POLS 7014
INTERMEDIATE POLITICAL METHODOLOGY
HOMEWORK 3

1. According to M&M's.com, 12% of all Peanut M&M's made are brown, 15% are yellow, 12% are red, 23% are blue, 23% are orange, and 15% are green. You open a large bag of Peanut M&M's and find that 85 M&M's are brown, 69 are yellow, 15 are red, 55 are blue, 57 are orange, and 13 are green.

   - What null hypothesis can you make about the proportion of M&M's that are a primary color (red, blue, or yellow)?
   - At a 95% confidence level, is the proportion of primary-colored M&M's in your bag significantly different than the null hypothesis? Show your work.
   - At a 90% confidence level, test the null hypothesis that 12% of the M&M's are brown. Show your work.

2. You just taught a Intro to American Politics class in which 12 students got up and walked out in the middle of your lecture. Your confidence shaken, you create a survey to try to determine if political science course make a difference in students' lives. You email a random sample of students and ask them a series of questions about their participation in a wide range of political activities during the 2012 election cycle. You use these responses to develop a civil engagement score that ranges from 0 to 60. You also ask whether the students have taken a political science class or not.

   The 206 students that took a political science course report an average civic engagement score of 17.384 (standard deviation of 1.221). The 128 students that did not take a political science course report an average of 15.375 (standard deviation of 3.5). Are political science courses encouraging students to be more political active or should you quit teaching and go back to your old job of running the blinds and wallpaper department at the Olathe, KS Home Depot?

3. You are interested in the impact the Sept. 11 attacks had on President George W. Bush's approval rating. In a Aug. 24, 2001 Gallup poll, 55% of the 814 people surveyed answered that they approved of Bush's handling of his job as president. In a Sept. 14, 2001 Gallup poll, 86% of the 1032 people surveyed answered that they approved of Bush's handling of his job as president.

   - At a 99% significance level, did the proportion of Americans that approve of Bush's job as president change after the attacks of Sept. 11.
   - Construct a 95% confidence interval to test whether the proportion changed. Interpret the confidence interval.

4. You are working for Professor Hood as a research assistant this semester. He is worried he may have miscalculated the χ^2 statistic that appears on Table 2 of his "Packin' in the Hood?: Examining Assumptions of Concealed-Handgun Research" article (www.jstor.org/stable/42863973). For Table 2 do the following:

   - Calculate the expected frequency (f_e) for each cell in the table.
   - Calculate the χ^2 statistic by hand. Be sure to write out the formula and denote the degrees of freedom.