Inference for Two-way Tables

TwoWayTable.tns

Name _____

Class _____

Problem 1 – Party Affiliation

The Quinnipiac University Polling Institute polled NYS residents on April 7, 2009. The results for the following question are given on page 1.6: *Do you approve or disapprove of the way Barack Obama is handling the economy?*

Using a 0.05 significance level, test the claim that the approval rating of the President is independent of a person's political party affiliation.

1. What is the null hypothesis? Alternative hypothesis?

2. Calculate the expected frequencies for the table using the formula given on page 1.9 and fill in the table below.

	Republicans	Democrats	Independents	Total
Approve	158 ( )	886 ( )	79 ( )	1123
Disapprove	217 ( )	39 ( )	43 ( )	299
Don't Know	47 ( )	39 ( )	17 ( )	103
Total	422	964	139	1525

3. Use page 1.13 to calculate the test statistic and record it below.

4. The degrees of freedom equals (# rows – 1)(# columns – 1). What is the degrees of freedom for this test?

5. Calculate the critical value on page 1.15 using the Inverse χ^2 command.

6. A value of the test statistic that is larger than the critical value means that the null hypothesis should be rejected. Should you reject or fail to reject the null hypothesis?

7. In the context of the claim, summarize your results below with a sentence or two.

8. Use the **χ^2 2-way Test** command to test the original claim. First remember to store the data in the table as a 3 x 3 matrix. What does the *P*-value indicate?

Problem 2 (Homework) – Gender

Consider the same question as before about the President's approval rating, but this time compare male vs. female. Using a 0.01 significance level, test the claim that the approval rating of the President is independent of a person's gender. Use the data given on page 2.2.

1. Based on the data alone, do you think that the two variables are independent or dependent?

2. Using the method requested by your teacher, test the claim given above. Justify your answer using statistics and write your conclusion.