Name _____ **Date** _____

Elementary Statistics **HW 10.2 part 2**

1. Some studies have shown that there is a correlation between consumption of salt and blood pressure. As more salt is consumed, blood pressure tends to rise. A reporter reads one of these studies and writes the headline, "Increased Salt Consumption Causes Blood Pressure to Rise."

   a. Is that headline justified?

   b. If not, help this reporter by rewriting the headline so that it is correct.

2. Listed below are PSAT scores and SAT scores from prospective college applicants. The scores were reported by subjects who responded to a request posted by the website: talk.collegeconfidential.com.

PSAT	183	207	167	206	197	142	193	176
SAT	2200	2040	1890	2380	2290	2070	2370	1980

b. Find the value of the linear correlation coefficient r.

c. Find the critical values from Table A-6 using a significance level, $\alpha = 0.05$.

d. Determine if there is sufficient evidence to support the claim of a linear correlation between the two variables.

e. Is there anything about this set of data that might make the results questionable?

3. Listed below are amounts of court fine revenue and salaries paid to the town justices (based on data from the Poughkeepsie Journal). All amounts are in thousands of dollars and all of the towns are in Dutchess County, NY.

Court Income	65	404	1567	1131	272	252	111	154	32
Justice Salary	30	44	92	56	46	61	25	26	18

a. If you are trying to determine if there is a linear correlation between court income and justice salaries in Dutchess County, NY, what is the claim in symbolic notation?

b. State the null and alternative hypotheses.

c. Find the critical values from Table A-6 using a significance level, $\alpha = 0.05$.

d. Find the linear correlation coefficient, r.

e. Does the test statistic, r, fall in the critical region? What should you conclude in regards to the null hypothesis?

f. Determine if there is sufficient evidence to support the claim of a linear correlation between the two variables.

4. The table below lists weights (carats) and prices (dollars) of randomly selected diamonds. All of the diamonds are round with ratings of "very good" cut, they all have a color rating of F ("slight color") and a clarity rating of VSI ("very slightly included"). The values are based on data from the retailer, Blue Nile.

Weight	0.3	0.4	0.5	0.5	1.0	0.7
Price	510	1151	1343	1410	5669	2277

   a. If you are trying to determine if there is a linear correlation between the weights and prices of diamonds, express the claim in symbolic notation.

   b. State the null and alternative hypotheses.

   c. Find the critical values from Table A-6 using a significance level, $\alpha = 0.05$.

   d. Find the linear correlation coefficient, r.

   e. Does the test statistic, r, fall in the critical region? What should you conclude in regards to the null hypothesis?

   f. Determine if there is sufficient evidence to support the claim of a linear correlation between the two variables.