setting meant that extraneous variables could be minimised. In this experiment, outside factors such as waiting time, noise and stress (which would be difficult to control in a field experiment) were removed.
- Ethical issues. In this case, the testing of memory in a field experiment would have involved ethical issues including deception of patients or withholding of information.

Candidates may also refer to other advantages of the laboratory setting such as replicability. These can receive full credit if they contextualised within the scenario.

Award four marks for an answer which provides accurate and detailed discussion of relevant advantage(s) with a clear link to the scenario.

Award two or three marks for an answer which includes discussion of relevant advantage(s), with some reference to the scenario.

Award one mark only for an answer which merely identifies one or more relevant advantage(s) of a laboratory experiment appropriate to this scenario.

Advantages of laboratory experiments which are not relevant to this study cannot gain any credit eg use of technical equipment.

(b) **AO2 / AO3 = 2**

- One mark for correctly identifying the Mann Whitney U test or independent t test.
- One mark awarded for an accurate reason for choice (for Mann Whitney these are: test of difference, independent groups design / independent data or data which can be treated at an ordinal level).

41

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **[AO3 = 2]**

For two marks, a clear, testable statement containing both conditions of the IV and an operationalised DV.

For one mark, a statement containing both conditions of the IV and a DV.

No marks for expressions of aim, questions, correlational hypotheses or statements without two conditions.

Possible answers:

Directional: Participants will successfully shoot more netballs through the hoop in the presence of an audience than in the absence of an audience.

Note: Also accept a directional hypothesis opposite to the above.

Non-directional: There will be a difference in the number of netballs successfully shot through the hoop for participants who perform in the presence of an audience and participants who perform in the absence of an audience.

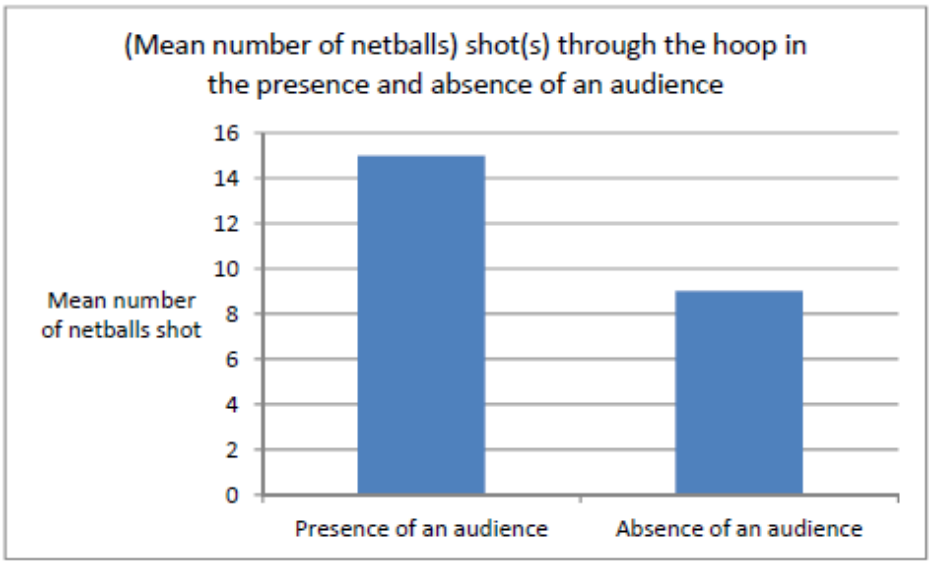
Credit null hypothesis.

(b) **[AO3 = 2]**

One mark for an appropriate conclusion eg the presence of an audience has a positive effect on the performance of the task (or similar response) (AO3, 1).

One mark for the justification of the response eg the mean number of netballs successfully shot through the hoop is higher when there is an audience than when there is no audience (or similar response) (AO3, 1).

(c) **[AO3 = 3]**



To gain the maximum three marks, candidates must provide the following:

- An appropriate title for the graphical display
- Appropriate axes and labelled eg presence / absence of an audience
- Plotting of data using a sensible scale / no penalty for joined bars.

Line graphs can be credited for title and axes only.

(d) **[AO3 = 2]**

One mark for a relevant strength.
One mark for how / why it is a strength.

Likely strengths: more likely to be representative of the target population; able to generalise to the target population; to exclude researcher bias etc.

(e) (i) **[AO3 = 2]**

One mark for a relevant limitation of an independent groups design.
One mark for how / why in relation to this study eg individual differences in ability / height etc.

(ii) **[AO3 = 2]**

Up to two marks for an appropriate explanation of how the problem may have been overcome.

Possible answer: Using a repeated measures design (1) plus explanation of how this could be done or why this would improve the study.

Credit answers that refer to matched pairs / need for random allocation.

Can credit (ii) in respect of incorrect answer to (i).

(f) (i) **[AO3 = 1]**

One mark for correct knowledge of the term.

Possible answer: A variable other than the independent variable or an additional / or another variable that might have an effect on the dependent variable, only accept the word ‘results’ for DV (1).

