# STATISTICAL TESTS – PAST PAPER QUESTIONS (OLD SPEC.)

These questions are taken from the old Specification (8PS01). The old Spec. had multiple choice questions and didn't expect candidates to use statistical tests within the exam, just to know about them. However, these questions are still worth answering to remind yourself.

## 2009

**For question 10 choose TWO answers from A, B, C, D, E and F.**

**10** In order to carry out a Mann Whitney U Test on data which **two** of the following statements must be correct?

- ☐ **A** The data can be nominal.
- ☐ **B** The data can be ordinal.
- ☐ **C** The design must be correlational.
- ☐ **D** The experimental design must be independent groups.
- ☐ **E** The experimental design must be matched pairs.
- ☐ **F** The experimental design must be repeated measures.

**12** Researchers carried out a correlational study to see if there was a relationship between eating breakfast and students' scores on a maths test. They carried out a Spearman's rho test on the data and found that the observed value of rho was +0.519, N = 20.

**Table to show the critical values for Spearman's test.**

| | $p \leq 0.05$ | $p \leq 0.025$ |
|---|---|---|
| N = 20 | 0.380 | 0.447 |

*(The observed/calculated value of rho must be equal to or greater than the critical/table value to be significant.)*

(a) What is meant by the term $p \leq 0.05$?

**(2)**

(b) (i) State whether the researchers would reject their null hypothesis.

**(1)**

(ii) Explain your answer to (b)(i).

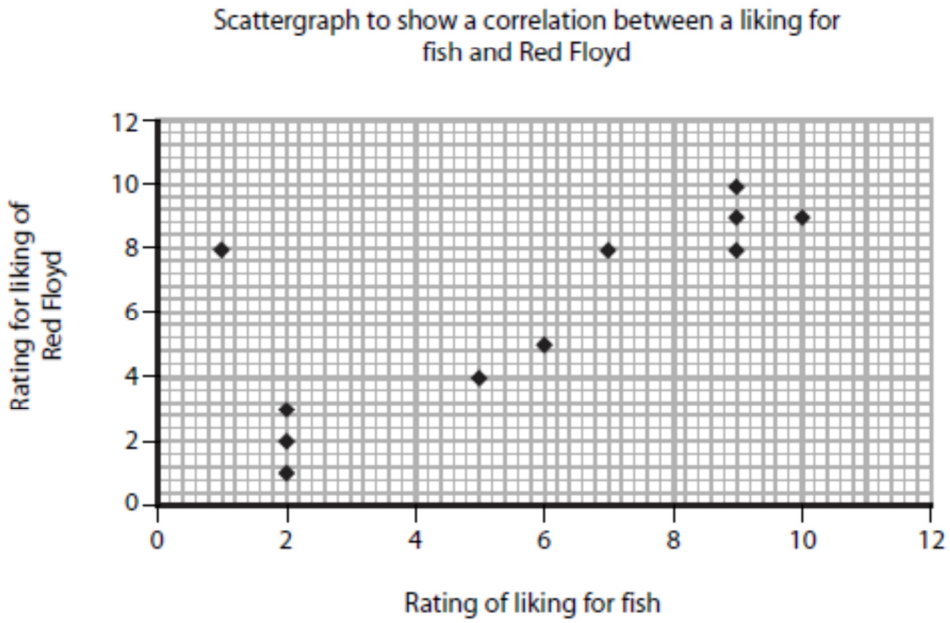
**(2)**

**(Total for Question 12 = 5 marks)**

# 2010

**12** Karen noticed that a lot of her friends who liked the taste of fish also liked the music by the band called Red Floyd. She decided to carry out a correlational study to see if there was a relationship between a liking for fish and a liking for Red Floyd.

Below is a scattergraph (scattergram) of her results.




(a) Put a circle around the **anomaly** (outlier) on the scattergraph above.

**(1)**

(b) Interpret the results of the correlation as shown in the scattergraph.

**(2)**

(c) Outline **one** strength and **one** weakness of using a correlational design in psychological research.

