Lecture Chapter 10 Math 15 Jones Name_____

1 Use the given data to find the equation of the regression line and round the final values to three significant digits, if necessary.

Eleven randomly selected cars were chosen from the cars data.

Model		Weight	CityMPG	Type
Buick	Century	3350	20	family
Buick	Regal	3325	19	family
Subaru	Legacy	2980	23	family
Audi	A4	3345	18	upscale
Mercury	Cougar	3140	20	sports
Oldsmobile	Aurora	3990	17	large
Mazda MX-5	Miata	2365	25	sports
Dodge	Intrepid	3455	21	large
BMW	318Ti	2790	23	sports
Kia	Sephia	2650	23	small
Mazda	Protege	2645	24	small

- Make a scatter plot of the data.
- Graph the regression line one the same graph.
- Find the value of the linear correlation coefficient r.
- Use Table A–6 to determine if there is enough evidence to support the claim that there is a linear correlation between the two variables.
- Use the regression line to predict the city MPG of a car that weighs 2500 lb.

2 Correlation Caution #3

Do not use regression equation if the correlation is not significant. Use the mean of the y-variables instead.

Make a scatter plot of the fallowing data and use your calculator to find the value of the linear correlation coefficient r.

A study was conducted to compare the average time spent in the lab each week versus course grade for computer students. The results are recorded in the table below.

Number of hours spent in lab Grade (percent)

Hours Studying	10	11	16	9	7	45	16	10
Grade on Test	96	51	62	58	89	81	46	51

- Make a scatter plot of the data.
- Graph the regression line on the same graph.
- Find the value of the linear correlation coefficient r.
- Use Table A–6 to determine if there is enough evidence to support the claim that there is a linear correlation between the two variables.
- Predict a students grade if they spent 12 hours in the lab.

3 Describe the error in the stated conclusion.

3) Given: There is a significant linear correlation between the number of homicides in a town and the number of movie theaters in a town.

Conclusion: Building more movie theaters will cause the homicide rate to rise.

4 Use the given data to find the equation of the regression line

Managers rate employees according to job performance and attitude. The results for several randomly selected employees are given below.

Performance	59	63	65	69	58	77	76	69	70	64
Attitude	72	67	78	82	75	87	92	83	87	78

- Make a scatter plot of the data.
- Graph the regression line one the same graph.
- Find the value of the linear correlation coefficient r.
- Use Table A–6 to determine if there is enough evidence to support the claim that there is a linear correlation between the two variables.
- Predict an employees attitude if their performance is 60.

x A

TABLE A-6 Critical Values of the Pearson Correlation Coefficient r

n	$\alpha = .05$	$\alpha = .01$
4	.950	.990
5	.878	.959
6	.811	.917
7	.754	.875
8	.707	.834
9	.666	.798
10	.632	.765
11	.602	.735
12	.576	.708
13	.553	.684
14	.532	.661
15	.514	.641
16	.497	.623
17	.482	.606
18	.468	.590
19	.456	.575
20	.444	.561
25	.396	.505
30	.361	.463
35	.335	.430
40	.312	.402
45	.294	.378
50	.279	.361
60	.254	.330
70	.236	.305
80	.220	.286
90	.207	.269
100	.196	.256

NOTE: To test H_0: $\rho = 0$ against H_1: $\rho \neq 0$, reject H_0 if the absolute value of r is greater than the critical value in the table.