(ii) **[AO3 = 2]**

One mark for stating that if EVs are not controlled for, then the results may be confounded (1) the researcher does not know what is causing the effect (1) or other suitable expansion eg effect on reliability or validity.

Do not accept - results will not be accurate.

Credit answers that refer to the study by way of illustration.

(g) **[AO3 = 4]**

Instruction must be written verbatim for more than 1 mark.

Essential points
- reference to presence of audience
- reference to shooting (hoops) throwing (hoops)

Optional
- where to stand
- ethics
- introduction of self

4 marks	Both essential and at least one optional point addressed clearly such that completion of the task in the experimental condition would be easily possible. Information should be clear, relevant, sensible and logically structured. Must be verbatim.
3 marks	Both essential points are addressed such that completion of the task in the experimental condition would be relatively easy. There may be deficiencies in clarity, some irrelevance, illogical sequencing or inappropriate content. Must be verbatim.
2 marks	Any two points are addressed. There may be omissions / irrelevancies / muddle such that completion of the task would be very difficult. Must be verbatim.
1 marks	There must be at least one relevant point (optional or essential). Information may be unclear / inappropriate / irrelevant / muddled such that completion of the task would be very difficult.
0 marks	No relevant information. Completion of the task would not be possible.

NB 2 - 4 marks = Verbatim Instructions

42

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **[AO1 = 2]**

Up to 2 marks for description of both obsessions – recurrent / persistent thoughts / ideas / images / impulses and compulsions – repetitive behaviours / ritual acts / behaviour that reduces anxiety.
Accept physiological symptoms of anxiety.

(b) **[AO3 = 2]**

1 mark for naming repeated measures design.
1 further mark for an elaboration of repeated measures design.
Possible answers:
Repeated measures design means that the same participants are used in both conditions of the study.
If the answer is related to the study described: This means that the children whose anxiety ratings are taken in the before therapy condition are the same children as those who provide the anxiety ratings for the after therapy condition.

(c) **[AO3 = 2]**

Up to 2 marks for an explanation of one advantage of using repeated measures design.
The advantage of repeated measures design (in this study) is that there will be no participant variables (1) so any differences in performance (the median anxiety ratings before and after therapy) are more likely to be due to the manipulated variables / variables under test (therapy programme) than other variables so the validity of the results is increased.
Answers based on the idea that fewer participants are required than in other designs are relevant.

Note:
If the answer to (b) is incorrect **full credit** can be awarded for (c) if the advantage given matches the experimental design identified in the answer to (b).

43

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **[AO3 = 2]**

1 mark for naming repeated measures design.
1 further mark for an elaboration of repeated measures design.
Possible answers:
Repeated measures design means that the same participants are used in both conditions of the study.
If the answer is related to the study described: This means that the children whose language interaction ratings are taken in the before therapy condition are the same children as those who provide the language interaction ratings for the after therapy condition.

(b) **[AO3 = 2]**

Up to 2 marks for a brief discussion of one advantage of using repeated measures design.
The advantage of repeated measures design (in this study) is that there will be no participant variables (1) so any differences in performance (the median verbal interaction ratings before and after therapy) are more likely to be due to the manipulated variables / variables under test (therapy programme) than other variables / so the validity of the results is increased (1).

Answers based on the idea that fewer participants are required than in other designs are relevant.

Note:
If the answer to (a) is incorrect **full credit** can be awarded for (b) if the advantage given matches the experimental design identified in the answer to (a).

(c) **[AO3 = 2]**

Up to 2 marks for a brief explanation of what the results indicate.
As the median verbal interaction ratings have increased (since the therapy programme) (1) that would seem to indicate the programme was effective (1).
Accept other plausible explanations of the difference in the medians.

44

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 2**

0 marks for a non-directional or correlational hypothesis.
The DV in this experiment is number of pictures correctly identified. Hypotheses where the DV is incorrect (eg number of participants who identified 10 pictures) = 0 marks.
1 mark if not fully operationalised, eg Participants who used the memory improvement strategy did better.
2 marks Participants who use a memory improvement strategy will correctly identify more pictures / objects than participants who do not use a memory improvement strategy.

(b) **AO3 = 1**

In an independent groups design a different group of participants is used in each condition.

1 mark = Different participants / people in each condition / group

Different / separate groups

Random allocation to groups / conditions.

0 marks = Different / separate conditions

Independent participants / people

Different experiments.

(c) **AO3 = 2 + 2**

Strength

The participants are naÏve because they take part in only one condition, so are less likely to show demand characteristics. There are no order effects such as practice or fatigue because participants take part in one condition.

Limitation

Individual variation, because there are different participants in each condition. More participants are needed than if a repeated measures design was used.

In each case 1 mark for very brief or slightly muddled strength or limitation, 2nd mark for appropriate elaboration of explanation.
0 marks for simply stating there are different participants in each condition.

(d) **AO3 = 3**

A pilot study is used to check aspects of the research such as whether participants understand standardised instructions, whether timings are adequate etc. It allows the researcher to try out the study with a few participants so that adjustments can be made before the main study, so saving time and money.

