Surname	StemUp Model Solution	Centre Number	Candidate Number
First name(s)			2

GCE A LEVEL

1290U40-1

Z22-1290U40-1

WEDNESDAY, 8 JUNE 2022 – MORNING

PSYCHOLOGY – A2 unit 4
Applied Research Methods

1 hour 30 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**19**	
2.	**11**	
3.	**16**	
4.	**14**	
Total	**60**	

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ADDITIONAL MATERIALS

You may require a calculator and a ruler.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Additional space is provided for some questions within the booklet (if required). If further space is required for any question, you should use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the necessity for good English and orderly presentation in your answers.

Assessment will take into account the quality of written communication used in your answers.

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SECTION A – Personal investigations

You should answer **all** the questions in this section with reference to the personal investigations carried out in your study of psychology.

INVESTIGATION ONE:

An experiment on helping behaviour.

1. (a) (i) Explain how the independent variable was operationalised within your experiment. [2]

The IV was the appearance of the person needing help. It had two conditions: in condition A a female confederate wore a smart suit, in condition B the same confederate wore jeans and a scruffy t-shirt. In both she dropped a pile of books in front of a passer-by.

(ii) Explain why you chose to operationalise the independent variable in this way. [2]

This gave a clear distinction between the two conditions (smart vs casual), and using the same confederate and staged incident kept all else constant, so only appearance changed and I could test its effect on how many passers-by helped.

(b) (i) Explain how the dependent variable was operationalised within your experiment. [2]

The DV was helping behaviour: the number of passers-by who stopped and picked up at least one book within 10 seconds of the drop. There were 10 trials of 10 drops per condition, so each trial gave a score out of 10.

(ii) Explain why you chose to operationalise the dependent variable in this way. [2]

This let helping behaviour be quantified by counting the passers-by who stopped to help, giving objective numerical data. This allowed me to compare the two conditions and establish a cause and effect relationship between appearance and helping behaviour.

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(c) Identify **one** extraneous variable you considered before conducting your experiment and explain how you dealt with this. [3]

One extraneous variable was time of day: on a weekday morning people rushing to work would be less likely to stop and help whatever the confederate wore, affecting the DV for all participants.

I dealt with this by running both conditions on the same Saturday afternoon (1pm to 3pm) on the same street, when shoppers are less rushed, alternating conditions each trial, on a dry day so weather could not affect helping either.

(d) Justify how you analysed the data in your experiment. Your discussion should include your use of:

(i) graphical representations. [2]

I used a bar chart because the IV had two separate, discrete categories (smart clothes and casual clothes), so the bars do not touch. It showed the mean number of passers-by who stopped to help in each condition, making the difference easy to see.

(ii) descriptive statistics. [2]

I used the mean as the measure of central tendency because there were no extreme values in the numbers helping per trial, and it is the most sensitive measure as it uses every score, giving the mean number of people who helped in the smart and casual conditions.

(iii) inferential statistics. [4]

I used a Mann-Whitney U test because I was testing for a difference in helping behaviour between the two conditions (smart vs casual clothes), it was an independent groups design as different passers-by took part in each condition, and the data (number of people helping per trial) was at least ordinal. It was one-tailed at $p \leq 0.05$ as I predicted more help for the smart confederate.

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INVESTIGATION TWO:

An interview on the use of social media.

2. (a) Describe the features of the participants used in your interview. [2]

There were 10 participants, 5 male and 5 female, all aged 16 to 18. They were sixth form students at my school, chosen by opportunity sampling from those in the common room during a free period, and all used at least one social media app daily.

(b) Justify the way you assessed the reliability of your interview. [2]

I used inter-rater reliability: a second interviewer and I independently coded the recorded answers about social media use into the same categories (e.g. talking to friends, news). Over 80% agreement showed the interview data was coded consistently, so it was reliable.

(c) There are different types of interview, such as structured interviews and semi-structured interviews. Justify the type of interview used in your investigation. [2]

I used a semi-structured interview: every participant was asked the same core questions about their social media use, so answers could be compared, but I could ask follow-up questions. This was because I wanted rich, detailed qualitative data on why they use social media, letting participants fully expand on their answers.

(d) State **one** conclusion from your interview. [2]

I concluded that 16 to 18 year old students use social media mainly as a way of keeping in contact and interacting with their existing friends, rather than to meet new people or find information, suggesting that for this age group social media has become a main way of maintaining friendships alongside face-to-face interaction.

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(e) Discuss **one** improvement that could be made to your investigation. [3]

One improvement would be to change the sampling method. My opportunity sample of 10 sixth formers from one school was small and biased, as only students in the common room could be chosen and all were the same age and from the same area. The findings therefore lack population validity and cannot be generalised to other people's use of social media.

Instead I could use a stratified sample of 30 participants, dividing the population into subgroups by age (e.g. 16 to 18, 25 to 40, over 40) and gender in proportion, then randomly selecting from each subgroup. This would make the sample more representative, reduce researcher bias in choosing participants, and allow me to compare how different age groups use social media, so my conclusions would be more valid and generalisable.

