7.2 The Chi-Squared Test: Rationale, Application and Critical Values: 10-minute Pack

AQA 7182 · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Define the Chi-Squared test of association and state when it is appropriate.

(Total for Question 1 is 1 mark)

2 Give the critical value for df = 1 at $p \leq 0.05$.

(Total for Question 2 is 1 mark)

3 Explain why Chi-Squared is unsuitable for continuous data and name appropriate tests.

(Total for Question 3 is 2 marks)

4 State the Chi-Squared calculation formula and explain its symbols.

(Total for Question 4 is 2 marks)

5 Describe calculation of degrees of freedom for a contingency table and give a 2x3 example in words.

(Total for Question 5 is 2 marks)

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Mark scheme · 7.2 The Chi-Squared Test: Rationale, Application and Critical Values: 10-minute Pack

Question 1

A test for association or difference between two categorical/nominal variables using frequency counts, typically applied to an independent-groups contingency table oe **B1**

Answer: A test for association or difference between two categorical (nominal) variables using frequency counts, usually applied to data in an independent-groups contingency table.

Question 2

critical value = 3.841 cao **B1**

Answer: 3.841

Question 3

explains that Chi-Squared uses counts of categories and would require arbitrary binning of continuous data which loses information oe **M1**

names appropriate tests such as t-tests or ANOVA for comparing group means of continuous data (parametric tests) oe **A1**

Answer: Chi-Squared uses categorical counts and would force arbitrary grouping of continuous data, losing information; for continuous interval/ratio data use t-tests or ANOVA to compare group means.

Question 4

formula given correctly as $X^2 = \text{sum}((O - E)^2 / E)$ cao **M1**

explains O = observed frequency in a cell and E = expected frequency in that cell under the null hypothesis oe **A1**

Answer: $X^2 = \text{sum}((O - E)^2 / E)$. O is the observed frequency in a cell and E is the expected frequency for that cell under the null hypothesis.

Question 5

states df = (number of rows - 1) x (number of columns - 1) cao **M1**

gives example in words: for a 2 by 3 table df = (2 - 1) x (3 - 1) = 1 x 2 = 2 oe **A1**

Answer: df = (rows - 1) x (columns - 1). For a 2 by 3 table df = (2 - 1) x (3 - 1) = 2.

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