1 mark for a very brief explanation. Further marks for appropriate elaboration or identification of other reasons. Eg

To check it works. 1 mark
To check the standardised instructions are clear. 2 marks
To check the standardised instructions are clear enough for the participants to understand what they are required to do in the experiment. 3 marks

This question requires an explanation of why a pilot study was used, so a description of what a pilot study is (small scale study carried out before the main research) is not credit-worthy on its own. Candidates do not have to refer to a specific aspect of this experiment.

However, to gain full marks the answer must be relevant, so reference to checking sound levels for example would not be relevant.

(e) **AO3 = 2**

The standard deviation (spread of scores) is larger in the condition with the memory improvement strategy.

Candidates who use the word 'range' to suggest spread should be credited.

1 mark The standard deviation is larger in the condition with the memory improvement strategy.
2 marks The data shows the dispersion or spread of scores is larger in the condition with the memory improvement strategy.

45

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

AO3 = 4

- The two averages are very similar, suggesting that both therapies are as good as each other.
- The range of each group is very different. This suggests that for some people Therapy A was very beneficial, but for others it had little benefit. For Therapy B, there was a much smaller range, suggesting that it has a similar effect on improvement for all the patients.

4 marks Effective interpretation of data Effective interpretation that demonstrates sound knowledge of what the data shows, with reference to both the average and the range.
3 marks Reasonable interpretation of data Reasonable interpretation of what the data shows; or effective interpretation of either the average or the range.
2 marks Basic interpretation of data Basic interpretation of what the data shows.
1 mark Rudimentary interpretation of data Rudimentary, muddled interpretation of the data, demonstrating very limited knowledge. Or reference to, for example, larger range/higher average/similar range.
0 marks No creditworthy material.

46

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO2 / AO3 = 2**

'There is an association between birth order and choice of career' = 2 marks.
A directional hypothesis is not credit-worthy. Reference to a relationship / correlation cannot gain credit.

Although technically, the psychologist is looking for an association, candidates can gain credit for expressing the hypothesis in terms of a difference eg 'There is a difference in career choice depending on birth order.'

2 marks for a clear hypothesis, 1 mark for a hypothesis which lacks clarity.

(b) **AO2 / AO3 = 3**

One mark for identifying a sampling method.
One mark for a brief explanation of how to obtain the sample eg 'by advertising for lawyers or artists to come forward'. One further mark for elaboration eg 'by explaining that adverts would have to be placed in appropriate journals etc to attract these particular categories of participants'

Candidates who identify a sampling method but describe it incorrectly can be awarded 1 mark.

(c) **AO2 / AO3 = 12**

This is a 12 mark question but marks are allocated to each of the required components as follows:

- An appropriately labelled table = 2 marks

1 mark for a table that displays the data in the question.
2 marks for a table which includes data relating to non first-born children. Totals are not required for the 2 marks.

Table: Table to show the career choices of first born and non-first born children

	Artists	Lawyers	Totals
First born	20	35	55
Not first born	30	30	60
Totals	50	65	115

- a sketch of an appropriately labelled bar chart = 3 marks

For 3 marks, candidates need to display the data relating to first born and non-first born career choices on a bar chart. They should label axes correctly and draw the columns to the correct approximate height for a sketch.

For 2 marks, candidates display data as above but labels are missing or lack clarity. For 1 mark, candidates graph the data supplied in the question relating to first born career choices only.

NB Labelled axes but no bars = 0 marks.

- identification of appropriate statistical test and justification = 1 + 2 marks

An appropriate test here is the Chi-squared.
Justification gains 2 marks. Any two correct reasons from:

- data are independent
- level of measurement is nominal
- test of association / difference is required.
- identification of appropriate significance level = 1 mark.

The most likely significance level is 5% ($p \leq 0.05$). Candidates are not asked to justify their choice. Candidates who choose a more stringent level can achieve marks but they must then follow this through when they make their statement of results.

Candidates who erroneously report 0.05% or $p = 0.5$ do not gain credit for level of significance but can achieve credit for the statement of results in relation to the hypothesis.

- a statement of the results of the statistical test in relation to the hypothesis = 3 marks.

For full marks, the candidate should state whether or not they can accept the hypothesis (or they can express this in terms of rejecting the null hypothesis) at a given significance level and refer to the observed and critical values.

Where candidates choose an inappropriate value from the table but interpret that value correctly, they can gain 2 marks.

The critical value for x^2 (df =1 p 0.05 (two-tailed)) is 3.84. As the observed value of x^2 2.27 is less than the critical value, we cannot reject the null hypothesis. There is not an association between birth order and career choice.

47

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 1**

Independent groups. Accept “independent” but not “individual”. Unrelated and between groups / subjects are also credit-worthy.

(b) **AO3 = 2**

There may be differences between the groups as there are different participants in each condition.
More participants are required than for a repeated measures design.
1 mark for very brief or muddled answer eg individual differences or needs more participants.
2 marks as above.

