

Section A: Multiple Choice

Question	Answer	Guidance
1	B	Random
2	A	Replicability
3	B	0.04
4	D	Test-retest
5	A	Incorrectly accepting the null hypothesis
6	C	Go/No-Go task
7a	D	28
7b	A	6
7c	B	15
7d	B	Eyesight
7e	C	Mann-Whitney U test
8	A	Volume of grey matter in the anterior hippocampus
9	B	<<
10	B	Appendices
11	C	0.0061

Section B: Research design and response

Q12: Write a null hypothesis for this study. (3 marks)	
Marking Criteria	Guidance
3 marks: Correctly cited null hypothesis with both variables operationalised.	<p><u>Example answer:</u> There will be no significant relationship between how artistic a person is (measured by how many artworks they create in a typical year) and the number of tattoos they have on their body.</p> <p>Each variable must be operationalised to produce ordinal or interval data to be creditworthy.</p> <p>Zero marks for citing an alternative hypothesis or a null hypothesis for an experiment (no credit if any reference to difference/cause/effect).</p>
2 marks: Correctly cited null hypothesis with reference to both variables, but only one operationalised.	
1 mark: Correctly cited null hypothesis with reference to both variables, but neither operationalised.	
0 marks: No creditworthy response.	

Q13: Explain how you would use the correlation method to investigate if there is a relationship between how artistic a person is and the tattoos they have on their body. Justify your decisions as part of your explanation. You must refer to:

- The sampling technique you would use to obtain participants for this study
- How you would operationalise the variable 'how artistic a person is'
- How you would attempt to reduce the influence of one extraneous variable.

(12 marks)

Marking Criteria			Guidance
Level	AO2 – maximum of 6 marks How Required Features are addressed	AO3 – maximum of 6 marks Justification of decisions made	
Excellent 5-6 marks	All three Required Features are addressed accurately, in context, and with sufficient clarity to enable replication.	Accurate justification is provided in context for all three design decisions.	<p><u>Suggestions could include:</u></p> <p>RF1: Any relevant sampling technique: opportunity, self-selected, snowball, random.</p> <p>RF2: How artistic someone is could be operationalised by reference to (numerical) GCSE grade in an Art subject, by giving participants a task to do that measures their artistic ability, etc. This <u>must</u> produce data at ordinal level (or above).</p> <p>RF3: Extraneous variables could include skin conditions people might have (that prevent them from being able to have tattoos), disposable income (to be able to pay for tattoos), availability of tattoo parlours, age of participants (assuming different attitudes towards tattoos among people from different generations), etc.</p> <p>Other appropriate responses should be credited.</p>
Good 3-4 marks	Two of the Required Features are addressed accurately, in context, and with sufficient clarity to enable replication.	Accurate justification is provided in context for two of the design decisions.	
Limited 1-2 marks	One of more of the Required Features is addressed accurately and with sufficient clarity to enable replication.	Accurate justification is provided for one of the design decisions.	

Q14: Suggest two questions the psychologist could ask about tattoo choices in this second part of the investigation. One must be a closed question, and one must be an open question. (4 marks) [2+2]		
Marking Criteria (Closed Question)	Marking Criteria (Open Question)	Guidance
2 marks: Clear question in context, with relevant response categories.	2 marks: Clear question in context (should be no response categories).	<u>Example closed question:</u> Do you regret getting any of your tattoos done? Yes/No/Not sure
1 mark: Vague/unclear question in context, with relevant response categories.	1 mark: Vague/unclear question in context (should be no response categories).	
0 marks: No creditworthy response.	0 marks: No creditworthy response.	<u>Example closed question:</u> Why did you get your first tattoo done?

Q15: Identify and explain two actions the psychologist could take to ensure the reliability of this second part of the investigation. (6 marks) [3+3]	
Marking Criteria	Guidance
For each action:	Reference could be made to: Ensuring a standardised procedure that is replicable, asking multiple questions about the same construct, having a large sample size, etc.
3 marks: Relevant action identified, and clearly explained (in terms of how it would improve the reliability of this second part of the investigation) in context.	
2 marks: Relevant action identified, and attempted explanation (in terms of how it would improve the reliability of this second part of the investigation) in context.	

1 mark: Relevant action identified (whether in context or not).	NB. Context is required to access 2 marks or above for each point.
0 marks: No creditworthy response.	

Q16: Another psychologist read the report of this second investigation. He was interested in finding out about the impact of culture on tattoos. Explain one ethical consideration that could affect any research into this. (4 marks)	
Marking Criteria	Guidance
4 marks: Relevant ethical consideration explicitly identified and explained in detail in context.	<p><u>Example 4 mark answer:</u></p> <p>One ethical consideration that could affect research into the impact of culture on tattoos is protection from harm. For example, as part of their research into the impact of culture on tattoos, the psychologist could carry out a cross-cultural investigation, collecting data in different countries around the world about the types of tattoo that are popular in that country (e.g. in terms of design, colours, position on the body, etc.) and the reasons people give for why they get these tattoos done. Assuming this would involve carrying out interviews, participants may wonder why they are being asked about their tattoos, and they may worry that the researcher thinks there is something strange about them, particularly if he has travelled from another country to ask questions about their tattoos.</p>
3 marks: Relevant ethical consideration explicitly identified and explained in context, lacking some detail.	
2 marks: Relevant ethical consideration identified/implied and EITHER explained OR related to the context of the investigation.	
1 mark: Relevant ethical consideration identified/implied but NEITHER explained NOR related to the context of the investigation.	
0 marks: No creditworthy response.	

