

1. Consider the following partially completed computer printout for a regression analysis where the dependent variable is the price of a personal computer and the independent variable is the size of the hard drive.

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.819361805				
R Square					
Adjusted R Square	0.661687702				
Standard Error					
Observations	36				
<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	33116034.84	33116034.84		
Residual		16211214.72			
Total	35	49327249.56			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	50.84102383	246.9869514	0.205844979	0.838139607	
Hard Drive Capacity	217.7539792	26.12854674		9.95844E-10	

Based on the information provided, what is the F statistic?

- About 8.33
- Just over 2.35
- About 4.76
- About 69.5

4 points

Save Answer

QUESTION 2

1. The standard error of the estimate is a measure of
- total variation of the Y variable.
- the variation around the sample regression line.
- explained variation.
- the variation of the X variable.

4 points

Save Answer

QUESTION 3

3. Nintendo Sony would like to test the hypothesis that a difference exists in the average age of users of a Wii, a PlayStation, or an Xbox console game. The following data represent the age of a random sample of Wii, PlayStation, and Xbox users.

Wii	PlayStation	Xbox
37	26	31
31	21	20
47	24	38
29	24	31
36	25	30

Using $\alpha = 0.05$, the conclusion for this hypothesis test would be that because the test statistic is

- more than the critical value, we cannot conclude that there is a difference in the average age of users of a Wii, a PlayStation, or an Xbox console game.
- less than the critical value, we cannot conclude that there is a difference in the average age of users of a Wii, a PlayStation, or an Xbox console game.
- more than the critical value, we can conclude that there is a difference in the average age of users of a Wii, a PlayStation, or an Xbox console game.
- less than the critical value, we can conclude that there is a difference in the average age of users of a Wii, a PlayStation, or an Xbox console game.

4 points

Save Answer

QUESTION 4

1. The relationship of Y to four other variables was established as $Y = 12 + 3X_1 - 5X_2 + 7X_3 + 2X_4$.
When X_1 increases 5 units and X_2 In a sample of $n = 23$, the Student's t test statistic for a correlation of $r = .500$ would be:

- 2.559
- 2.819
- 2.646
- can't say without knowing α (alpha)

4 points

Save Answer

QUESTION 5

1. Given the following ANOVA table (some information is missing), find the F statistic.

<i>Source</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>
Treatment	744.00	4	
Error	751.50	15	
Total	1,495.50	19	

- 3.71
- 0.99
- 0.497
- 4.02

4 points

Save Answer

QUESTION 6

1. Examine the following two-factor analysis of variance table:

<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F-Ratio</i>
Factor A	162.79	4		
Factor B			28.12	
AB Interaction	262.31	12		
Error	_____	_____		
Total	1,298.74	84		

Complete the analysis of variance table.

- MSA = 40.928, F Factor A = 3.35, SSB = 85.35, Factor B df = 3, F Factor B = 2.316, MSAB = 21.859, F Factor AB = 1.8, SSE = 789.29, SSE df = 66, MSE = 12.143
- MSA = 40.928, F Factor A = 3.35, SSB = 85.35, Factor B df = 4, F Factor B = 2.316, MSAB = 21.859, F Factor AB = 2.1, SSE = 789.29, SSE df = 66, MSE = 12.143
- MSA = 40.698, F Factor A = 3.35, SSB = 84.35, Factor B df = 5, F Factor B = 2.316, MSAB = 21.859, F Factor AB = 2.1, SSE = 789.29, SSE df = 65, MSE = 12.143
- MSA = 40.698, F Factor A = 3.35, SSB = 84.35, Factor B df = 3, F Factor B = 2.316, MSAB = 21.859, F Factor AB = 1.8, SSE = 789.29, SSE df = 65, MSE = 12.143

4 points

Save Answer

QUESTION 7

1. The critical value for a two-tailed test of $H_0: \beta_1 = 0$ at a $(\alpha) = .05$ in a simple regression with 22 observations is:
- + or - 1.725
- + or - 2.086
- + or - 2.528
- + or - 1.960

4 points

Save Answer

QUESTION 8

1. A regression equation that predicts the price of homes in thousands of dollars is $t = 24.6 + 0.055x_1 - 3.6x_2$, where x_2 is a dummy variable that represents whether the house is on a busy street or not. Here $x_2 = 1$ means the house is on a busy street and $x_2 = 0$ means it is not. Based on this information, which of the following statements is true?