(c) **AO3 = 2**

The graph shows the cognitive interview is effective. There were more correct statements made after the cognitive interview than after the traditional interview. There was no difference in the number of incorrect statements made.
1 mark for a very brief or muddled statement. Eg It shows it’s effective.
2 marks for some elaboration with reference to either correct statements, incorrect statements or both.

(d) **AO2 = 2**

The answer should clearly relate to one or more of the main techniques used in a cognitive interview:

Context reinstatement
Recall from a changed perspective
Recall in reverse order
Report everything.
The main additional features of the enhanced cognitive interview:
Encourage to relax and speak slowly
Offer comments to help clarify their statements
Adapt questions to suit the understanding of individual witnesses.

1 mark for simple identification of a relevant cognitive technique, or a very brief suggestion eg “tell me everything you saw.”
Further mark for application or elaboration. Eg “Please tell me everything you can remember about the robbery from the film you have just seen”, or “Report all the details you can remember even if they don’t seem very relevant.” 2 marks.
Answers which could not relate to the film or robbery should be restricted to a maximum of 1 mark.

(e) **AO3 = 4**

Investigator effects occur when the researcher’s behaviour or characteristics influence the research in some way. This includes the way the presence of the researcher may influence the participants.
0 marks for an incorrect answer or one which simply re-states the words eg “how the investigator effects research”.
1 mark very brief or muddled answer eg the researcher’s influence.
Maximum 2 marks for an accurate understanding of investigator effects but no reference to this experiment.
Candidates whose explanation of possible investigator effects in this experiment shows understanding of the term can be awarded 4 marks, even though there is no separate definition.
Eg The psychologist may expect the cognitive interview to be more effective than the standard interview. This may be unconsciously communicated to the participants though mannerisms such as smiling or frowning. (4 marks). There are different routes to 4 marks. Candidates could be stronger on definitions or stronger on application.

48

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **AO2/3 = 6**

Candidates need to show that they understand what differentiates opinion from scientific evidence. They could mention some of the following:

- The teacher has only experienced one school in a particular catchment area so she has only observed a very limited number of 5 year-olds (issues of sampling and replicability).
- She has found out that children do not eat anything nourishing simply by chatting with the children. She has no corroborative evidence from eg parents (issues of objectivity).
- She uses vague phrases such as ‘decent breakfast’ without being clear what this means (operationalisation).
- She has generated a theory and made predictions based on flimsy evidence.
- She has not used any scientific method to lead to her conclusions eg a carefully controlled experiment, survey or observation.
- She has drawn conclusions about the effects of breakfast without considering other variables which might affect reading skills and behaviour.

AO2/3 Mark bands
6 marks Effective Explanation demonstrates sound understanding. Application of knowledge is effective and shows coherent elaboration. Ideas are well structured and expressed clearly and fluently. Consistently effective use of psychological terminology.
5 – 4 marks Reasonable Explanation demonstrates reasonable understanding. Application of knowledge is reasonably effective and shows some elaboration. Most ideas appropriately structured and expressed clearly. Appropriate use of psychological terminology.
3 – 2 marks Basic Explanation demonstrates basic, superficial understanding. Application of knowledge is basic. Expression of ideas lacks clarity. Limited use of psychological terminology.
1 mark Rudimentary Explanation is rudimentary, demonstrating very limited understanding. Application of knowledge is weak, muddled and may be mainly irrelevant. Deficiency in expression of ideas results in confusion and ambiguity. The answer lacks structure, often merely a series of unconnected assertions.
0 marks No creditworthy material is presented.

(b) **AO2/3 = 3**

In a random sample, every member of the identified population has an equal chance of selection. In this case, the sampling frame consists of the 400 five-year-old children attending ten local schools. In order to obtain a simple random sample, the researcher has to have the names of all 400 children and can then select using one of the following methods:

- **Random number tables** – random number tables are specially devised to meet the following criteria – they contain strings of numbers where each number has the same chance of being selected as any other and each number is independent of the others. Such tables are readily available in statistics text books etc or can be generated by the researcher using a computer program. The researcher assigns each child a number between 1 and 400. He enters the table at any place (he could close his eyes and point with a finger at a starting place) and then moves either horizontally or vertically to produce a string of random numbers. He records all the numbers which correspond to the 400 children until he has recorded a total of 100 non-duplicated numbers.

- **Computer selection** – This is a similar method where the computer does most of the work. A computer can generate an endless string of random numbers ie numbers which have no relationship to one another as a sequence. Each child's name is given a number and a random number generator program is used to produce the required sample size (in this case 100 participants).

- **Manual selection** – Using this method, the researcher has to put each name (or an assigned number) on a separate slip of paper and place them all in a container. The researcher then selects 100 slips from the container. The following conditions could apply: the container should be shaken between each draw; the slips of paper should all be the same size and folded in the same way so that one does not feel different from another; the selector draws 'blind' ie cannot see the actual slips of paper.

