Name:_____

Ch. 10,11 & 12 **Show all work for full credit.**

01/25/2011 ***HW #4 – Math 227*** **Box your answers.**

1.) The following data represent the number of calories per serving and the number of grams of sugar per serving for a random sample of cereals. Answer the following problems:

Calories(y)	**Sugar(x)**
200	18
210	23
170	17
190	20
200	18
180	19

a. Calculate the correlation coefficient.

b. Does there exist linear correlation between the number of calories per serving and the number of grams of sugar per serving, at a 0.05 level of significance?

c. If the sugar level is 24 grams, find the calories per serving.

d. What is the proportion of the variation in y that is explained by the linear relationship between x and y.

2.) The following are the high school GPAs and the college GPAs at the end of the freshman year for 10 different students:

High School GPA:

2.7	3.1	2.1	3.2	2.4	3.4	2.6	2.0	3.1	2.5

College GPA:

2.2	2.8	2.4	3.8	1.9	3.5	3.1	1.4	3.4	2.5

a. Test to see if there is correlation between GPAs at a 0.01 level of significance.

b. If a student had a High School GPA of 3.25, predict their College Freshman GPA.

c. Calculate r^2.

3.) It is a common belief that more fatal car crashes occur on certain days of the week, such as Friday or Saturday. A sample of motor vehicle deaths for a recent year is randomly selected. The numbers of fatalities for the different days of the week are listed below.

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of Fatalities	22	30	20	22	46	39	31

At a 0.01 level of significance, test the claim that accidents occur with equal frequency on different days.

4.) Offering several versions of the same car model is a common practice among automobile manufacturers. For example, a popular sports car can be purchased in a standard, deluxe or luxurious version. Suppose the manufacturer claims that 38% of sales are form the standard line, 26% and 36% are for deluxe and luxurious versions, respectively. To check on the reality of this claim, an independent testing group surveyed 580 new owners of this model. They found the following:

	Standard	Deluxe	Luxurious
Observed	239	143	198

Is there sufficient evidence to conclude that the manufactures claim is false?

5.) The accompanying table lists sample data that describes drinking and type of crime committed. Does the type of crime appear to be independent of whether the criminal drinks or abstains from drinking?

	Arson	Rape	Violence	Stealing	Coining	Fraud
Drinker	50	88	155	379	18	63
Abstainer	43	62	110	300	14	144

6.) Test the claim that the proportion of agree/disagree responses are the same for the subjects interviewed by men and the subjects interviewed by women.

	Gender of Interviewer	
	Man	Woman
Women who Agree	512	336
Women who Disagree	288	64

7.) The Bureau of Labor Statistics publishes data on weekly earnings of nonsupervisory workers. The following data, in dollars, were obtained from random samples for full and part time workers in five service producing industries.

Transportation and Public Utilities	Wholesale Trade	Retail Trade	Finance, Insurance and Real Estate	Services
543	524	260	482	408
583	469	188	436	420
544	449	170	518	427
588	518	298	404	343
635	502	185		380
566		279		317

Is there sufficient evidence to conclude that a difference exists in mean weekly earnings among the five industries? Fill out the table.

Source	df	SS	MS	F	P
Treatment					
Error					
Total					

8.) Listed below are random samples of GPAs from freshman living in three different dormitories at UCLA. Determine whether there is a significant difference in GPAs among the residents of the three dormitories at a 0.1 level of significance.

De Neve	**Sproul**	**Dykstra**
0.60	**2.12**	**3.65**
3.82	**2.00**	**1.57**
4.00	**1.03**	**3.36**
2.22	**3.47**	**1.17**
1.46	**3.70**	**2.55**
2.91	**1.72**	**3.12**
2.20	**3.15**	**3.60**
1.60	**3.93**	**4.00**
0.89	**1.26**	**2.85**
2.30	**2.62**	**2.13**

Source	df	SS	MS	F	P
Treatment					
Error					
Total					

9.) Fill out the ANOVA table. Data comes from three different samples and the total number of observations is 12. A pooled estimate for the variance is 2.333 with variance between sample means is 120.33

Source	df	SS	MS	F	P
Treatment					
Error					
Total					