Self Assessment Questions & Answers

Linear Regression

Question 1

- How closely is the height (in inches) of an individual related to the weight? Partial regression output for a sample of 92 individuals is shown below. Based on the output, what is the predicted average weight for people who are 5’6” (66 inches) tall from the model?

weight	Coef.	Std. Err.	t	P>|t|]
height	5.09108	0.4237	12.020	0.0000
_cons	-204.740	29.1600	-7.020	0.0000

a. 131.32 pounds
b. (127.49, 135.14)
c. (101.68, 160.95)
d. 145 pounds

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a. 131.32 pounds (equation: weight = -204.74 + 5.0918*(66 inches)
b. (127.49, 135.14)
c. (101.68, 160.95)
d. 145 pounds

Question 2

- How closely is the height of an individual related to the weight? Partial regression output for a sample of 92 individuals is shown below. Based on the output, what is the 95% confidence interval for β_1, the slope of the regression line?

weight	Coef.	Std. Err.	t	P>|t|]
height	5.09108	0.4237	12.020	0.0000
_cons	-204.740	29.1600	-7.020	0.0000

a. -204.74±(1.96)*29.16
b. 5.0918 ±(1.96)*0.4237
c. (101.68, 160.95)
d. (127.49, 135.14)

Answer 2

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Question 3

- The following is output from a regression analysis. The predictor variable is a mathematics placement test score, and the outcome variable is a student's final grade in a statistics course. Is the slope of the regression equation statistically significant?

Course Grade = 29.9 + 2.46 Placement Score

```
------------------------------------------------------------
Course Grade    |      Coef.   Std. Err.      t    P>|t|
----------------+-------------------------------------------
Constant        |    29.882      7.304      4.09   0.001
Placement Score |     2.456      0.417      5.88   0.000
------------------------------------------------------------
s = 7.12074   R-Sq = 0.727   R-Sq(adj) = 0.706
```

a. Yes, it is highly significant
b. It is approaching statistical significance
c. It is not statistically significant
d. We can't tell from the output

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Question 4

- The following is output from a regression analysis. The predictor variable is a mathematics placement test score, and the outcome variable is a student's final grade in a statistics course. What is the value of the coefficient of determination?

```
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Course Grade    |      Coef.   Std. Err.      t    P>|t|]
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Constant        |    29.882      7.304      4.09   0.001
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a. 29.882
b. 7.304
c. 2.4558
d. 0.727

Answer 4

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a. 29.882
b. 7.304
c. 2.4558
d. 0.727

Question 5

- The following is output from a regression analysis. The predictor variable is a mathematics placement test score, and the outcome variable is a student's final grade in a statistics course. What is the interpretation of the coefficient of the placement score?

Course Grade	Coef.	Std. Err.	t	P>|t|
Constant	29.882	7.304	4.09	0.001
Placement Score	2.456	0.417	5.88	0.000

s = 7.12074 R-Sq = 0.727 R-Sq(adj) = 0.706

a. A unit increase in placement score increases student's final grade by 29.882 units, on average
b. A unit increase in placement score increases student's final grade by 2.456 units, on average
c. A unit increase in placement score increases student's final grade by 0.706 units, on average
d. The model is not significant, so we can't interpret the results

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c. A unit increase in placement score increases student's final grade by 0.706 units, on average
d. The model is not significant, so we can't interpret the results

Question 6

- The following is output from a regression analysis. The only predictor variable is a mathematics placement test score, and the outcome variable is a student's final grade in a statistics course. How would you interpret the coefficient of determination?

Course Grade	Coef.	Std. Err.	t	P>|t|
Constant	29.882	7.304	4.09	0.001
Placement Score	2.456	0.417	5.88	0.000

s = 7.12074 R-Sq = 0.727 R-Sq(adj) = 0.706

a. 2.4% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade
b. 72.7% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade
c. .727% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade
d. 70.7% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade

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b. 72.7% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade
c. .727% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade
d. 70.7% of the variation in the student's final grade is accounted for the linear relationship between placement score and course grade