A simple definition of a random sample is not credit-worthy since it offers no explanation.\ Similarly, answers which only use the word 'random' as an explanation cannot gain credit eg He would choose 100 participants at random from the children. One mark for a very basic method eg 'he would take names from a hat / computer / random number table'. Two further marks for elaboration.

(c) **AO2/3 = 3**

Candidates could focus on:

- Even if a sample is random, it may not be truly representative of the population eg might all come from the same school, or be all boys or all girls.

- Practical limitations eg the time and effort needed to write out 400 slips for the manual method.

- Difficulties of obtaining a truly random sample eg even if the sample is selected randomly, parents might refuse to allow their children to participate.

Any plausible and appropriate answers should be credited.
Up to 2 marks for identification of limitations. For 3 marks, one or more limitations must be explained in reasonable detail.

(d) **AO2/3 = 5**

There are two requirements to this question, **why** operationalising variables is important and **how** to operationalise the IV and the DV. If a candidate only explains **how / why**, maximum 3 marks.

The terms' 'decent breakfast' and 'reading skills' are vague. It is important from the point of view of objectivity, replicability and control of extraneous variables to make sure that these terms are closely defined.

Suggestions as to how the psychologist might do this could include the following:

The researcher needs to specify the exact composition of the breakfast (possibly by doing a pilot study or a literature search to identify the components of breakfast most likely to bring about behavioural / cognitive change). He probably also needs to specify the time at which it is consumed. The researcher needs to use a standard reading test which should be administered to all the participants at the beginning of the study and at the end – the dependent variable is likely to be the improvement score.

(e) **AO2/3 = 2**

Reasons are:

- a test of difference
- data (scores from a reading test) are at least ordinal, this would include ordinal / interval and / or ratio
- independent design.

One mark for each appropriate reason (maximum 2 marks).

(f) **AO2/3 = 2**

It would have been more difficult to use a matched-pairs design because of the number of relevant factors that would need to be controlled (eg gender, intelligence, parental attitudes / income / education, experience of pre-school education, number of siblings in family etc). There is a relatively small pool of children available (ie 400) and it could be difficult to match on all these factors. It would also be very time-consuming; it could be quite expensive to carry out the necessary surveys; it could be quite intrusive collecting such information from parents.

One mark for a basic explanation eg “Because it is difficult to match participants appropriately”.
One further mark for elaboration.

(g) **AO2/3 = 2**

One mark for identifying an appropriate issue and second mark for explaining how it could be addressed.

The most likely issue is confidentiality which could be addressed by ensuring that all scores on reading scales and all personal information are anonymised.
There are also ethical problems involved in denying the control group breakfast although it is more difficult for candidates to suggest a way of addressing this – perhaps to put only those children into the control group who do not eat breakfast anyway, restricting the study length to a short period of time and, if the study results support the hypothesis, to provide free breakfasts to these children for the rest of the academic year.
Parental consent is excluded because it is given in the stem so answers which offer this as an issue cannot gain credit.

(h) **AO3 = 12**

Design should be written clearly, succinctly and with sufficient detail for reasonable replicability.
Candidates will not receive credit for details included in the stimulus material. These include using a random sample of 100 children, gaining parental consent and selection of a Mann Whitney test.
To access marks in the top band candidates must state an appropriate hypothesis in which "playground behaviour" is clearly operationalised. The hypothesis could be directional or non-directional.
Given the wording of the question, a correlational hypothesis is not credit-worthy, however, the rest of the answer should be marked on its merits.
Likely aspects of "playground behaviour" would include activity levels, aggression, cooperative play etc.
An attempt to operationalise "a healthy breakfast" should be credited. However, candidates could assume this had already been done by the psychologist.

As this is an observational study any of the following, together with appropriate justification, would be credit-worthy:
Is the observation covert or overt?
Where are observers positioned? (In playground, watching from window?)
Is a video recording of the children used? How will this be analysed (eg content analysis)?
Do the students who observe know what the children ate for breakfast?
At what times of day does the observation take place?
How many children are observed? (Candidates could justify using a smaller sub-sample of the 100 children in the original study).
How long does each observation last?
Will the observers use a behavioural check list / tally chart?
Will more than one observer observe each child? If so, what training will be given and what checks for inter-observer reliability will take place?
Reference to time sampling or event sampling.

Credit any other relevant material.

AO2/3 Mark bands
12 – 10 marks Effective design A design that demonstrates sound knowledge and understanding of observational research. The selection and application of research techniques is appropriate. The description provides sufficient detail for most aspects of the study to be implemented. Some design decisions are justified effectively.
9 – 7 marks Reasonable design The design is reasonable and demonstrates knowledge and understanding of some aspects of observational research. The selection and application of research techniques is mostly appropriate. The description provides sufficient detail for some aspects of the study to be implemented. Some design decisions are justified.
6 – 4 marks Basic design The design is basic and demonstrates limited knowledge and understanding of aspects of observational research. The selection and application of research techniques are sometimes appropriate. Some basic design decisions/features of the study are described but there may be significant omissions, lack of clarity and possibly some implausible suggestions that severely limit implementation. Justifications of the design are limited.
3 – 1 marks Rudimentary design The design is rudimentary. Design decisions are muddled and or mostly inappropriate and are not justified. Description lacks clarity. The study could not be implemented.
0 marks No creditworthy material.