**(4)**

Strength

Weakness

**(Total for Question 12 = 7 marks)**

# 2011

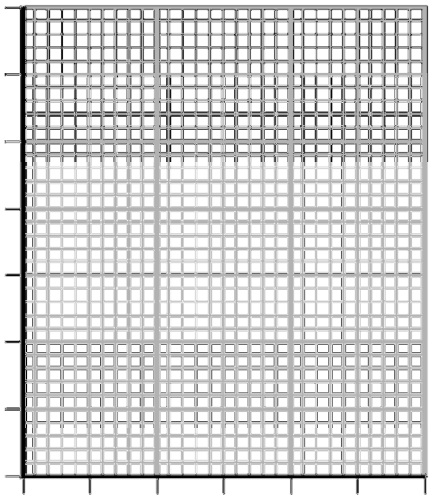
**11** Caroline carried out an experiment to see if men were better at hitting a target with a ball than women. 10 men and 10 women threw 50 balls each. She counted how many balls hit the target for each participant. She then worked out the mean number of hits for males and the mean number of hits for females.

**Figure 1: Table to show the mean number of times the ball hit the target.**

| | Males | Females |
|---|---|---|
| Mean number of times the ball hit the target | 30 | 25 |

(a) On the graph paper below, draw and fully label a bar chart to represent the data in the table above. Use a pen to draw your graph freehand.

**(3)**



(b) (i) What inferential (statistical) test could Caroline use on the results of her study?

**(1)**

.....

(ii) Give **two** reasons why Caroline would be able to use the inferential (statistical) test you identified in (b)(i).

**(2)**

1 .....

.....

2 .....

.....

**(Total for Question 11 = 6 marks)**

# 2012

**For question 11 choose THREE answers from A, B, C, D, E, F, G and H.**

**11** Kate carried out a Mann Whitney U test on the results of her study.

As Kate chose the Mann Whitney U test for her study, it means she carried out a study that

- ☒ **A** was a correlation
- ☒ **B** was an experiment
- ☒ **C** had a directional hypothesis
- ☒ **D** used a non-directional hypothesis
- ☒ **E** had nominal data
- ☒ **F** had at least ordinal data
- ☒ **G** used an independent groups design
- ☒ **H** used a repeated measures design

# 2013

**For question 8 choose ONE answer from A, B or C.**

**8** Megan collected ordinal data from her experiment.

Which statistical test should Megan use to analyse her data?

- ☒ **A** Mann Whitney U
- ☒ **B** Chi-squared ($\chi^2$)
- ☒ **C** Spearman's rho

# 2014

**12** Researchers carried out a Mann Whitney U test on their data from a study. Their observed value was 13.

The table below shows the critical value of U for a one tailed test where U is the lower of the two values.

| | Critical value at 0.05 |
|---|---|
| N1 = 10 N2 = 10 | 27 |

*The observed value of U is significant if it is equal to or less than the critical value.*

Using the information in the table, the researchers would have concluded that there was

- ☐ **A** a significant difference
- ☐ **B** no significant difference
- ☐ **C** a significant correlation
- ☐ **D** no significant correlation

**13** $p \leq 0.05$ means the probability that the results are due to chance is

- ☐ **A** equal to or less than 0.05%
- ☐ **B** equal to or less than 0.5%
- ☐ **C** equal to or less than 5%
- ☐ **D** equal to or less than 50%

# 2015

**For question 10 choose TWO answers from A, B, C, D or E.**

**10** Neil carried out a correlation. To analyse his data Neil decided to carry out a Spearman's test. He carried out the Spearman's test because he was

- ☐ **A** looking for a difference.
- ☐ **B** looking for a relationship.
- ☐ **C** using an independent groups design.
- ☐ **D** using nominal data.
- ☐ **E** using ordinal data.

**For question 11 choose ONE answer from A, B, C or D.**

**11** A strength of the correlation as a research method is that

- ☒ **A** it allows us to determine cause and effect.
- ☒ **B** the independent variable is tightly controlled.
- ☒ **C** it provides detailed, qualitative data.
- ☒ **D** the results may lead to new areas of research.