Project 4   **Math 121**

Please type your solutions to the questions below in Microsoft Word or Google Docs (or other document editor), then print your document. It is due when we meet for the final exam on **Thursday, December 8th**. *Use complete sentences to write your answers. It is okay to discuss the problems with other students, but all of your solutions must be explained in your own words.*

Is there a relation between education level and religious observance in the United States? We will use the χ^2-test for association and some data from the General Social Survey (GSS) to investigate. One of the questions asked on the GSS is "Have you attended religious services in the last week?" Here are the results broken down by education level for people surveyed with at least a high school education.

	Highest Degree Held			
	High School	2-Year College	4-Year College	Graduate
Attended services	400	62	146	76
Did not attend services	880	101	232	105
Total	1280	163	378	181

1. Make a stacked bar graph showing the column percentages in this two way table. You can use Excel to make the graph. What is the biggest difference visible between the different groups?

2. How many degrees of freedom does the table above have for the chi-squared test?

3. For this table, $\chi^2 = 14.2$. What is the corresponding p-value? What does it mean about education level versus attendance at religious services?

4. Which group is the least likely to have attended religious services?

5. If you remove that group, then for the remaining three groups, $\chi^2 = 0.73$ which has a p-value of 69.4%. What do these three groups have in common, and what does the chi-squared test say about the association between education level and religious attendance when you only look at these three groups?