49

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 2**

0 marks for a directional hypothesis.
1 mark if not operationalised, eg “Age affects memory.” “There will be a difference between the two conditions.”
2 marks for eg “There will be a difference in how many numbers are correctly recalled by children and adults.” “Children and adults have different short-term memory spans.” Or “The capacity of short-term memory is different for adults and children.

Candidates may write a hypothesis where the IV is how many numbers are in the list and the DV is the number of participants who can recall that digit span.
Eg As numbers in the list increase, recall changes. 1 mark.
As the number of random numbers in the list increases, the number of participants recalling the list correctly, changes. 2 marks.

(b) **AO3 = 2**

The experiment uses adults in one condition and children in the other so it would be impossible to use a repeated design unless the researchers waited for the children to grow into adults.
Given the nature of this experiment, demand characteristics and order effects are inappropriate.
1 mark for a brief explanation. A further mark for elaboration. Eg Can compare the two different groups to see who is better. 0 marks (because this relates to all experimental designs).
They needed to have different people in each condition. 1 mark.
They needed to have different people in each condition based on age. 2 marks.
They needed to have children in one group and adults in the other. 2 marks.

(c) **AO3 = 2**

Children 6
Adults 7
1 mark for each correct answer.

(d) **AO3 = 3**

The frequency distribution shows that there is a difference in results between the two age groups.
Adults recalled more digits than children. However, the difference is small and some children recalled more digits than some adults. Candidates might refer to the modal scores being different while the range is the same.
Any credit-worthy material should be credited.
1 mark for a very brief answer eg identifying there is a difference between adults and children and / or adults score more than children. Further marks for more detail as above.

(e) **AO2 = 2**

Other research has suggested the capacity of short-term memory is 7 + / – 2. The results do support this as the range is from 5-9.
1 mark for a brief or muddled explanation eg capacity is 5-9 / other research has similar findings.
2nd mark for elaboration as above.
Candidates will be credited for reference to research such as Jacobs which found STM increases with age. However, reference to such research is not a requirement.

50

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO2 / 3 = 1**

1 mark for correct answer – directional (one-tailed is acceptable).

(b) **AO2 / 3 = 3**

1 mark for correctly stating that the result is significant.
2 further marks for an explanation: the calculated value of T = 53 which is less than the value of 60 where N = 20 and $p \leq 0.05$ for a one-tailed test.

If the candidate states that the result is not significant, no marks can be awarded.

51

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO2 / 3 = 4**

For any credit, candidates must sketch a scattergram.
For full marks, candidates should provide an appropriate title for the scattergram, label each of the axes appropriately and plot the data accurately on the scattergram.

Each of the examples below is a full mark answer because:

- it is clearly a sketch of a scattergram
- the data are appropriately plotted
- the labels of the axes and the title taken together show full understanding of the nature of the data.

(b) **AO2 / 3 = 4**

For full marks, candidates should give a reasonably detailed explanation eg she is concerned because the observers should both recognise the same types of verbal behaviour as aggressive and you would expect their tallies to be very similar. In this case, the observers disagree in every 10-minute time interval even though they are both watching the same child and should be using the same criteria. In some time slots, there is a really big difference in the number of acts.
This suggests that the observers have interpreted the criteria differently or that, at certain times, one observer was more vigilant then the other (4 marks).

1 mark – 'because the observers do not agree with each other'.
3 further marks for elaboration.
Candidates who simply describe what is meant by inter-rate reliability can gain no marks.

(c) **AO2 / 3 = 3**

1 mark for identifying the appropriate test – Spearman's Rho or Pearson's (with appropriate justification).
2 further marks for explaining why it is appropriate ie the psychologist is testing for a correlation and the data that can be treated as ordinal.
Candidates can gain no marks on this question if their choice of statistical test is inappropriate.

(d) **AO2 / 3 = 4**

1 mark for a very brief answer eg 'better training for the observers'
3 further marks for elaboration.

There is a breadth / depth trade-off here. Candidates can elaborate on one improvement eg explain how the training might be improved or outline several improvements in less detail eg establish clearer criteria for categorising verbal aggression, filming the child so that the observers can practise the categorisation.

52

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

AO3 = 2

This graph shows a fairly strong negative correlation between stress and white blood cell activity / the immune system. As the stress increases the immune functioning decreases. The following can all receive a mark: direction, strength, and a description of their relationship.

53

AO3 = 4

Strength: can study relationships between variables that occur naturally, eg stress from exams and students getting ill. Can measure things that cannot be measured experimentally. Can suggest trends that can lead to experiments.

Weakness: it is not possible to say that one thing causes another. Just because there is a correlation between stress and the immune system, it does not mean that stress directly caused the immune system to become less effective: there may be another variable connecting the two.

