

Past Paper 1 Q's with Research Methods

2017

1.

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

In condition 1: the confederates completed the questionnaire.

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

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

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

(a) Identify the type of data in this experiment. Explain your answer. **[2 marks]**

(b) Using your knowledge of social influence, explain the likely outcome of this experiment. **[3 marks]**

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

(c) Outline **one** way in which the researchers could have addressed this issue. **[4 marks]**

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

(d) Apart from reference to the level of measurement, give **two** reasons why the researchers used the chi-squared test. **[2 marks]**

The calculated value of chi-squared in the experiment is **3.97**

Table 1: Critical values for the chi-squared test

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

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

- (e)** With reference to the critical values in **Table 1**, explain whether or not the calculated value of chi-squared is significant at the 5% level.

[2 marks]

2018

2.

A researcher studying depression wanted to see whether or not there was a relationship between level of self-esteem and negative schema score. She constructed two questionnaires and asked ten people who had been diagnosed with depression to complete them.

One questionnaire measured the participant's level of self-esteem. A low score (out of 50) indicated low self-esteem.

The other questionnaire measured whether the participant showed evidence of negative schema. A low score (out of 50) indicated evidence of negative schema. The two sets of results for each participant are shown in the table below.

Table 1 Self-esteem score and negative schema score for each patient

Participant	1	2	3	4	5	6	7	8	9	10
Self-esteem score	8	9	9	11	13	17	18	18	20	22
Negative schema score	11	15	13	18	12	14	20	16	17	19

- (a)** The researcher analysed the data in **Table 1** using a Spearman's rho statistical test.

With reference to level of measurement, explain why Spearman's rho is an appropriate statistical test for this data.

[2 marks]

- (b)** Estimate the correlation coefficient most likely to result from analysis of the data in **Table 1**. Shade **one** box only.

The correlation coefficient would be approximately

+0.95

☐

+0.70

☐

+0.30

☐

+0.15

☐

[1 mark]

2019

3.

In 1987, a survey of 1000 young people found that 540 said they smoked cigarettes, whilst 460 said they did not. In 2017, a similar survey of another 1000 young people found that 125 said they smoked cigarettes, whilst 875 said they did not.

- (a)** Calculate the ratio of smokers to non-smokers in 2017. Give your answer in simplest form.

Show your workings.

[2 marks]

- (b)** Which statistical test should be used to calculate whether there is a significant difference in reported smoking behaviour between the two surveys? Give **three** reasons for your answer.

[4 marks]

A researcher wanted to investigate agoraphobia by studying Patient X. The researcher designed a questionnaire to find out about Patient X's experiences. However, a colleague suggested that the researcher might do better to conduct a case study.

- (c)** Explain **one or more** reasons why it might be better to conduct a case study than a questionnaire.

[4 marks]

2020

4.

A researcher investigated retrieval failure using an independent groups design.

In **Condition A**, 10 participants learnt 30 words and recalled them in the same room.

In **Condition B**, another 10 participants learnt the same 30 words in one room and recalled them in a different room.

The results for **Condition B** are shown below.

Table 1

Participant	1	2	3	4	5	6	7	8	9	10
Number of words recalled	9	11	8	28	14	13	9	15	10	12

The researcher decided to use the mean to analyse the results.

(a) State **one** advantage of an independent groups design. **[1 mark]**

(b) Suggest a more appropriate measure of central tendency for this data set **and** explain why it would be more appropriate. **[3 marks]**

Studies of attachment often involve naturalistic observations.

(c) Suggest **one** way in which studies of attachment could be improved by using controlled observations. **[3 marks]**

2021

5.

(a) A researcher wanted to investigate whether there was a relationship between locus of control and resistance to social influence. Before the investigation began, he devised a questionnaire to measure locus of control.

Why would the researcher's questionnaire produce primary data? Suggest **one** limitation of primary data.

[2 marks]

- (b) To assess the questionnaire's validity, the researcher gave it to 30 participants and recorded the results. He then gave the same 30 participants an established questionnaire measuring locus of control. The researcher found a weak positive correlation between the two sets of results, suggesting that his questionnaire had low validity.

Explain how the validity of the researcher's questionnaire could be improved.

[4 marks]

- (c) Researchers investigated whether the experience of bullying is influenced by attachment type. They interviewed teenagers about their early attachment experiences. Following the interviews, the teenagers were categorised into two groups based on their attachment type:

- **Group 1** – secure attachment in childhood
- **Group 2** – insecure attachment (insecure-avoidant or insecure-resistant) in childhood.

During the interview, the teenagers were also asked about their experience of bullying. They were categorised as either:

- having had experience of bullying, or
- having had no experience of bullying.

Which statistical test would be most suitable to analyse the data in this investigation? With reference to this investigation, explain **three** reasons for your choice of test.

[7 marks]

2022

6.

- (a) A biological psychologist wanted to see if there was a positive correlation between heart rate (measured in beats per minute) and levels of a stress hormone (measured in micrograms) in people with obsessive-compulsive disorder (OCD). She wrote a directional hypothesis and collected data from 20 people with OCD.

The psychologist chose to use the Pearson's r test to analyse the data because she was testing for a correlation.

Explain **one other** reason why the psychologist used a Pearson's r test in this study.

