

# Disclaimer

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# **Chapter 11 Homework**

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## Chapter 11 Homework

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1. Define contingency table.
2. True or False. The chi-square test statistic will always be negative because of the fact that squared values are used.
3. Is gender independent of type of vehicle owned? The data is listed below. Perform a chi-square test of independence at the 10% level of significance.

	<b>Car</b>	<b>Truck</b>	<b>SUV</b>	<b>Van</b>
<b>Men</b>	48	10	22	20
<b>Women</b>	40	23	27	10

4. Define Analysis of Variance (ANOVA).
5. True or False. Performing an analysis of variance requires the use of the F-distribution.
6. Is the average salary of elementary school teachers different among 3 county school districts? The data is listed below. Assuming the populations are normally distributed, the samples are independent and the population variances are equal, is there sufficient evidence to suggest that not all the population mean salaries of elementary school teachers among 3 county school districts are equal. Perform an ANOVA at the 10% level of significance.

<b>Perry County</b>	<b>Lewis County</b>	<b>Jasper County</b>
27,465	35,234	28,341
32,987	39,623	27,846
35,662	37,819	32,555
30,812	31,647	25,901
29,453	33,171	30,330



## Answers

1. Contingency Table: a table of rows and columns that shows the observed counts of data. The categories of one qualitative variable are represented via the rows and the categories of the other qualitative variable are represented via the columns.
2. False
3.  $H_0$ : Gender and type of vehicle owned are independent,  $H_A$ : Gender and type of vehicle owned are dependent.  $X^2 = 9.69$ . Reject the null hypothesis. There is sufficient evidence to suggest that gender and type of vehicle owned are dependent.
4. Analysis of Variance (ANOVA): a statistical procedure used to compare the means of three or more independent populations.
5. True
6.  $H_0: \mu_1 = \mu_2 = \mu_3$ ,  $H_A$ : Not all the population mean salaries of elementary school teachers among 3 county school districts are equal.  $F = 6.01$ . Reject the null hypothesis. There is sufficient evidence to suggest that not all the population mean salaries of elementary school teachers among 3 county school districts are equal.

