

AP Statistics

Name: _____ Score: _____

1. Chi-square tests are designed for which kind of data?
 - ☐ a single proportion only
 - ☐ measured means
 - ☐ continuous data
 - ☐ categorical counts
2. A fair die is rolled 60 times. What is the expected count for each face ($60 \times 1/6$)?

3. One category has observed 8, expected 10. Compute $(\text{observed} - \text{expected})^2 / \text{expected}$.

4. Row total 60, column total 50, grand total 100. Find the expected count ($\text{row} \cdot \text{col} / \text{grand}$).

5. You sample 100 boys and 100 girls SEPARATELY and compare favorite subject. This is a test of...
 - ☐ homogeneity
 - ☐ goodness-of-fit
 - ☐ a mean
 - ☐ independence
6. With $\chi^2 = 6.0$ at $df = 1$, the p-value ≈ 0.014 . At $\alpha = 0.05$, the decision is...
 - ☐ accept H_0
 - ☐ fail to reject H_0
 - ☐ double the p-value
 - ☐ reject H_0
7. One categorical variable checked against a claimed distribution (one sample) calls for a...
 - ☐ test of homogeneity
 - ☐ two-sample t-test
 - ☐ test of independence
 - ☐ goodness-of-fit test
8. A goodness-of-fit test involves how many categorical variables?

☐ three

☐ none

☐ one

☐ two

9. For a goodness-of-fit test with 6 categories, what are the degrees of freedom?

10. A large chi-square statistic is evidence against the claimed distribution.

☐ True ☐ False

AP Statistics

1. **categorical counts**

Chi-square compares counts in categories.

2. **10**

$$60 \times 1/6 = 10.$$

3. **0.4**

$$(8-10)^2/10 = 4/10 = 0.4.$$

4. **30**

$$60 \times 50 / 100 = 30.$$

5. **homogeneity**

Several separate samples compared on one variable $\rightarrow$ homogeneity.

6. **reject H0**

$$0.014 \leq 0.05 \rightarrow \text{reject } H_0.$$

7. **goodness-of-fit test**

One variable vs. a distribution $\rightarrow$ goodness-of-fit.

8. **one**

GOF checks one variable against a claimed distribution.

9. **5**

$$df = \text{categories} - 1 = 6 - 1 = 5.$$

10. **True**

Big gaps $\rightarrow$ big $\chi^2 \rightarrow$ evidence against H_0 .