- On average, homes that are on busy streets are worth \$3600 less than homes that are not on busy streets.
- On average, homes that are on busy streets are worth \$3.6 less than homes that are not on busy streets.
- On average, homes that are on busy streets are worth \$3600 more than homes that are not on busy streets.
- On average, homes that are on busy streets are worth \$3.6 more than homes that are not on busy streets.

4 points

Save Answer

QUESTION 9

1. The variation attributable to factors other than the relationship between the independent variables and the explained variable in a regression analysis is represented by

- regression sum of squares.
- error sum of squares.
- total sum of squares.
- regression mean squares.

4 points

Save Answer

QUESTION 10

1. Degrees of freedom for the between-group variation in a one-factor ANOVA with $n_1 = 8$, $n_2 = 5$, $n_3 = 7$, $n_4 = 9$ would be:

- 28

- 3
- 29
- 4

4 points Save Answer

QUESTION 11

1. A hypothesis test is conducted at the 5 percent level of significance to test whether the population correlation is zero. If the sample consists of 25 observations and the correlation coefficient is 0.60, then the computed test statistic would be:

- 2.071
- 1.960
- 3.597
- 1.645

4 points Save Answer

QUESTION 12

1. A two-factor analysis of variance is conducted to test the effect that price and advertising have on sales of a particular brand of bottled water. Each week a combination of particular levels of price and advertising are used and the sales amount is recorded. The computer results are shown below.

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-value</i>	<i>F-crit</i>
Sample (advertising)	99.73324	1	99.73324	5.251652	0.034201	4.413873
Columns (price)	1150.432	2	575.2161	30.28914	1.74E-06	3.554557
Interaction	1577.526	2	788.7629	41.53387	1.8E-07	3.554557
Within	341.835	18	18.99083			
Total	3169.526	23				

Based on the results above and a 0.05 level of significance, which of the following is correct?

- There is no interaction between price and advertising, so results for individual factors may be

misleading.

- There is interaction between price and advertising, so the above results for individual factors may be misleading.
- There is no interaction between price and advertising, and both factors significantly affect sales.
- There is interaction between price and advertising, so the above results conclusively show that both factors affect price.

4 points

Save Answer

QUESTION 13

1. Many companies use well-known celebrities as spokespersons in their TV advertisements. A study was conducted to determine whether brand awareness of female TV viewers and the gender of the spokesperson are independent. Each in a sample of 300 female TV viewers was asked to identify a product advertised by a celebrity spokesperson. The gender of the spokesperson and whether or not the viewer could identify the product was recorded. The numbers in each category are given below.

	Male Celebrity	Female Celebrity
Identified product	41	61
Could not identify	109	89

Referring to the Table, the degrees of freedom of the test statistic are

- 1
- 2
- 4
- 299

4 points

Save Answer

QUESTION 14

1. In a multiple regression with six predictors in a sample of 67 U.S. cities, what would be the critical value for an F-test of overall significance at $\alpha = .05$?

- 2.29
- 2.25
- 2.37
- 2.18

4 points

Save Answer

QUESTION 15

1. Consider this partially completed one-way ANOVA table:

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F-ratio</i>
Between Samples		3		
Within Samples	<u>405</u>	_____		
Total	888	31		

How many different populations are being considered in this analysis?

- 2
- 4
- 6
- 5

4 points

Save Answer

QUESTION 16

1. The slope (b_1) represents

- predicted value of Y when $X = 0$.
- the estimated average change in Y per unit change in X .

- the predicted value of Y .
- variation around the line of regression.

