

3. Shown below are average temperatures (in degrees Celsius) in a city obtained in the years 2006 (X) and 2007 (Y).

Year	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
2006 (x)	8	9	16	18	21	24	26	24	17	16	12	10
2007 (y)	9	9	14	16	20	22	24	25	18	14	10	10

- (a) Use your calculator to compute the Pearson correlation coefficient, r , between X and Y (6 pts.)
- (b) Take as given: $\bar{x} = 16.75$; $\bar{y} = 15.92$; $s_x = 6.15$; $s_y = 5.87$. Using these statistics and the correlation coefficient obtained in (a), find the regression equation for predicting Y from X . Show work. (8 pts.)
4. Of all the investors in a community, 41% of them invest their money into stocks, 87% invest into mutual funds, and 38% invest into both stocks and mutual funds.
- (a) Find the probability that a randomly selected investor in this community invests his/her money into stocks, mutual funds, or both. (6 pts.)
- (b) Suppose that a randomly selected investor invests his/her money into mutual funds. What is the probability that he/she investments money into stocks also? (6 pts.)
- (c) Are the events “selected investor investing money into stocks” and “selected investor investing money into mutual funds” independent? Justify your answer. (8 pts.)

5. The table below cross-classifies a total of 915 faculty members at a small college according to their gender and their political affiliation.

Gender	Political affiliation		
	Democrat	Independent	Republican
Female	227	15	22
Male	560	10	81

- (a) Compute the conditional percentages of the political affiliation for male and female faculty separately. (8 pts.)
- (b) Based on the conditional percentages obtained in (a), describe the association between gender and political affiliation. (6 pts.)
6. At a factory that produces computer hard disks, 0.5% of the disks produced are defective. If 3 disks are taken at random from the production line, what is the probability that at least one of them will be defective? Hint: Use complement. (6 pts.)
7. For a sample of 16 college students, number of credits earned was modeled as a function of class standing using a simple linear regression. Number of credits earned ranged from 28 to 196. Class standing was coded as 1 = freshman, 2 = sophomore, 3 = junior, and 4 = senior. The results of the analysis are presented on the following page.
- (a) Predict the number of credits earned for a sophomore student. (6 pts.)
- (b) Interpret the value of the coefficient of determination, r^2 , in the context of the problem. (6 pts.)

Figure 1. SPSS output for Problem 7.

Variables Entered/Removed ^b			
Model	Variables Entered	Variables Removed	Method
1	Class Standing ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: Credits Earned

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.971 ^a	.943	.939	15.208

a. Predictors: (Constant), Class Standing

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53457.800	1	53457.800	231.137	.000 ^a
	Residual	3237.950	14	231.282		
	Total	56695.750	15			

a. Predictors: (Constant), Class Standing

b. Dependent Variable: Credits Earned

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-31.625	9.313		-3.396	.004
	Class Standing	51.700	3.401	.971	15.203	.000

a. Dependent Variable: Credits Earned