Q17a: You have carried out your own practical investigation using the observation method: Explain one strength of the sample of participants in your practical investigation. (3 marks)	
Marking Criteria	Guidance
3 marks: Relevant strength identified, and explained in detail in the context of a clearly described practical investigation that used the observation method.	<p><u>Example answer:</u> As part of my A-level course, I carried out an observation of how people behave on a bus, recording such behaviour as whether they chat with other people, look out of the window, read things on their mobile phone, etc. One strength of the sample of people I observed was that, as I carried out this observation in the afternoon, they seemed quite varied in age, from parents with young children up to older, retired people. This was good because it means that the conclusions I drew about how people behave on buses can be representative of a wide range of different ages.</p> <p>NB. Context is required to access 2 marks or above.</p>
2 marks: Relevant strength identified, and briefly explained in the context of a clearly described practical investigation that used the observation method.	
1 mark: Relevant strength identified (whether in context or not).	
0 marks: No creditworthy response.	

Q17b: You have carried out your own practical investigation using the observation method: Explain one weakness of the sample of participants in your practical investigation. (3 marks)	
Marking Criteria	Guidance
3 marks: Relevant weakness identified, and explained in detail in the context of a clearly described practical investigation that used the observation method.	<p><u>Example answer:</u> As part of my A-level course, I carried out an observation of how people behave on a bus, recording such behaviour as whether they chat with other people, look out of the window, read things on their mobile phone, etc. One weakness of the sample of people I observed was that, as I carried out this observation in the afternoon, there weren't very many people on the bus, and during my journey I was only able to observe the behaviour of 16</p>
2 marks: Relevant weakness identified, and briefly explained in the context of a clearly described practical investigation that used the observation method.	

<p>1 mark: Relevant weakness identified (whether in context or not).</p>	<p>passengers. This is a weakness of my sample because it means I have not got enough data to be able to draw reliable conclusions about how people behave on buses because my findings could have been skewed by anyone who behaved in an atypical way.</p> <p>NB. Context is required to access 2 marks or above.</p>
<p>0 marks: No creditworthy response.</p>	

Section C: Data analysis and interpretation

<p>Q18a: Calculate the percentage number of times the ambiguous image was identified as neither a crocodile nor a laptop computer. Show your workings. (2 marks)</p>	
<p>Marking Criteria</p>	<p>Guidance</p>
<p>2 marks: Accurate percentage calculated, with accurate workings.</p>	<p><u>Example 2 mark answer:</u></p>
<p>1 mark: EITHER accurate percentage calculated OR accurate workings.</p>	<p>$2 \div 20 = 0.1$ $0.1 \times 100 = 10$</p>
<p>0 marks: No creditworthy response.</p>	<p>Answer = 10%</p>

<p>Q18b: Sketch a fully labelled bar chart showing the data collected in this investigation. (4 marks)</p>									
<p>Marking Criteria [1 mark per feature]</p>	<p>Guidance</p>								
<p>1 mark: For including an appropriate title.</p>	<div data-bbox="1137 1102 2056 1581"> <p>A bar chart to show the frequency of the different ways an ambiguous image was perceived</p> <table border="1"> <caption>Data for Bar Chart</caption> <thead> <tr> <th>How image was perceived</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Crocodile</td> <td>9</td> </tr> <tr> <td>Laptop Computer</td> <td>9</td> </tr> <tr> <td>Neither crocodile or laptop computer</td> <td>2</td> </tr> </tbody> </table> </div>	How image was perceived	Frequency	Crocodile	9	Laptop Computer	9	Neither crocodile or laptop computer	2
How image was perceived		Frequency							
Crocodile	9								
Laptop Computer	9								
Neither crocodile or laptop computer	2								
<p>1 mark: For including appropriate labels on the X axis.</p>									

<p>1 mark: For including appropriate label on the Y axis.</p>	
<p>1 mark: For accurately plotted data (bars in correct proportions to data).</p>	

<p>Q18c: Outline one conclusion that can be drawn from the data collected in this investigation. (3 marks)</p>	
<p>Marking Criteria</p>	<p>Guidance</p>
<p>3 marks: Relevant conclusion stated, supported by reference to relevant findings, and plausible explanation given for the conclusion.</p>	<p><u>Example answer:</u> Participants were just as likely to see the ambiguous image as a crocodile as they were to see it as a laptop computer. Nine participants perceived it as a crocodile and nine perceived it as a laptop computer. In part, this could be because the image was in black-and-white, and this could have helped make it more ambiguous than if it had been in colour.</p>
<p>2 marks: Relevant conclusion stated, and EITHER supported by reference to relevant findings OR plausible explanation given for the conclusion.</p>	
<p>1 mark: Relevant conclusion stated, and NEITHER supported by reference to relevant findings NOR plausible explanation given for the conclusion.</p>	
<p>0 marks: No creditworthy response.</p>	