4 points Save Answer

QUESTION 17

1. What do we mean when we say that a simple linear regression model is “statistically” useful?

- All the statistics computed from the sample make sense.
- The model is an excellent predictor of Y .
- The model is “practically” useful for predicting Y .
- The model is a better predictor of Y than the sample mean, _____.

4 points Save Answer

QUESTION 18

1. Nintendo Sony would like to test the hypothesis that a difference exists in the average age of users of a Wii, a PlayStation, or an Xbox console game. The following data represent the age of a random sample of Wii, PlayStation, and Xbox users.

Wii	PlayStation	Xbox
37	26	31
31	21	20
47	24	38
29	24	31
36	25	30

Using $\alpha = 0.05$, the critical value for this hypothesis test would be _____.

- 3.885
- 4.581
- 5.718

6.040

4 points

Save Answer

QUESTION 19

1. The following regression output was generated based on a sample of utility customers. The dependent variable was the dollar amount of the monthly bill and the independent variable was the size of the house in square feet.

SUMMARY OUTPUT				
<i>Regression Statistics</i>				
Multiple R	0.149769088			
R Square	0.02243078			
Adjusted R Square	-0.012482407			
Standard Error	16.72762259			
Observations	30			
<i>ANOVA</i>				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	179.7725274	179.7725	0.642473
Residual	28	7834.774007	279.8134	
Total	29	8014.546534		
<i>Coefficients</i>				
	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	66.44304169	13.44691911	4.941135	3.26E-05
Square Feet	0.005258733	0.006560753	0.801544	0.429567

Based on this regression output, which of the following statements is not true?

- The number of square feet in the house explains only about 2 percent of the variation in the monthly power bill.
- At an alpha level equal to 0.05, there is no basis for rejecting the hypothesis that the slope coefficient is equal to zero.
- The average increase in the monthly power bill is about 66.4 for each additional square foot of space in the house.

- The correlation of the monthly power bill with the square footage of the house is 0.149

4 points

Save Answer

QUESTION 20

1. Consider this partially completed one-way ANOVA table:

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F-ratio</i>
Between Samples		3		
Within Samples	<u>405</u>	_____		
Total	888	31		

Based on the analysis of variance F-test, what conclusion should be reached regarding the null hypothesis? Test using $\alpha = 0.05$.

- Since $11.1309 > 2.9467$ accept H_0 and conclude that all population means are the same.
- Since $2.9467 > 11.1309$ accept H_0 and conclude that all population means are the same.
- Since $11.1309 > 2.9467$ reject H_0 and conclude that at least two populations means are different.
- Since $2.9467 > 11.1309$ reject H_0 and conclude that at least two populations means are different.

4 points

Save Answer

QUESTION 21

1. The following EXCEL tables are obtained when "Score received on an exam (measured in percentage points)" (Y) is regressed on "percentage attendance" (X) for 22 students in a Statistics for Business and Economics course.

Regression Statistics

Multiple R	0.142620229
R Square	0.02034053
Adjusted R Square	-0.028642444
Standard Error	20.25979924
Observations	22

	<i>Coefficients</i>	<i>Standard Error</i>	<i>T Stat</i>	<i>P-value</i>
Intercept	39.39027309	37.24347659	1.057642216	0.302826622
Attendance	0.340583573	0.52852452	0.644404489	0.526635689

Which of the following statements is true?

- If attendance increases by 0.341%, the estimated average score received will increase by 1 percentage point.
- If attendance increases by 1%, the estimated average score received will increase by 39.39 percentage points.
- If attendance increases by 1%, the estimated average score received will increase by 0.341 percentage points.
- If the score received increases by 39.39%, the estimated average attendance will go up by 1%.

4 points

Save Answer

QUESTION 22

- A local trucking company fitted a regression to relate the travel time (days) of its shipments as a function of the distance traveled (miles). The fitted regression is $\text{Time} = -7.126 + .0214 \text{ Distance}$, based on a sample of 20 shipments. The estimated standard error of the slope is 0.0053. Find the critical value for a right-tailed test to see if the slope is positive, using a $(\alpha) = .05$.

