

A.P. Statistics
Assignment 10.4

Remember to show your thinking through your work.

1. What are the conditions for conducting a chi-squared test of independence?

2. A chi-squared goodness of fit test is used to determine whether a 0-9 spinner is “fair”. The spinner is spun 100 times, and the results are recorded. How many degrees of freedom does the chi-squared distribution have?

- a) 1
 - b) 8
 - c) 9
 - d) 99
 - e) 100
3. A two-way table of counts is analyzed to examine the hypothesis that the row and column classifications are independent. There are three rows and four columns. How many degrees of freedom does the chi-squared distribution have?
- a) 5
 - b) 6
 - c) 7
 - d) 12
 - e) $n-1$
4. The alternate hypothesis of a chi-squared test of independence is:
- a) Observed = Expected
 - b) Observed < Expected
 - c) Observed > Expected
 - d) Observed \neq Expected
 - e) Dependent upon the data.
5. Which of the following assumptions are necessary to conduct a chi-squared goodness of fit test?
- I. No expected counts < 1.
 - II. Sample size > 30.
 - III. No more than 20% of the counts are < 5.
- a) I only.
 - b) II only.
 - c) III only.
 - d) I and III only.
 - e) II and III only.

6. On the Titanic, people have theorized that the wealthy passengers were saved while the poorer passengers perished. Here is the data with the passengers categorized by their socioeconomic status (highest, middle, or lowest) and whether they survived or not.

Socioeconomic status	Died	Survived	Totals
Highest	117	187	
Middle	163	112	
Lowest	526	186	
Totals			

- a. Fill in the totals in the table above.
- b. Fill in the table below with the expected counts. Let your calculator figure out the expected counts (decimals are ok).

Socioeconomic status	Died	Survived	Totals
Highest			
Middle			
Lowest			
Totals			

- c. Run a complete test to determine if the variables of survival and socioeconomic status are independent or not. Be sure to provide a clear conclusion.

7. On the Titanic, people have theorized that the female passengers were saved while the male passengers perished. Here is the data with the passengers categorized by their gender and whether they survived or not.

Gender	Died	Survived	Totals
Female	126	317	
Male	680	168	
Totals			

- a. Fill in the totals in the table above.
- b. Fill in the table below with the expected counts. Let your calculator figure out the expected counts (decimals are ok).

Gender	Died	Survived	Totals
Female	117	187	

Male	163	112	
Totals			

- c. Run a complete test to determine if the variables of survival and gender are independent or not. Be sure to provide a clear conclusion.

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