Any other appropriate answer can get credit.
For each, 1 mark for a brief outline of the strength / weakness and a further mark for elaboration.

54

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

AO3 = 4

Conclusions can include: there are two factors that influence conformity, the ambiguity of the task and the size of the majority. A large majority is most influential with an ambiguous task, but still exerts pressure even when the task is easy. However, a small majority has less effect and the type of task does not seem to be an important variable.

4 marks Accurate and reasonably detailed Accurate and reasonably detailed answer that demonstrates sound knowledge and understanding of what the bar chart shows about conformity. There is appropriate selection of material to address the question.
3 marks Less detail but generally accurate Less detailed but generally accurate answer that demonstrates knowledge and understanding. There is some evidence of material to address the question.
2 marks Basic Basic answer that demonstrates some relevant knowledge and understanding but lacks detail and may be muddled. There is little evidence of selection of material to address the question.
1 mark Very brief/flawed of inappropriate Very brief or flawed answer demonstrating very little knowledge. Selection and presentation of information is largely or wholly inappropriate.
0 marks No creditworthy material.

55

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

Although the essential content for this mark scheme remains the same, mark schemes for the new AQA Specification (Sept 2015 onwards) take a different format as follows:

- A single set of numbered levels (formerly bands) to cover all skills
- Content appears as a bulleted list
- No IDA expectation in A Level essays, however, credit for references to issues, debates and approaches where relevant.

(a) **AO2 / 3 = 2**

One mark for one brief finding and a further mark for appropriate elaboration or for two brief findings or one mark for a slightly muddled answer.
On average, the treatment group showed greater improvement after the treatment than the no-treatment group. The average improvement score for the no-treatment group was very low suggesting that the treatment gains for the treatment group were not simply a result of the passage of time.

There was some variation in both groups as shown by the ranges but it was wider in the treatment group. The low range in the no-treatment group suggests that most people in this group had similar low improvement scores.

(b) **AO1 = 1, AO2 / 3 = 3**

One mark for identification of a suitable test and 3 further marks for an appropriate justification.The specification only requires knowledge of non-parametric tests. However, if a candidate names an independent t-test and justifies its use, this is perfectly acceptable. It is likely that most candidates will identify a non-parametric test. The most appropriate test is the Mann-Whitney and the justifications for its use are:

- independent groups design
- at least ordinal data
- differences.

(c) **AO2 / 3 = 2**

One mark for correctly identifying the likelihood and one further mark for an appropriate explanation or one mark for a slightly muddled answer.

The likelihood of making a Type 1 error is 5%. A Type 1 error occurs when a researcher claims support for the research hypothesis with a significant statistical test, but in fact, the variations in the scores are due to chance variables. If the level of significance is set at 5%, there will always be a one in twenty chance or less that the results are due to chance rather than to the influence of the independent variable or some other factors.

(d) **AO2 / 3 = 4**

Two marks for each reason. One mark for a basic identification and one further mark for elaboration.

Possible reasons include:

Expectations – the patients might expect the treatment to do them some good and it becomes a self-fulfilling prophesy.

Biased sample – even though the participants were randomly assigned to groups, the treatment group might, by chance have included more people with milder symptoms that were more likely to respond to treatment.

Other support – we do not know what other support/ treatment that the participants might have had over the 8 week therapy period.

(e) **AO2 / 3 = 4**

Two marks for the advantage and two marks for the disadvantage. One mark for simply identifying an advantage / disadvantage and the further mark for elaboration in the context of the study. Answers which are not set in context cannot achieve full marks.

Advantage: Much quicker to administer and to score – could all have been given out at the same time whereas the therapist has to conduct 30 time-consuming interviews; cheaper than interviews, ie in terms of the therapist's time; people might be more comfortable, and, therefore, more honest, if they have to write responses rather than face an interviewer (could work the other way as well – see disadvantages).

Disadvantage: Self-report questionnaires might not yield as accurate data as an interview – questions can limit range of answers and there are no additional cues, eg body language, participants might be less honest on a questionnaire than in a face-to-face interview.

Marks can be awarded for any appropriate advantages / disadvantages.

(f) **AO2 / 3 = 5**

Candidates should demonstrate understanding of some of the requirements of a good consent form. For full marks, it should be succinct, clear and informative.

It is likely to include some of the following information: treatment programme that is noninvasive; requirement to be assessed on current level of functioning; use of a trained therapist to conduct interviews; duration of the programme; requirement for re-assessment at the end of the programme; random allocation to a treatment or no-treatment group.

It should show awareness of ethical considerations, eg

- no pressure to consent – it will not affect any other aspects of their treatment if they choose not to take part
- they can withdraw at any time
- they can withdraw their data from the study
- their data will be kept confidential and anonymous
- they should feel free to ask the researcher any questions at any time
- they will receive a full debrief at the end of the programme.

For full marks, candidates must include a range of both procedural and ethical points.

