UNIVERSITY OF STRATHCLYDE
DEPARTMENT OF MATHEMATICS & STATISTICS

MM104: Statistics and Data Presentation Semester 2
MM107: Statistics and Data Presentation

HYPOTHESIS TESTING: TUTORIAL QUESTIONS

Question 1

A study was carried out at a memory clinic for patient's suffering from Alzheimer's disease. Researchers developed a program to help the patients to remember the order of daily tasks. Group 1 was taught using visuals and Group 2 was taught using visuals and intense verbal rehearsal. Researchers are interested if there is a difference between the two groups. Some descriptive statistics are given below:

	Sample Size	Sample Mean	Sample Standard deviation
Group 1	25	5.43	3.42
Group 2	25	5.53	2.06

a. State the null and alternative hypothesis in the context of this study.

b. Calculate the t-test statistic and compare this to the critical value. What do you conclude ? Comment on the result in the context of the study.

Question 2

Heart disease is thought to be associated with sex and a Chi squared test was identified as the appropriate test. The table below shows the observed counts on the top line of each cell and the contribution to the χ^2 test statistic for each cell is given in italics (underneath the observed counts).

		Male	Female
Heart Disease	No	450 *0.726*	506 *0.697*
	Yes	40 *15.772*	4 *15.153*

a. State the null and alternative hypothesis in the context of this study.

b. Perform a χ^2 test for association between heart disease and sex. Comment on the result in the context of the study.

c. Does this data set meet the assumptions of the χ^2 squared test ?

d. Using the values for the contribution to the χ^2 test statistic, give an interpretation of the results of the hypothesis test in the context of the study.