**STUDY QUESTIONS**

1. Statistical techniques based on assumptions about the population from which the sample data are selected are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statistics.

2. Statistical techniques based on fewer assumptions about the population and the parameters are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statistics.

3. A chi-square goodness-of-fit test is being used to determine if the observed frequencies from seven categories are significantly different from the expected frequencies from the seven categories. The degrees of freedom for this test are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. A value of alpha = .05 is used to conduct the test described in question 3. The critical table chi-square value is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. A variable contains five categories. It is expected that data are uniformly distributed across these five categories. To test this, a sample of observed data is gathered on this variable resulting in frequencies of 27, 30, 29, 21, 24. A value of .01 is specified for alpha. The degrees of freedom for this test are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. The critical table chi-square value of the problem presented in question 5 is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. The observed chi-square value for the problem presented in question five is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Based on this value and the critical chi-square value, a researcher would decide to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the null hypothesis.

8. A researcher believes that a variable is Poisson distributed across six categories. To test this, a random sample of observations is made for the variable resulting in the following data:

Number of arrivals Observed

0 47

1 56

2 38

3 23

4 15

5 12

Suppose alpha is .10, the critical table chi-square value used to conduct this chi-square goodness-of-fit test is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. The value of the observed chi-square for the data presented in question 8 is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Based on this value and the critical value determined in question 8, the decision of

the researcher is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the null hypothesis.

10. The degrees of freedom used in conducting a chi-square goodness-of-fit test to

determine if a distribution is normally distributed are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. In using the chi-square goodness-of-fit test, a statistician needs to make certain that

none of the expected values are less than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. The chi-square \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to analy*z*e frequencies of two

variables with multiple categories.

13. A two-way frequency table is sometimes referred to as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ table.

14. Suppose a researcher wants to use the data below and the chi-square test of

independence to determine if variable one is independent of variable two.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Variable One | | |
| A | B | C |
| Variable  Two | D | 25 | 40 | 60 |
| E | 10 | 15 | 20 |

The expected value for the cell of D and B is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. The degrees of freedom for the problem presented in question 16 are

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

16. If alpha is .05, the critical chi-square value for the problem presented in question 16

is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17. The observed value of chi-square for the problem presented in question 16 is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Based on this observed value of chi-square and the critical

chi-square value determined in question 18, the researcher should decide to

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the null hypothesis that the two variables are independent.

18. A researcher wants to statistically determine if variable three is independent of

variable four using the observed data given below:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Variable Three | |
|  |  | A | B |
| Variable  Four | C | 92 | 70 |
| D | 112 | 145 |

If alpha is .01, the critical chi-square table value for this problem is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. The observed chi-square value for the problem presented in question 20 is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Based on this value and the critical value determined in

question 20, the researcher should decide to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the null hypothesis.

**ANSWERS TO STUDY QUESTIONS**

1. Parametric Statistics

2. Nonparametric Statistics

3. 6

4. 12.5916

5. 4

6. 13.2767

7. 2.091, Fail to Reject

8. 7.77944

9. 16.2, Reject

10. *k* – 3

11. 5

12. Test of Independence

13. Contingency

14. 40.44

15. 2

16. 5.9915

17. .19, Fail to Reject

18. 6.6349

19. 6.945, Reject