- 2.101
- 2.552
- 1.960
- 1.734

4 points

Save Answer

QUESTION 23

1. The following regression output is from a multiple regression model:

SUMMARY OUTPUT				
<i>Regression Statistics</i>				
Multiple R	0.919404776			
R Square	0.845305142			
Adjusted R Square	0.816299856			
Standard Error	11.39504264			
Observations	20			
ANOVA				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	3	11352.44805	3784.149351	29.14314
Residual	16	2077.551948	129.8469967	
Total	19	13430		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	72.31785346	12.44716792	5.809984561	2.66E-05
t	34.83108152	5.008279449	6.954700088	3.24E-06
t ²	-3.575838282	0.547142399	-6.535480136	6.87E-06
t ³	0.110697771	0.01715369	6.45329207	7.97E-06

The variables t, t², and t³ represent the t, t-squared, and t-cubed respectively where t is the indicator of time from periods t = 1 to t = 20. Which of the following best describes the type of forecasting model that has been developed?

- A complete third-order polynomial model
- A tri-variate smoothed regression model

- A nonlinear trend model
- A qualitative regression model

4 points Save Answer

QUESTION 24

1. Examine the following two-factor analysis of variance table:

<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F-Ratio</i>
Factor A	162.79	4		
Factor B			28.12	
AB Interaction	262.31	12		
Error	_____	_____		
Total	1,298.74	84		

Does the ANOVA table indicate that the levels of factor B have equal means? Use a significance level of 0.05.

- Fail to reject H_0 . Conclude that there is not sufficient evidence to indicate that at least two levels of Factor B have different mean responses.
- Reject H_0 . Conclude that there is sufficient evidence to indicate that at least two levels of Factor B have different mean responses.
- Fail to reject H_0 . Conclude that there is sufficient evidence to indicate that at least two levels of Factor B have different mean responses.
- Reject H_0 . Conclude that there is not sufficient evidence to indicate that at least two levels of Factor B have different mean responses.

4 points Save Answer

QUESTION 25

1. Parents complain that children read too few storybooks and watch too much television nowadays. A survey of 1,000 children reveals the following information on average time spent watching TV and average time spent reading storybooks

	Average time spent reading story books		
Average time spent watching TV	Less than 1 hour	Between 1 and 2 hours	More than 2 hours
Less than 2 hours	90	85	130
More than 2 hours	655	32	8

Referring to the Table, if the null hypothesis of no connection between time spent watching TV and time spent reading story books is true, how many children watching less than 2 hours of TV and reading no more than 2 hours of story books on average can we expect?

- 35.69
 227.23
 262.91
 969.75

4 points

Save Answer

QUESTION 26

1. With two-way ANOVA, the total sum of squares is portioned in the sum of squares for
- Factor A, Factor B, block, and error.
 Factor A, Factor B, within, and error.
 Factor A, Factor B, interaction, and error.
 Factor A, Factor B, interaction, and between.

4 points

Save Answer

QUESTION 27

1. Consider this partially completed one-way ANOVA table:

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F-ratio</i>
Between Samples		3		
Within Samples	<u>405</u>	_____		
Total	888	31		

Fill in the ANOVA table with the missing values.

- SSB = 483, MSB = 161, F-ratio = 11.1309, Within Samples df = 28, MSW = 14.464
- SSB = 483, MSB = 161, F-ratio = 8.1629, Within Samples df = 28, MSW = 14.464
- SSB = 483, MSB = 161, F-ratio = 8.1629, Within Samples df = 25, MSW = 14.464
- SSB = 504, MSB = 161, F-ratio = 8.1629, Within Samples df = 28, MSW = 14.464

4 points

Save Answer

QUESTION 28

1. _____ ANOVA relies on matched samples in a similar way to the matched-pairs hypothesis testing that compares two population means.
- One-way
- Randomized block
- Two-way
- Three-way

4 points

Save Answer

QUESTION 29

1. The following EXCEL tables are obtained when "Score received on an exam (measured in percentage points)" (Y) is regressed on "percentage attendance" (X) for 22 students in a Statistics for Business and Economics course.

