Name:_____ Math 130
Date: 5/14/2025 Quiz 19

1. (10 points) In order to study people's perception on whether a college education is important, people from 3 countries were polled and asked "Do you believe a college education is important?". The number of people who said yes and who said no to this question from each country is listed in the table below. Test whether the proportions of people in each country who feel a college education is important are the same at the $\alpha = 0.07$ significance level. Use the p-value method.

	U.S.	Spain	Argentina
Yes, a college education is important	34	21	63
No, a college education is not important	51	24	54

Extra Credit: (10 points) In order to investigate the effectiveness of different diets, 40 people were randomly selected who were on various diets for a year. The amount of weight the people lost and what diets they were on is summarized in the table below. Use a 0.05 significance level to test the claim that a person's average weight loss is the same for the various diet plans listed in the table. Use the rejection region method.

												$\bar{x}_i$	s_i
Weight Watchers	16	62	35	23	18	33	37	25	21	42		31.2	13.87
Atkins	41	59	55	17	48	41	29	44	37	49		42	12.33
Jenny Craig	22	26	32	17	32	25	28	19	11	17		22.9	6.94
Nutrisystem	28	31	24	11	18	23	23	39	31	28		25.6	7.72

Some formulas you may need:

$$\chi^2 = \sum \frac{(O-E)^2}{E} \qquad E = \frac{(row\ \ total)(column\ \ total)}{grand\ \ total} \qquad df = (r-1)(c-1)$$

$$df_1 = k-1 \qquad df_2 = n-k$$

$$MST = \frac{\sum n_i (\bar{x}_i - \bar{x})^2}{k-1}$$

$$MSE = \frac{\sum (n_i - 1) s_i^{\ 2}}{n-k}$$

$$F = \frac{MST}{MSE}$$