Math 220 Assignment

1. Each boy in a sample of Mexican American males, age 10 to 18, was classified according to smoking status and response to a question whether he likes to do risky things. The following table is based on an article in Journal of School Health, 1998, p 376-379.

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            Likes risky things      Doesn't like risky things   Total

Smoker                    45                  36                    81
Nonsmoker                 46                 153                   199


Total                     91                 189                   280
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Assume it is reasonable to regard the sample as a random sample from the population.

   1). Based on the table, what proportion (or percent) of boys like risky things among smokers? Among nonsmokers?

   Proportion of boys who like risky things among smokers is:

   Proportion of boys who like risky things among nonsmokers is:

2). Perform a chi-square test to examine whether there is an association between smoking status and desire to do risky things. Use $\alpha = 0.05$ as the level of significance.

   H_0 :

   H_1:
   The expected count of cell (2, 2) under independence is

You can get the expected counts for other cells as well. I give the expected cell count for cell (1, 1), (1, 2) and (2, 1) under independence as 26.3, 54.7, and 64.7 respectively to save your computation time.

   Based on the expected cell counts, the chi-square test statistic is

d.f. is

The p-value is

Conclusion(Circle one):
Reject H_0. There is strong evidence that there is an association between smoking status and desire to do risky things. The data showed that a smoking boy was more likely to like to do risky things.

Do not reject H_0.