C.K. HANSEN **MATH 380 :** Elementary Probability and Statistics NAME :
12/2/25 Class Assignment # 6 (15 points)

The data given below are from one of several data sets made available by Professor Karen A. Carlberg, Department of Biology, EWU. These are real data from studies Professor Carlberg has done in the past concerning women experiencing amenorrhea, i.e. cessation of menstruation. We are particularly interested in testing whether *amenorrhea (cessation of menstruation) is more common among athletes than among non-athletic women.*

The data below shows the breakdown into a) regular mentruation b) irregular menstruation and c) amenorrhea for the two groups of students (non-athletic vs. athletic).

	Group 1	**Group 2**
	Non-Athletic Students	Athletic Students
Regular Menstruation	274	73
Irregular Menstruation	141	75
Amenorrhea	11	20
TOTAL	**426**	**168**

a) Setup the appropriate null- and alternative hypotheses for testing whether amenorrhea is more common among athletic women than among non-athletic women. Perform the test, calculate the (approximate) *p*-value and state the conclusion (reject the null hypothesis or not). Also write a brief conclusion in plain English.

b) Is irregular menstruation more common among athletic women than among non-athletic women? (proceed as in the previous question).

c) Find a 95% confidence interval for the mean difference in the proportions of Amenorrhea for the two groups. Interpret the result.