Lesson 69 - More Examples:

Ex1 – Here are the results of 60 rolls of a standard die.

Outcome	Observed	Expected
1	13	
2	11	
3	6	
4	12	
5	10	
6	8	

Do we have evidence that the die is biased?

Ex 2 – from Outliers by M Gladwell

A random sample of 80 NHL players found that 32 were born in the first quarter of the year, 20 in Q2, 16 in Q3, and 12 in Q4. Does this prove that kids born such that they are older than their peers are more likely to go pro?

Ex 3 – The data below show the results of a survey of 1048 people who were asked their age and if they have a landline phone at home.

Age	Count
20-29	141
30-39	186
40-49	224
50-59	211
60+	286

Can we say that the distribution of landline phone usage is uniformly distributed based on age?

Ex 4 – In an associated press report it was reported that in a random sample of 830 stolen cars, 140 were white, 100 were blue, 270 were red, 230 were black, and 90 were other colors. Suppose the American Automobile Association reports that 15% of all cars are white, 15% are blue, 35% are red, 30% are black, and 5% are other colors. Conduct a hypothesis test to answer the question: Does car color affect the chance that it will be stolen? Use an alpha level of 0.01

Ex 5 - Is there a relationship between male and female political leanings at NWHS? An SRS of 90 NWHS students was asked to categorize themselves as liberal, moderate or conservative. A two-way table with the resulting data is given below:

	Liberal	Moderate	Conservative	Total
Males	16	10	6	32
Females	20	22	16	58
Total	36	32	22	90

Do the data provide evidence of an association between political philosophy and gender at NWHS at α = 0.01?

Ex 6 – The table below shows data comparing heart disease and Anger Level.

	Low anger	Moderate Anger	High Anger
Heart Disease	53	110	27
No Heart Disease	3057	4621	606

A. Create Hypotheses
B. Find the expected counts
C. Find the Chi-Sq at each location
D. Find the total Chi-sq, DF, and p-value.
E. Describe the proper conclusion

Ex 7 – The table below shows different treatments for depression. The possible treatments are Saint-John's wort, Zoloft, and a Placebo. The effect of the treatment is described as creating a full response, partial response, or no response.

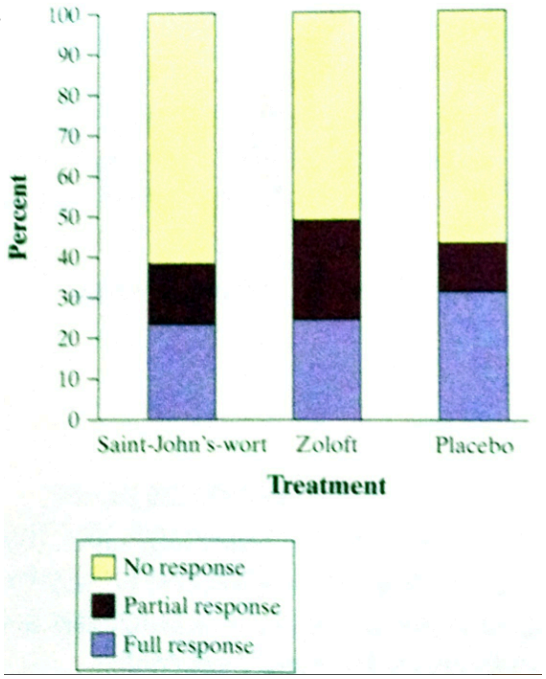
Data:

	St. John's wort	Zoloft	Placebo
Full Response	27	27	37
Partial Response	16	26	13
No Response	70	56	66

Examples:

Problem:

a. A graph to the right shows the conditional distributions. Describe what the graph is showing



b. Find the expected counts for the three treatments.

c. State the hypotheses for a significance test:

d. Find the chi-square value and the p-value:

e. State the conclusion:

Ex 8 – the computer printout below shows the number of people at the Goodwill store in two different cities. The values are also broken down based on gender where 1 = men and 2 = women

Chi-Square Test: City 1, City 2

Expected counts are printed below observed counts

Chi-Square contributions are printed below expected counts

	City 1	City 2	Total
1	38	68	106
	55.66	50.34	
	5.601	6.192	
2	203	150	353
	185.34	167.66	
	1.682	1.859	
Total	241	218	459

Chi-Sq = 15.334, DF = 1, P-Value = 0.000

Note on the computer output:
Under City 1
38 is the observed value
55.66 is the expected value
5.601 is the amount added to the chi-square total from this

What significance test was run and what was the conclusion/result?

HW 64 Finish the examples shown here and complete the Quiz Reviews on pages 661-666