Feedback — Quiz 2

Thank you. Your submission for this quiz was received.

You submitted this quiz on **Thu 9 Jul 2015 10:09 PM EDT**. You got a score of **8.00** out of **10.00**. You can attempt again, if you'd like.

Question 1

Consider the following data with x as the predictor and y as as the outcome.

```
x <- c(0.61, 0.93, 0.83, 0.35, 0.54, 0.16, 0.91, 0.62, 0.62)
y <- c(0.67, 0.84, 0.6, 0.18, 0.85, 0.47, 1.1, 0.65, 0.36)
```

Give a P-value for the two sided hypothesis test of whether β_1 from a linear regression model is 0 or not.

Your Answer		Score	Explanation
○ 0.025			
◉ 0.05296	✔	1.00	
○ 2.325			
○ 0.391			
Total		1.00 / 1.00	

Question 2

Consider the previous problem, give the estimate of the residual standard deviation.

Your Answer		Score	Explanation
⦿ 0.223	✔	1.00	
○ 0.3552			
○ 0.4358			
○ 0.05296			
Total		1.00 / 1.00	

Question 3

In the `mtcars` data set, fit a linear regression model of weight (predictor) on mpg (outcome). Get a 95% confidence interval for the expected mpg at the average weight. What is the lower endpoint?

Your Answer		Score	Explanation
○ -6.486			
○ -4.00			
○ 21.190			
⦿ 18.991	✔	1.00	
Total		1.00 / 1.00	

Question 4

Refer to the previous question. Read the help file for `mtcars` . What is the weight coefficien interpreted as?

Your Answer		Score	Explanation
⚪	The estimated 1,000 lb change in weight per 1 mpg increase.		
⚪	It can't be interpreted without further information		
⚫	The estimated expected change in mpg per 1,000 lb increase in weight.	✔ 1.00	
⚪	The estimated expected change in mpg per 1 lb increase in weight.		
Total		1.00 / 1.00	

Question 5

Consider again the `mtcars` data set and a linear regression model with mpg as predicted by weight (1,000 lbs). A new car is coming weighing 3000 pounds. Construct a 95% prediction interval for its mpg. What is the upper endpoint?

Your Answer		Score	Explanation
⚫ 27.57		✔ 1.00	
⚪ 14.93			
⚪ -5.77			
⚪ 21.25			

Total	1.00 / 1.00	

Question 6

Consider again the `mtcars` data set and a linear regression model with mpg as predicted by weight (in 1,000 lbs). A "short" ton is defined as 2,000 lbs. Construct a 95% confidence interval for the expected change in mpg per 1 short ton increase in weight. Give the lower endpoint.

Your Answer		Score	Explanation
◉ -12.973	✔	1.00	
○ -6.486			
○ -9.000			
○ 4.2026			
Total		1.00 / 1.00	

Question 7

If my X from a linear regression is measured in centimeters and I convert it to meters what would happen to the slope coefficient?

Your Answer	Score	Explanation
○ It would get multiplied by 100.	This is the correct answer	
○ It would get multiplied by 10		

○ It would get divided by 10		
◉ It would get divided by 100	✘	0.00
Total		0.00 / 1.00

Question 8

I have an outcome, Y, and a predictor, X and fit a linear regression model with $Y = \beta_0 + \beta_1 X + \epsilon$ to obtain $\hat{\beta}_0$ and $\hat{\beta}_1$. What would be the consequence to the subsequent slope and intercept if I were to refit the model with a new regressor, $X + c$ for some constant, c?

Your Answer	Score	Explanation
○ The new slope would be $c\hat{\beta}_1$		
○ The new intercept would be $\hat{\beta}_0 + c\hat{\beta}_1$		
○ The new slope would be $\hat{\beta}_1 + c$		
◉ The new intercept would be $\hat{\beta}_0 - c\hat{\beta}_1$	✔	1.00
Total	1.00 / 1.00	

Question 9

Refer back to the mtcars data set with mpg as an outcome and weight (wt) as the predictor. About what is the ratio of the the sum of the squared errors, $\sum_{i=1}^{n}(Y_i - \hat{Y}_i)^2$ when comparing a model with just an intercept (denominator) to the model with the intercept and slope (numerator)?

Your Answer	Score	Explanation
○ 0.25		This is the correct answer.
⊙ 0.75	✖ 0.00	
○ 0.50		
○ 4.00		
Total	0.00 / 1.00	

Question 10

Do the residuals always have to sum to 0 in linear regression?

Your Answer	Score	Explanation
○ The residuals never sum to zero.		
○ The residuals must always sum to zero.		
○ If an intercept is included, the residuals most likely won't sum to zero.		
⊙ If an intercept is included, then they will sum to 0.	✔ 1.00	
Total	1.00 / 1.00	