<i>Regression Statistics</i>	
Multiple R	0.142620229
R Square	0.02034053
Adjusted R Square	-0.028642444
Standard Error	20.25979924
Observations	22

	<i>Coefficients</i>	<i>Standard Error</i>	<i>T Stat</i>	<i>P-value</i>
Intercept	39.39027309	37.24347659	1.057642216	0.302826622
Attendance	0.340583573	0.52852452	0.644404489	0.526635689

2.

Which of the following statements is true?

- 2.86% of the total variability in score received can be explained by percentage attendance.
- 2.86% of the total variability in percentage attendance can be explained by score received.
- 2% of the total variability in score received can be explained by percentage attendance.
- 2% of the total variability in percentage attendance can be explained by score received.

4 points

Save Answer

QUESTION 30

1. In a particular model, the sum of the squared residuals was 847. If the model had 5 independent variables, and the data set contained 40 points, the value of the standard error of the estimate is 24.911.

- True
 False

4 points Save Answer

QUESTION 31

1. The following multiple regression output was generated from a study in which two independent variables are included. The first independent variable (X1) is a quantitative variable measured on a continuous scale. The second variable (X2) is qualitative coded 0 if Yes, 1 if No.

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.79288				
R Square	0.628659				
Adjusted R Square	0.522562				
Standard Error	53.93691				
Observations	10				
<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	
Regression	2	34475.67	17237.83	5.925303	
Residual	7	20364.33	2909.19		
Total	9	54840			
	<i>Coefficients</i>		<i>Standard Err</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	413.0573	67.1026	6.155608	0.000465	
X1	-46.7516	13.61245	-3.43447	0.010919	
X2	-36.051	35.07682	-1.02777	0.338256	

Based on this information, which of the following statements is true?

- The model explains nearly 63 percent of the variation in the dependent variable
- If tested at the 0.05 significance level, the overall model would be considered statistically significant.
- The variable X1 has a slope coefficient that is significantly different from zero if tested at the 0.05 level of significance.
- All of the above are true.

4 points

Save Answer

QUESTION 32

The _____ is another term for the variance of the sample data.

- mean square total
- mean square between
- mean square within
- total sum of squares

4 points

Save Answer

QUESTION 33

1. We are interested in determining whether the opinions of the individuals on gun control (as to Yes, No, and No Opinion) are uniformly distributed. A sample of 150 was taken and the following data were obtained.

Do you support gun control	Number of Responses
Yes	40
No	60
No Opinion	50

The conclusion of the test with $\alpha = 0.05$ is that the views of people on gun control are:

- uniformly distributed.
- not uniformly distributed.
- inconclusive.
- None of the above

4 points

Save Answer

QUESTION 34

1. When testing for independence in a contingency table with 3 rows and 4 columns, there are _____ degrees of freedom.

- 5
- 6
- 7
- 12

4 points

Save Answer

QUESTION 35

1. The following regression output was generated based on a sample of utility customers. The dependent variable was the dollar amount of the monthly bill and the independent variable was the size of the house in square feet.

SUMMARY OUTPUT				
<i>Regression Statistics</i>				
Multiple R	0.149769088			
R Square	0.02243078			
Adjusted R Square	-0.012482407			
Standard Error	16.72762259			
Observations	30			
<i>ANOVA</i>				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	1	179.7725274	179.7725	0.642473
Residual	28	7834.774007	279.8134	
Total	29	8014.546534		
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	66.44304169	13.44691911	4.941135	3.26E-05
Square Feet	0.005258733	0.006560753	0.801544	0.429567

Based on this regression output, what is the 95 percent confidence interval estimate for the population regression slope coefficient?

- Approximately -0.0003 ----- +0.0103
- About -0.0082 ----- +0.0188
- Approximately -32.76 ----- +32.79
- None of the above

4 points

Save Answer

Click Save and Submit to save and submit. Click Save All Answers to save all answers.