

AP Statistics - Chi-Square Tests - Test

Common Core AP STAT 8.1, AP STAT 8.2, AP STAT 8.3, AP STAT 8.4, AP STAT 8.5, AP STAT 8.6, AP STAT 8.7 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test covers goodness-of-fit tests, tests for homogeneity and independence, and choosing among inference procedures. Follow State, Plan, Do, Conclude and write each conclusion in context.

About this test

- Grade: AP Statistics
- Chapter: Chi-Square Tests
- Standards: AP STAT 8.1, AP STAT 8.2, AP STAT 8.3, AP STAT 8.4, AP STAT 8.5, AP STAT 8.6, AP STAT 8.7
- Time: 45 minutes
- Total: 20 points

Question 1 - Goodness-of-fit test [5 pts]

Category	Observed	Expected
A	12	20
B	18	20
C	24	20
D	26	20

Four categories, 80 observations.

A random sample of 80 observations is sorted into 4 categories. Test H_0 : all four categories are equally likely at $\alpha = 0.05$. (*Hypotheses 1, conditions 1, chi-square and df 1, p-value 1, conclusion 1*)

Question 2 - Expected counts [3 pts]

	Yes	No	Total
Group X	22	38	60
Group Y	48	42	90
Total	70	80	150

Two-way table.

In the table, find the expected count in each cell and the degrees of freedom. (2 points for expected counts, 1 point for df)

Question 3 - Chi-square statistic [3 pts]

Compute the chi-square statistic and p-value for the table of Group X and Group Y. (3 points)

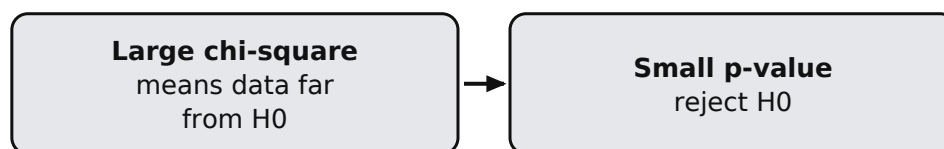
Question 4 - Which test [2 pts]

Name the chi-square test: (a) 150 students are each classified by grade and by whether they have a part-time job. (b) Random samples of 100 men and 100 women are each asked to choose a favorite pizza topping from five choices.

Question 5 - Conditions [2 pts]

Expected counts in a 3 by 3 table are 12, 8, 4, 10, 6, 14, 7, 9, 15. Is the chi-square condition met? Explain.

Question 6 - Interpretation [2 pts]



Interpreting chi-square.

A chi-square test for independence gives chi-square = 9.8, df = 2, p = 0.0074. State the conclusion in context when the variables are 'type of music' and 'age group'.

Question 7 - Degrees of freedom [1 pt]

Find df for a test with 4 categories (goodness-of-fit) and for a 4 by 3 table.

Question 8 - Choose a procedure [2 pts]

Name the best procedure: (a) estimate the mean sleep time of all students in a school from a random sample, (b) compare the proportions of two treatment groups that recover.