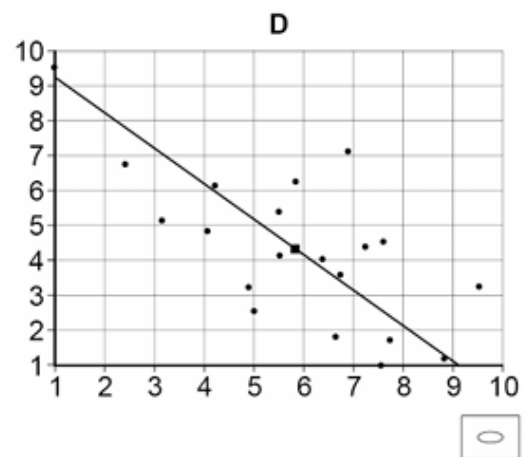
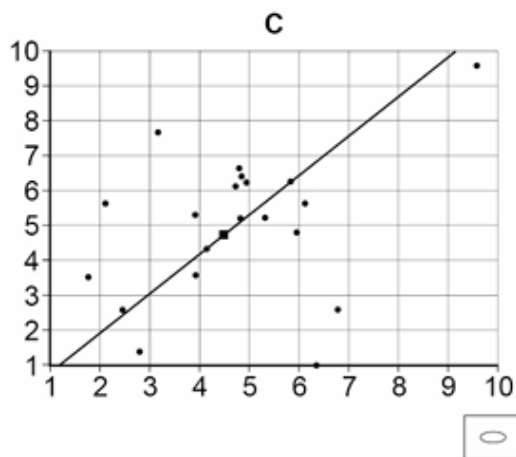
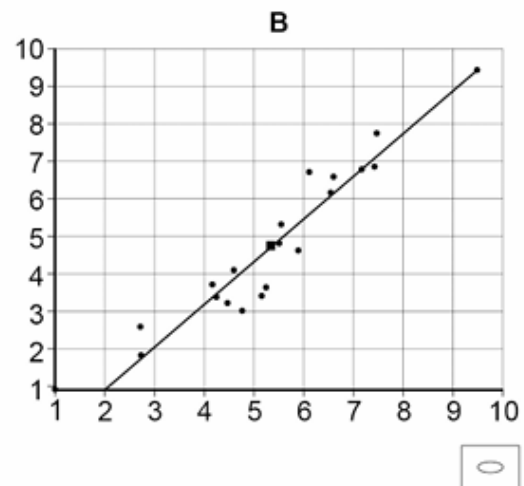
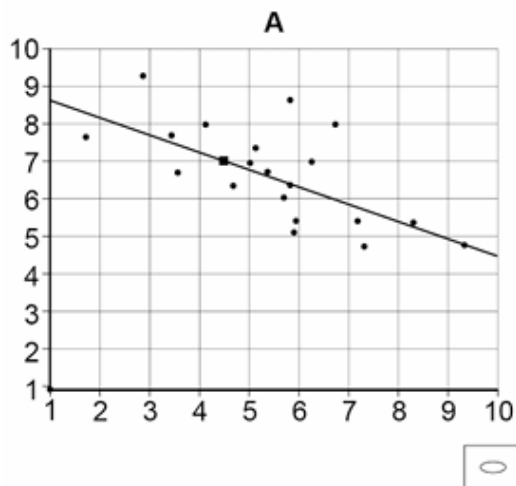
[2 marks]

(b) The calculated value of r for the Pearson's test was **+0.42**.

Which **one** of the following scattergrams **best** represents a correlation coefficient of +0.42?

Shade **one** box only.

[1 mark]



The researcher used the following table of critical values.

Table 1 Critical values of r for Pearson's test

Level of significance for a one-tailed test	0.05	0.025
Level of significance for a two-tailed test	0.10	0.05
$df = 17$.389	.456
18	.378	.444
19	.369	.433
20	.360	.423

Calculated value of r must be equal to or more than the critical value for significance to be shown
Degrees of freedom (df) = $N - 2$

- (c) Is the psychologist's calculated value significant? With reference to **Table 1**, explain your answer.

[4 marks]

2023

7.

Two groups of participants took part in a memory experiment. The researcher read 20 words to the participants.

- Participants in **Group A** had to write down the words immediately after they had heard them.
- Participants in **Group B** had to write down the words after they had read a book for one minute.

The researcher noticed that:

- participants in **Group A** generally recalled words from the beginning and the end of the list
- participants in **Group B** generally recalled words from the beginning of the list only.

- (a) Outline what is meant by standardisation **and** suggest **one** way standardisation could have been used in this experiment.

[2 marks]

- (b) Outline what is meant by randomisation **and** suggest **one** way randomisation could have been used in this experiment.

[2 marks]

- (c) Patients with depression were asked to keep a daily diary of their experiences as part of their therapy. Two researchers analysed the same extracts from the diaries using content analysis.

What is content analysis?

[1 mark]

- (d) Explain **one** way in which the researchers could have used content analysis to analyse diary extracts in this investigation.

[2 marks]

The two researchers' analyses of the diary extracts were found to be quite different.

- (e) Explain how the reliability of this content analysis could be improved.

[4 marks]

2024

8.

- (a) A researcher wanted to test if there is a relationship between the passage of time and recall of nonsense words. They gave 30 participants 40 nonsense words to learn, then tested recall at fixed intervals over several weeks. The nonsense words were standardised to ensure they were of similar difficulty and length.

When writing up the investigation, the researcher represented their data on a scattergram.

Briefly explain how the use of inferential statistics would improve this investigation.

[3 marks]

- (b) Suggest an appropriate statistical test to improve this investigation. With reference to the study, outline **two** reasons for your choice of test.

[5 marks]

Check individual mark schemes for answers