<p>Q19a: Calculate the ratio of the number of participants who perceived a crocodile in the first condition and the number who perceived a crocodile in the second condition. Express your answer in its simplest form. (2 marks)</p>	
<p>Marking Criteria</p>	<p>Guidance</p>
<p>2 marks: Accurate ratio identified AND simplified.</p>	<p>Accurate ratio = 15:5 Simplified ratio = 3:1</p>
<p>1 mark: EITHER accurate ratio identified OR simplified ratio only stated.</p>	
<p>0 marks: No creditworthy response.</p>	

Q19b: The psychologist used the Chi-square test to analyse the findings from the second stage of her investigation. Explain two reasons why this was the appropriate non-parametric inferential statistical test to use for this investigation. (4 marks) [2+2]	
Marking Criteria	Guidance
For each reason:	<p><u>Example 4 mark answer:</u></p> <p>Chi-square was used because the study had an independent measures design (participants were only in one condition – they saw five images of animals or electronic devices). It also collected nominal data (the frequency of participants perceiving the ambiguous image as either a crocodile or a laptop computer).</p>
2 marks: Accurate reference to the study using independent measures design/test of difference/nominal data, accurately explained in context.	
1 mark: Accurate reference to the study using independent measures design/test of difference/nominal data, but not explained in context.	
0 marks: No creditworthy response.	

Q19c: Calculate the degrees of freedom for use with the Chi-square test in this study. Show your workings. (2 marks)	
Marking Criteria	Guidance
2 marks: Accurate calculation of degrees of freedom, with accurate workings.	<u>Example 2 mark answer:</u>

1 mark: EITHER accurate calculation of degrees of freedom OR accurate workings.	$(2-1) \times (2-1) = 1$
0 marks: No creditworthy response.	

Q19d: The calculated Chi-square value was 3.80. Using the extract from the table of critical values presented below, explain whether the psychologist has found a significant difference or not at the following levels: 0.05 and 0.01 **(4 marks)**

Marking Criteria	Guidance
4 marks: Accurate explanation of significance in relation to both levels (0.05 and 0.01), with explanation in context.	<p><u>Example 4 mark answer:</u></p> <p>Results were significant at the 0.05 level because the calculated value of 3.80 was higher than the critical value at this level (2.71), and it needed to be equal to or higher than this critical value for the psychologist to find a significant difference in how many people saw the ambiguous image as either a crocodile or a laptop computer, depending on whether they saw the image after seeing images of either animals or electronic devices. However, results were not significant at the 0.01 level because the calculated value of 3.80 was not equal to or higher than the critical value at this level (5.41).</p> <p>Values for reference: Calculated value = 3.80 Critical value at 0.05 = 2.71 (significant as $3.80 > 2.71$) Critical value at 0.01 = 5.41 (not significant as $3.80 < 5.41$)</p>
3 marks: Accurate explanation of significance in relation to one of the levels with this explanation in context OR accurate explanation of significance in relation to both of the levels but neither explanation in context.	
2 marks: Accurate explanation of significance in relation to one of the levels but this explanation is not in context.	
1 mark: Explanation of significance that contains some accuracy for at least one of the levels but is not fully accurate (whether in context or not).	
0 marks: No creditworthy response.	

Q19e: Explain one way this investigation demonstrates scientific principles. (3 marks)	
Marking Criteria	Guidance
3 marks: Relevant scientific principle identified and explained in detail in the context of this investigation.	Appropriate scientific principles are as follows: <ul style="list-style-type: none"> ▪ The study of cause-and-effect ▪ Falsification ▪ Replicability ▪ Objectivity ▪ Hypothesis testing ▪ Manipulation of variables ▪ Control and standardisation ▪ Quantifiable measurement <p>NB. Context is required to access 2 marks or above.</p>
2 marks: Relevant scientific principle identified and explained in the context of this investigation.	
1 mark: Relevant scientific principle identified (whether in context or not).	
0 marks: No creditworthy response.	

Q19f: Evaluate two issues of validity in the second stage of this investigation. (6 marks)		
Level	Marking Criteria	Guidance
Good 5-6 marks	Clear evaluation of validity (strengths or weaknesses) with two or more well-explained points in context.	Relevant comments could relate to: <ul style="list-style-type: none"> ▪ Population validity ▪ Ecological validity

<p>Reasonable 3-4 marks</p>	<p>Evaluation of validity (strengths or weaknesses) with one or more point(s) made in context.</p>	<ul style="list-style-type: none"> ▪ Use of independent measures design (so no risk of order effects) ▪ Controls of extraneous variables ▪ Demand characteristics ▪ Possibility of participants in the second study talking with participants from the first study ▪ Participant variables ▪ The way in which the first part of the investigation had controlled for the ambiguous image resembling a crocodile more than a laptop computer, etc.
<p>Limited 1-2 marks</p>	<p>Attempt to evaluate validity whether in context or not.</p>	

Customer Testings