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SECTION B – Application of research methods to novel scenarios

Answer **all** questions.

3. A psychology teacher predicted that giving students regular homework improved grades in GCSE exams. To test the hypothesis, she assigned students to one of two groups without their knowledge. One group of students was given homework three times a week. No homework was given to the second group of students. The exam grades of the two groups were compared and led to the conclusion that homework does have a positive effect on students' performance in exams.

(a) State and explain the experimental design used in this piece of research. [2]

An independent groups design was used, because two different groups of students took part in each condition: one group was given homework three times a week and the other group was given no homework, and their GCSE grades were compared.

(b) Describe an appropriate sampling method the teacher could have used for this research. [2]

She could use stratified sampling: list all the GCSE students in her school, divide them into subgroups in the same proportions as the year group, e.g. by sex and by predicted grade, then randomly select students from each subgroup (e.g. names from a hat) and randomly allocate them to the two groups.

(c) (i) Discuss **three** ethical issues that have arisen in this research. [2+2+2]

1. Valid consent: the students were assigned to the homework and no homework groups without their knowledge, so they did not know they were in an experiment and could not give informed consent. As GCSE students are likely to be under 16, parental consent was also needed but not obtained.

2. Deception: the students were deceived about the purpose of the homework (or lack of it), as they thought it was normal teaching rather than part of a study on exam grades, so they were also not told of their

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right to withdraw.

3. Risk of stress, anxiety and harm: the group given homework three times a week could feel overwhelmed and stressed by the workload, while the no homework group could be disadvantaged in a real GCSE exam that affects their future, causing anxiety if they find out the other group had extra preparation.

(ii) Explain how you would deal with the **three** ethical issues you have discussed in (c)(i). [2+2+2]

1. Valid consent: before the research the teacher should explain the aim of the study and what each group would involve to the students and, as they are under 16, to their parents, and gain full written informed consent from both. They should be told they have the right to withdraw at any time without any effect on their teaching.

2. Deception: at the end of the study the teacher should fully debrief all the students, explaining the true aim of the research, why they were placed in their group and what the findings were. They should be given the right to withdraw their grades from the study and the chance to ask questions.

3. Risk of stress and harm: the research should not be linked to the real GCSE exams; instead it should use low stakes class tests. After the study the no homework group should be given the same homework and revision support, so no student is disadvantaged, and a manageable amount of homework should be set, with students able to speak to a teacher if stressed.

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4. A Developmental Psychologist wanted to investigate infants' colour preferences. She collected an opportunity sample of five infants (one boy and four girls) in order to observe them playing with toys. Firstly, she gave the infants blue toys. Next, she gave them pink toys. Finally, she gave them green toys. She recorded the time each infant spent playing with toys of each colour before they looked bored. The results of the research can be seen below:

	Blue toys	**Pink toys**	**Green toys**
Mean time in minutes spent playing before the infants looked bored	5	3	1

(a) Using data from the above table state an appropriate conclusion for this piece of research. [2]

Infants showed a greater preference for blue toys than for pink and green toys. The mean time spent playing with blue toys before looking bored (5 minutes) was nearly double that for pink toys (3 minutes) and five times longer than for green toys (1 minute), so green toys were the least preferred.

(b) Identify the level of measurement of the data collected in this research. [1]

Ratio data.

(c) (i) Identify the experimental design of the above research. [1]

Repeated measures design.

(ii) Define the experimental design you identified in (c)(i). [2]

A repeated measures design is one where the same participants take part in all conditions of the IV. Here each of the five infants played with the blue toys, the pink toys and the green toys, so each infant's playing time was measured in every condition and the conditions were compared within the same participants.

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(d) The Developmental Psychologist asked a colleague to review this research. Discuss the improvements that could be suggested by the review. [8]

Firstly, the reviewer would suggest improving the sample. An opportunity sample of only five infants is very small and, with one boy and four girls, it is gender biased, so a preference for blue may only reflect these girls. A larger sample, e.g. 40 infants of the same age range with equal numbers of boys and girls, chosen by stratified sampling, would increase population validity and generalisability.

Secondly, the procedure had a fixed order: blue first, then pink, then green. Order effects such as fatigue or boredom mean the infants may have played for less time with the green toys simply because they were tired, which is a confounding variable. The reviewer would suggest counterbalancing, with infants given the three colours in different orders, and a rest between conditions.

Thirdly, 'looked bored' is subjective and not operationalised. The reviewer would suggest clear behavioural categories, e.g. the infant looks away from or puts down the toy for 10 seconds, and filming the sessions so a second observer could code them independently to check inter-rater reliability. The toys should also be identical apart from colour so that toy type does not affect playing time, and sessions should take place in the same controlled room.

Finally, only means were reported. Measures of dispersion (range or standard deviation) and an inferential test of difference would show whether the differences are significant. Parental consent and stopping if an infant is distressed would also be needed. Together these changes would make the conclusion about colour preference more valid and reliable.

END OF PAPER

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