Second Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

30 pts.

Q	P
3	5
2	4
1	2

a) Find by hand (show work) the regression equation where Q is a function of P.

b) Find the r^2 and the standard error of the estimate.

c) What percentage of the total variation is explained by the model.

d) Find the adjusted r^2 and interpret it.

e) Find the predicted value of Q and a 95 percent prediction interval for $\mu_{Q.P}$ when P is 1.

20 pts.

2) Use the printout for the price/income regression on the next page for this question.

a) Is there a statistically significant relationship ($\alpha=.01$) between price and income? Use two parts of the display to support your answer.

b) Are there outliers or influential observations. Explain.

c) Does heteroscedasticity seem to be a problem in the data? Explain.

25 pts. **Computer Problem**

3) a)   Use SPSS and the Mutual Funds data in the Chapter 16 folder to regress Expense Ratio, Safety Rating and Fund Type on Performance. (You will have to create a dummy variable to use the fund information. Ask for help if you need it.) Ask for collinearity diagnostics.

b) How much does your model suggest that fund type affects performance?

c) Is there any evidence of collinearity? Explain.

d) Run the model now without control for fund type. Are the effects of the remaining variables changed much by the absence of the dummy variable? Explain.

25 pts

4)   Use the printout for LNGNP.

a) If the model is $\ln GNP = a + bX$, what are the values for A and B in $GNP = AB^X$?

b) Is there any indication of autocorrelation in the printout? Explain.

c) Does the residual plot look like it should? Explain.

d) Explain the difference between a standardized residual and one that's unstandardized? (Plain English please, don't just write formulas.)

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has._____

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.93
R Square	0.86
Adjusted R	0.85
Standard E	6.63
Observatio	12

Income ($1000s) Residual Plot
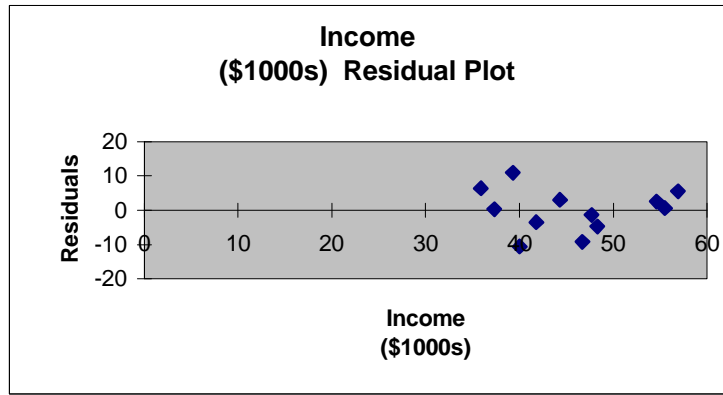
ANOVA

	df	SS	MS	F	Significance F
Regression	1	2718	2718	61.75031	1.38E-05
Residual	10	440	44		
Total	11	3158			

|	Coefficients	Standard E	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-12	12.8	-0.9	0.379793	-40.4204	16.81631
Income ($1000s)	2.18	0.28	7.86	1.38E-05	1.564916	2.803585

	Income ($1000s)		Price ($1000s)	
Mean	45.69167	Mean		88

RESIDUAL OUTPUT

Observation	Predicted Price ($1000s)	Residuals	Standard Residuals
1	79.5	-3.5	-0.6
2	92.4	-1.4	-0.2
3	75.6	-11	-1.7
4	85	3.04	0.48
5	69.7	0.33	0.05
6	66.6	6.39	1.01
7	74	11	1.73
8	112	5.52	0.87
9	90.2	-9.2	-1.5
10	93.7	-4.7	-0.7
11	107	2.54	0.4
12	109	0.58	0.09

Income ($1000s) Line Fit Plot
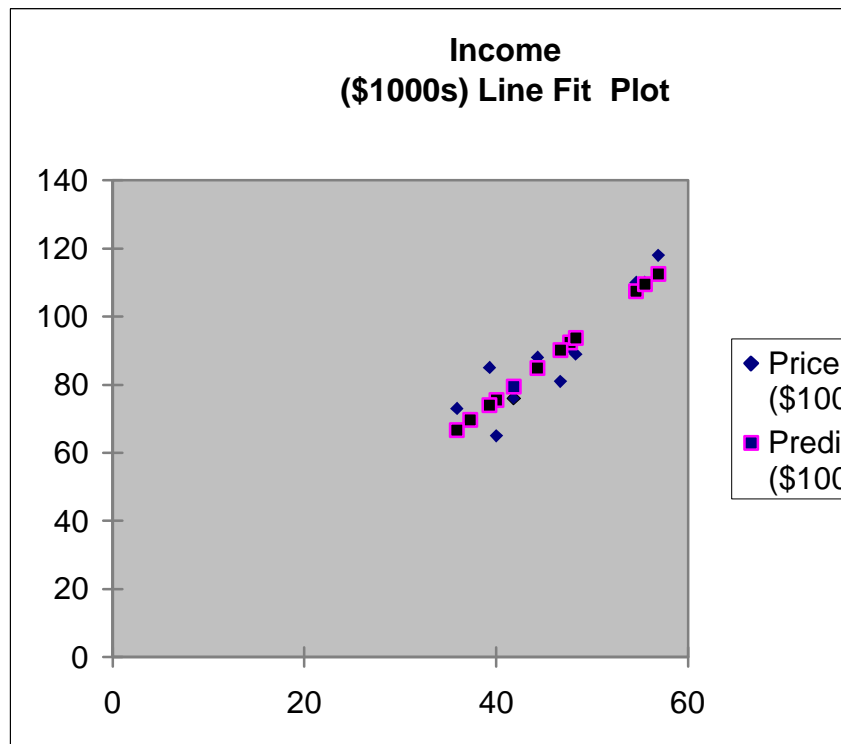
Regression

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.999[a]	.998	.998	.00401	.101

a. Predictors: (Constant), 1929 to 1983

b. Dependent Variable: LNGNP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.267	.009		358.430	.000
	1929 to 1983	.014	.000	.999	110.734	.000

a. Dependent Variable: LNGNP

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.1188	4.4260	4.2724	.09468	23
Residual	-.0080	.0043	.0000	.00392	23
Std. Predicted Value	-1.622	1.622	.000	1.000	23
Std. Residual	-1.983	1.066	.000	.977	23

a. Dependent Variable: LNGNP

Charts

Scatterplot

Dependent Variable: LNGNP

LNGNP