Take Test: Module 04 Week 7 gretl Assignment

Test Information

Description	This is the gretl assignment for Module 04, Week 7. In this assignment you will continue to explore ordinary least squares regression, particularly multiple variable or multivariable regression. I am uploading a complete Word doc below. As was the case last week, this document contains everything you need to complete the gretl assignment as well as a discussion about some of the concepts covered. The intention is to help you develop an intuitive understanding for what is going on with this type of regression. As usual, select the choice that best answers a question and round numeric answers to two decimal places. As always, if you have question please ask! Module 4 Week 1, gretl 7 ANA 500.docx cafeteria.csv
Instructions	The online portion of this gretl assignment has a variety of types of questions; multiple choice, fill in the blank, true/false, etc. Please select the choice that best answers the question or enter a value rounded to two decimal places unless otherwise instructed. If you have any questions just ask! If you didn't already download it, here is a copy of the Word document associated with this week's assignment. Module 4 Week 1, gretl 7 ANA 500.docx cafeteria.csv
Multiple Attempts	This test allows 2 attempts. This is attempt number 1.
Force Completion	This test can be saved and resumed later. Your answers are saved automatically.

Question Completion Status:

QUESTION 1 — **4 points** Save Answer

Considering the descriptive statistics for the cafeteria.gdt data, this dataset does NOT have sufficient observations (or records) to build an OLS model without worry about sample size. Therefore, we will have to modify the distributions used for tests of the model to compensate.

- ○ True
- ○ False

QUESTION 2 — **4 points** Save Answer

Thinking about consistent units and the listed units for sales, price and advertising costs (adv_cost), an adjustment may need to be made to values in price for a direct comparison to the other variables sales (revenue) and advertising cost (adv_cost).

- ○ True
- ○ False

QUESTION 3 — **5 points** Save Answer

The simple linear regression model for this situation is:

$$sales\ revenue = \beta_0 + \beta_1 price + \beta_2 adv\_cost + \varepsilon$$

(Hint: remember the definition of simple linear regression, multivariable linear regression, multivariate regression and so on!)

- ○ True
- ○ False

QUESTION 4 — **4 points** Save Answer

I have included tests for normality, linearity, and homoscedasticity in the script at the end of this Word doc. You can read more specifics about them in the output from the gretl script as well as in the various manuals and command help files available for gretl.

Using the data in the data file cafeteria.csv, consider the descriptive statistics, frequencies, and develop a simple linear model to represent these data.

The assumption of normality is satisfied.

- ○ True
- ○ False

QUESTION 5 — **5 points** Save Answer

I have included tests for normality, linearity, and homoscedasticity in the script at the end of this Word doc. You can read more specifics about them in the output from the gretl script as well as in the various manuals and command help files available for gretl.

Using the data in the data file cafeteria.csv, consider the descriptive statistics, frequencies, and develop a simple linear model to represent these data.

The assumption of linearity is satisfied.

- ○ True
- ○ False

QUESTION 6 — **5 points** Save Answer

I have included tests for normality, linearity, and homoscedasticity in the script at the end of this Word doc. You can read more specifics about them in the output from the gretl script as well as in the various manuals and command help files available for gretl.

Using the data in the data file cafeteria.csv, consider the descriptive statistics, frequencies, and develop a simple linear model to represent these data.

The assumption of homogeneity or homoscedasticity is satisfied.

- ○ True
- ○ False

QUESTION 7 — **5 points** Save Answer

Analyze the coefficients related to the explanatory (independent) variables.

- ○ Only the advertising costs variable is statistically significant.
- ○ Only the price variable is statistically significant.
- ○ All the variables in the model are statistically significant.
- ○ None of the variables in the model are statistically significant.

QUESTION 8 — **5 points** Save Answer

The value of the intercept of the regression line is _____.

[ ]

QUESTION 9 — **6 points** Save Answer

The coefficient of price is _____.

QUESTION 10 — **4 points** Save Answer

The coefficient of adv_cost is _____.

QUESTION 11 — **4 points** Save Answer

How much annual revenue will be generated if the average price per meal is $5.50 and the advertising costs are capped at $1,200? In this case, be sure to round correctly to the dollar (USD). (Hint: you've done this before when considering other variables and ensuring you are using consistent units, i.e. remember that the problem statement says that values are in 1,000's of dollars (USD).)

QUESTION 12 — **4 points** Save Answer

Determine the number of degrees of freedom for this problem. (Hint: remember the formula $df = N - K$ where N is the number of observations and K is the number of unknown coefficients.) The number of degrees of freedom is _____.

QUESTION 13 — **5 points** Save Answer

The 95% confidence interval for price has a lower limit of _____ and,

QUESTION 14 — **4 points** Save Answer

the 95% confidence interval for price has an upper limit of _____ .

QUESTION 15 — **4 points** Save Answer

Based on the computed 95% confidence interval this means that if the price per meal is "decreased" by 10 cents or 0.10 that means that sales (revenue) would be increased by between _____ and,...
(Hint: remember that the units are 1,000's of dollars (USD).)

QUESTION 16 — **4 points** Save Answer

Continued from Q12a:
an upper limit of _____. (Hint: remember that the units are 1,000's of dollars (USD).)

QUESTION 17 — **4 points** Save Answer

The computed t-statistic (or t-ratio) for price is _____.
(See attached Word doc for the rest of the text of this question!)

QUESTION 18 — **4 points** Save Answer

Using the same hypothesis test or computing with gretl, the t-ratio for the advertising costs (adv_cost) is _____ .

QUESTION 19 — **4 points** Save Answer

These values are the same as the values computed and included in the table for the original OLS model.

- ○ True
- ○ False

QUESTION 20 — **4 points** Save Answer

The corresponding P-values indicate that we must reject the null hypothesis, i.e. the P-value is much less than 0.05. Therefore, both price and adv_cost are significant variables and should be included in the model.

- ○ True
- ○ False

QUESTION 21 — **4 points** Save Answer

The null and alternate hypotheses to test if any additional dollars of advertising will generate additional sales is:

$H_0: \beta_2 \leq 1 \quad H_A: \beta_2 > 1$

- ○ True
- ○ False

QUESTION 22 — **4 points** Save Answer

Assume a level of significance of $\alpha = 0.05$ and find the relevant critical value. Treat the null hypothesis as an equality, i.e. $H_0: \beta_2 = 1$ is _____.

QUESTION 23 — **4 points** Save Answer

Compute any additional required values to determine whether or not there is sufficient evidence to confirm that additional dollars spent on advertising will be cost effective, i.e. result in increased sales (revenue). Answer the question, "There is sufficient evidence to confirm that additional money spent on advertising will result in increased revenue." Yes or No.

- ○ Yes
- ○ No

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

Save All Answers | Save and Submit