AO2 / 3 Mark Bands (5 marks)
5 marks Effective Consent form demonstrates sound knowledge and understanding of research ethics.
4 – 3 marks Reasonable Consent form demonstrates reasonable knowledge and understanding of research ethics.
2 marks Basic Consent form demonstrates basic, superficial knowledge and understanding of research ethics.
1 mark Rudimentary Consent form is rudimentary demonstrating very limited understanding of research ethics.
0 marks No creditworthy material is presented.

(g) **AO1 = 2, AO2 / 3 = 2**

AO1: One mark for brief description, eg ’consistency’ and one further mark for elaboration. Reliability refers to consistency over time. If a test, questionnaire, etc, is reliable, people tend to score the same on the test if they take it again soon afterwards.

AO2 / 3: One mark for a very brief answer, eg ‘do another test’ or ‘test them again’ or ‘use another interviewer to check’. Two marks for some elaboration.

Reliability could have been checked by administering a valid and reliable questionnaire to the participants as well as interviewing them and then comparing the scores on the two measures. If the interview score was reliable, there would be strong positive correlation between the scores.

The interviews could have been filmed and given to another trained therapist to assess. A strong correlation between the scores given by each therapist would demonstrate reliability.

(h) **AO2 / 3 = 10**

For full marks, the method section should be written clearly, succinctly and in such a way that the study would be replicable. It should be set out in a conventional reporting style, possibly under appropriate headings. Examiners should be mindful that there are now different, but equally acceptable reporting styles. For example, candidates should not be penalised for writing in the first person. The important factor here is whether the study could be replicated.

There should be reasonable detail with regard to:

- design
- participants
- materials
- procedures.

AO2 / 3 Mark Bands (10 marks)
10 – 9 marks Effective Effective method section that demonstrates sound knowledge and understanding of investigation design. The design decisions are appropriate and the description provides accurate detail of the design, participants, materials and procedure of the study. Effective and appropriate report style.
8 – 6 marks Reasonable The method section demonstrates reasonable knowledge and understanding of investigation design. The design decisions are generally appropriate and the description provides reasonable detail of the design, participants, materials and procedure of the study. Generally appropriate report style.
5 – 3 marks Basic The method section demonstrates basic knowledge and understanding of investigation design. Some aspects of the design are appropriate. The description provides basic detail of some features of the study or rudimentary outline of the main features. Expression lacks clarity.
2 – 1 mark Rudimentary The method section demonstrates rudimentary knowledge or understanding of research. The report is weak, muddled or incomplete. Deficiency in expression results in confusion and ambiguity.
0 marks No creditworthy material is presented.

56

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 2**

Identification of the mean or median.
There are no repeated scores in either list, so the mode would not be appropriate.
Justification for the mean could be that it used all of the available data, that it is a powerful / sensitive measure or that it is suitable for use with interval / ratio data.
Justification for using the median is that it is relatively unaffected by outlying scores.

(b) **AO3 = 2**

The specification names random, opportunity and volunteer sampling. Answers must relate to volunteer sampling which involves participants selecting themselves.

1 mark:
very brief suggestion, eg put up a notice.
2 marks:
some elaboration that could apply to the scenario, eg advertise on the staff room notice board, asking teachers to sign a list.

(c) **AO3 = 1**

Extraneous variables are anything other than the independent variable that could affect the dependent variable. In this study they could include participant differences, environmental variables such as temperature or noise, and experimenter variables including the way in which the research is conducted.

(d) **AO3 = 2**

The control must relate to the variable in (c).
1 mark for a brief suggestion. Second mark for some elaboration.
For example, control for participant differences by making sure both groups are similar (1 mark).
Control for participant differences by randomly assigning the participants to conditions (2 marks).

57

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

(a) **AO3 = 1**

Identification of a positive correlation, +, +ve.

(b) **AO3 = 4**

The strength and weakness must be appropriate for investigating day care.

1 mark for stating a relevant strength / weakness. A further mark for some elaboration which would apply to day care.

For example, a strength would be it is an ethical way of collecting data (1 mark) because there is no manipulation of time the child spends in day care (2 marks).
A weakness you can't infer cause and effect (1 mark) because you can't be sure that time in day care causes the child to be disobedient (2 marks).

58

(a) **AO3 = 3**

Candidates may point out that the % of secure attachment in all three countries is very similar, but that insecure attachments vary. Country one has the lowest % of insecure-avoidant but the highest of insecure resistant. Country three has the lowest % of insecure-resistant but the highest of insecure-avoidant.

One mark for a brief outline of one point. Two further marks for accurate elaboration of one point in detail or more than one point more briefly.

(b) **AO3 = 3**

Candidates may refer to limitations of the strange situation as a way of identifying attachment type. Alternatively they may focus on the differences in number of studies in each country.
They could also criticise the use of meta analysis.
One mark for a brief outline of a relevant criticism. Two further marks for elaboration.
For example, the findings for country two come from 18 different studies. We can't be sure that all of the studies were carried out in the same way (second mark). It is possible that the 'Strange Situation' or ways of categorising types of attachment were different in the different studies (third mark).
If candidates give more than one criticism, the best should be credited.