Chapter (11)

1)Determine the critical value of $\chi 2$ with 1 degree of freedom for $\alpha=0.025$

The critical value of $\chi 2$ is = [ ]

(Round to three decimal places as needed.)

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2) Consider a contingency table with two rows and eight columns(r=2 c=8).

a. Find the degrees of freedom.

b. Find the critical value for $\alpha=0.01$.

c. Find the critical value for $\alpha=0.025$.

a. The degrees of freedom are = [ ]

b. The critical value for $\alpha=0.01$ is [ ]

(Round to three decimal places as needed.)

c. The critical value for $\alpha=0.025$ is [ ]

(Round to three decimal places as needed.)

3)Use the contingency table to the right to complete parts (a) through (c) below

	A	B	Total
1	62	13	75
2	13	12	25
Total	75	25	100

a. Find the expected frequency for each cell.

	A	B	Total
1			75
2			25
Total	75	25	100

(Type integers or decimals.)

b) Compare the observed and expected frequencies for each cell.

Choose the correct answer below.

A. The expected values are always greater than the observed values .

B. The totals for the observed values are always greater than the totals for the expected values .

C.The totals for the observed and expected frequencies are the same .

D.The observed values are always greater than the expected values

C). Compute $\chi 2_{STAT}$ $\chi 2_{STAT}$ =

(Round to two decimal places as needed)

4) An automobile manufacturing company is planning to introduce a new model of their car. The company conducted a survey to determine whether a model of a car would appeal to different age groups. Data was collected from 497 people who previewed the model. The following results were obtained. Complete parts a through d.

Age group

Model appeal	Under 25 years	25-40 years	40-55 years	55 years and over	Total
Person who liked the car	147	77	48	26	298
Person who disliked the car	56	50	31	62	199
Total	203	127	79	88	497

a) State the null and the alternative hypothesis for the test

H_0: No relationship between the model appeal and the age groups
H_1: A relationship exists between the model appeal and the age groups

b) Calculate the test statistics(χ^2) .

The value of test statistics χ^2 is ____

(Round your answer to three decimal places as needed.)

(c) Determine the critical value for a χ^2 test.

The critical value for the test at 5% level of significance is ____

(Round your answer to three decimal places as needed.)

(d) State the conclusion.
The table value of a χ^2 is **less** than the computed value of χ^2, therefore, the null hypothesis will be **rejected**. The model appeal **depends** on the age groups.

5) An Airline consultancy firm conducted a survey to determine what type of airline tickets passengers preferred to buy when they were travelling for business. The data collected from 920 passengers in the last 12 months is shown in the following contingency table. Complete parts a through d.

Type of flight

Type of ticket	Domestic	International	Total
First Class	28	22	50
Business/Executive Class	95	121	216
Economy Class	519	135	654
Total	642	278	920

Use 5% level of significance for the independence of type of flight and type of ticket.

(a) State the null and the alternative hypothesis for the test.

H_0 : The type of flight and type of ticket are **independent**

H_1 : The type of flight and type of ticket are **dependent**

b) Calculate the test statistics.

The value of test statistics $\chi 2$ is ☐

(Round your answer to three decimal places as needed.)

c) Determine the critical value for a $\chi 2$ test.

The critical value for the test at 5% level of significance is ☐

(Round your answer to three decimal places as needed.)

(d) The table value of a $\chi 2$ is **less** than the computed value of $\chi 2$, therefore the null hypothesis will be **rejected**. The model appeal **depended** on the age groups.