INFERENCE 5

At the right is the computer output for a regression analysis involving starting salary (in $1,000) and college GPA.

Variable	Coef	s.e.	t	p
Constant	-0.73391	5.744	-0.128	0.9015
GPA	11.8204	1.848	6.4	0.0002

s = 3.772 R-sq = 83.6% R-sq(adj) = 81.6%

Source	df	SS	MS	F
Regression	1	581.798	581.798	40.9
Residual	8	113.802	14.2252	

What is the equation for the least squares regression line?

(A) GPA = −0.734 + 11.82(Salary)

(B) Salary = −0.734 + 11.82(GPA)

(C) GPA = 0.9015 + 0.0002(Salary)

(D) Salary = 5.744 + 1.848(GPA)

(E) Salary = 1.848 + 11.82(GPA)

INFERENCE 17

A college recruiter is interested in comparing the SAT math and verbal scores of applicants to the college. An SRS of 40 applicants is chosen, and the math and verbal scores are noted. Which of the following is a proper test?

(A) Test of difference in two population means.

(B) Test of difference in two population proportions.

(C) One sample test on differences of paired data.

(D) Chi-square goodness-of-fit test.

(E) Chi-square test for homogeneity.

INFERENCE 32

To compare prices at a grocery store in the suburbs with one in the city, a housewife picks ten basic items and checks the prices of these items at each store. Which test should she use to determine if the prices are different at the two stores?

(A) χ^2 test for goodness-of-fit

(B) χ^2 test for independence

(C) Two-sample z-test

(D) Two-sample t-test

(E) Matched pairs t-test

INFERENCE 37

A linear regression analysis relating secretaries' salaries to years of experience yields $\hat{y} = 19.78 + 2.405x$, where x is years of experience and y is salary (in $1,000). Which of the following is the most proper conclusion?

(A) A starting secretary will earn $19,780, while one with 70 years of experience should earn $188,130.

(B) Starting secretaries average $19,780 with bonuses of $2,405 every year.

(C) There is a cause-and-effect relationship between secretaries salaries and experience with each extra year of experience corresponding to an extra $2,405 in salary.

(D) Starting salaries for secretaries average $19,780 and each year of experience is associated with an average extra $2,405.

(E) There is a high correlation between secretaries' salaries and years of experience.

INFERENCE 57

Three professors are interviewed as to a sampling of their grades, and the following table gives the resulting counts.

	Prof. A	Prof. B	Prof. C
Grades A, B	3	8	12
Grade C	15	9	8
Grades D, F	2	3	4

A statistics student runs a chi-square test of homogeneity. What is the most proper conclusion?

(A) There is no evidence of a relationship between these professors and grades.

(B) There is evidence at the 10 percent level, but not at the 5 percent level, that the professors give different grade distributions.

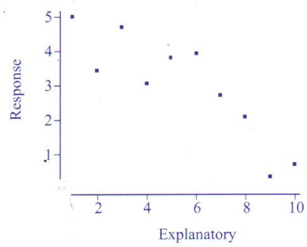
(C) There is evidence at the 5 percent level, but not at the 1 percent level, that the professors give different grade distributions.

(D) There is evidence at the 1 percent level that the professors give different grade distributions.

(E) A chi-square test of homogeneity is not appropriate.

INFERENCE 65

Which is the correct regression output for the scatterplot below?



(A)

Variable	Coef	s.e.	t	p
Constant	5.45333	0.5487	9.94	0.0001
Explanatory	-0.451515	0.08844	-5.11	0.0009
s = 0.8033	R-sq = 76.5%	R-sq(adj) = 73.6%		

(B)

Variable	Coef	s.e.	t	p
Constant	-0.451515	0.5487	9.94	0.0001
Explanatory	5.45333	0.08844	-5.11	0.0009
s = 0.8033	R-sq = 76.5%	R-sq(adj) = 73.6%		

(C)

Variable	Coef	s.e.	t	p
Constant	5.45333	0.5487	9.94	0.0001
Explanatory	0.451515	0.08844	5.11	0.0009
s = 0.8033	R-sq = 36.5%	R-sq(adj) = 33.6%		

(D)

Variable	Coef	s.e.	t	p
Constant	5.45333	0.5487	9.94	0.0001
Explanatory	-0.451515	0.08844	-5.11	0.0009
s = 0.8033	R-sq = 36.5%	R-sq(adj) = 33.6%		

(E)

Variable	Coef	s.e.	t	p
Constant	5.45333	0.5487	9.94	0.0001
Explanatory	0.451515	0.08844	5.11	0.0009
s = 0.8033	R-sq = 76.5%	R-sq(adj) = 73.6%		

INFERENCE 73

In a random sample of 25 high school students, each was interviewed as to GPA and weekly hours worked at part-time jobs. What is the critical *t*-value in calculating a 90 percent confidence interval estimate for the slope of the resulting least squares regression line.

(A) 1.645 (B) 1.703 (C) 1.708 (D) 1.711 (E) 1.714

INFERENCE 75

It is hypothesized that scores on a certain intelligence test are normally distributed with a mean of 100 and a standard deviation of 10. A psychologist runs a goodness-of-fit hypothesis on an SRS of 100 scores resulting in the table below. What is the χ^2 statistic for this test?

Score:	Below 90	90–100	100–110	Above 110
Number of people:	10	40	35	15

(A) $\frac{(10-16)^2}{10}+\frac{(40-34)^2}{40}+\frac{(35-34)^2}{35}+\frac{(15-16)^2}{15}$

(B) $\frac{(10-16)^2}{16}+\frac{(40-34)^2}{34}+\frac{(35-34)^2}{34}+\frac{(15-16)^2}{16}$

(C) $\frac{(10-25)^2}{25}+\frac{(40-25)^2}{25}+\frac{(35-25)^2}{25}+\frac{(15-25)^2}{25}$

(D) $\frac{(10-25)^2}{10}+\frac{(40-25)^2}{40}+\frac{(35-25)^2}{35}+\frac{(15-25)^2}{15}$

(E) $\frac{(10-25)^2}{16}+\frac{(40-25)^2}{34}+\frac{(35-25)^2}{34}+\frac{(15-25)^2}{16}$

INFERENCE 81

An automotive insurance company is interested in the association between age of SUVs and odometer reading for their clients. Data from 20 randomly selected clients generates the following computer output:

Dependent variable : **Mileage**

Source	df	Sum of Squares	Mean Square	F-ratio
Regression	1	21.5613e9	21.5613e9	87.3
Residual	18	4.44774e9	247.097e6	

Variable	Coeff	s.e. of Coeff	t-ratio	prob
Constant	9717.95	7208	1.35	0.194
Age	15675.2	1678	9.34	0.000

s = 15720 with df = 20 - 2 = 18 R-sq = 82.9% R-sq (adj) = 81.9%

Which of the following gives a 96 percent confidence interval for the slope of the regression line?

(A) 9,718 ± 2.054 (7,208)

(B) 9,718 ± 2.197 (7,208)

(C) $9,718 \pm 2.214\left(\frac{7,208}{\sqrt{20}}\right)$

(D) $15,675 \pm 2.197\left(\frac{15,720}{\sqrt{20}}\right)$

(E) 15,675 ± 2.214 (1,678)

5. B
17. C
32. E
37. D
57. E
65. A
73. E
75. B
81. E