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Quiz name

Weekly quiz 5 (DUE: Fri Aug 25 10am)

1 | **MULTIPLE CHOICE**

Edit

Linear regression assumes that the relationship between two variables, x and y , can be modeled by a _____ line

Answer choices

- | | |
|----------|-----------|
| A | curved |
| B | straight |
| C | linear |
| D | quadratic |



2

MULTIPLE CHOICE

Edit

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

In the linear model, given by the equation above, what parts conventionally represents the explanatory variable(s)?

Answer choices

A	y
B	x_1
C	x_2
D	β_0
E	β_1
F	β_2
G	ε



3 | **MULTIPLE CHOICE**

Edit

If a linear model underestimates an observation, will the residual be _____ ?

Answer choices

A	positive
B	negative
C	zero
D	biased

4 | **TRUE/FALSE**

Edit

The least squares line is obtained by minimizing this criterion, where e is a residual, and $|\cdot|$ means absolute value.

$$|e_1| + |e_2| + \dots + |e_n|$$

Actually this would be the least absolute deviation line.

Answer

False

5 | MULTIPLE CHOICE

Edit

$$\hat{y} = 41.00 + 0.59x$$

The linear model describing the relationship between head length (y) and total length (x) of the Australian brush tail possum is above. For each increase of 2cm in total length, what is the average increase in head length?

Answer choices

A	42.18
B	0.59
C	1.18
D	82.00

6 | MULTIPLE CHOICE

Edit

For the linear model given by

$$\hat{y} = 41.00 + 0.59x$$

what is the residual for the observation (77.0, 85.3)?

Answer choices

A	86.4
B	-1.1
C	+1.1
D	85.3

7 | **MULTIPLE CHOICE**

Edit

Given these sample statistics

$$\bar{x} = 5, \bar{y} = -6, s_x = 2, s_y = 3, r = -3$$

compute the slope of a linear regression equation, that would give you a least squares line.

|

Answer choices

A	-2.0
B	-4.5
C	-1.2
D	3.6

8 | **MULTIPLE CHOICE**

Edit

The slope of a linear model describes the estimated _____ in the y variable if the explanatory variable x for a case happened to be one unit larger.

Answer choices

A	value
B	increase
C	decrease
D	difference

9 | MULTIPLE CHOICE

Edit

The intercept describes the _____ response value of y if $x = 0$. It only makes sense if the linear model is valid all the way to $x = 0$, which in many applications is not the case.

Answer choices

A	numerical
B	explained
C	average
D	observed

10 | MULTIPLE CHOICE

Edit

The

$$R^2$$

of a linear model describes the amount of _____ in the response that is explained by the least squares line

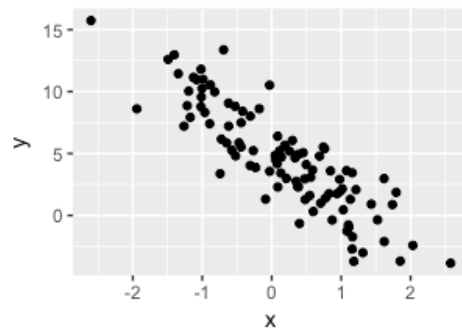
Answer choices

A	change
B	fit
C	variation
D	error

11

MULTIPLE CHOICE

Edit



The correlation, r , between x and y will be closest to ___?

Answer choices

A	0.9
B	-0.9
C	0.4
D	-0.4

12 | **MULTIPLE CHOICE**

Edit

"When those blizzards hit the East Coast this winter, it proved to my satisfaction that global warming was a fraud. That snow was freezing cold. But in an alarming trend, temperatures this spring have risen. Consider this: On February 6th it was 10 degrees. Today it hit almost 80. At this rate, by August it will be 220 degrees. So clearly folks the climate debate rages on." Stephen Colbert April 6th, 2010

What mistake was Stephen Colbert making?

Answer choices

A	prediction
B	fitting
C	error estimation
D	extrapolation

13 | **MULTIPLE CHOICE**

Edit

Points that fall horizontally away from the center of the cloud tend to pull harder on the line, so we call them points with high _____.

Answer choices

A	influence
B	outlyingness
C	leverage
D	importance

14 | MULTIPLE CHOICE

Edit

We are interested in the relationship between the number of calories and amount of carbohydrates (in grams) in Starbucks food menu items. Since Starbucks only lists the number of calories on the display items, we are interested in predicting the amount of carbs a menu item has based on its calorie content. What is the response variable?

Answer choices

A	number of calories
B	amount of carbohydrates (in grams)
C	grams
D	Starbucks food items

15 | TRUE/FALSE

Edit

If the

$$R^2 = 0.72$$

in a simple linear regression model, the correlation between the two variables could be -0.85 (approximately).

Answer

True

[+ Multiple Choice](#)[+ True/False](#)[+ Short Answer](#)