

This WeBWorK assignment is due on 12/10/2015 at 12:15pm EST.

1. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-18.pg

For the data set

$$(-2, -3), (0, 0), (4, 5), (8, 6), (9, 11),$$

carry out the hypothesis test

$$H_0 \quad \beta_1 = 0$$

$$H_1 \quad \beta_1 \neq 0$$

Determine the value of the test statistic and the associated p-value.

Test Statistic = _____

p-Value = _____

Correct Answers:

- 5.939696961967
- 0.00953996

2. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-16.pg

Find the least-squares regression line $\hat{y} = b_0 + b_1x$ through the points

$$(-1, 1), (1, 7), (5, 15), (7, 18), (11, 24),$$

and then use it to find point estimates \hat{y} corresponding to $x = 4$ and $x = 8$.

For $x = 4$, $\hat{y} =$ _____

For $x = 8$, $\hat{y} =$ _____

Correct Answers:

- 11.8684210526316
- 19.4122807017544

3. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-01.pg

Given the least squares regression line $\hat{y} = 5 - 2x$:

- A. as x decreases, so does y
- B. the relationship between x and y is negative
- C. as x increases, so does y
- D. the relationship between x and y is positive

Given a specific value of x and confidence level, which of the following statements is correct?

- A. The confidence interval estimate of the expected value of y will be narrower than the prediction interval.
- B. The confidence interval estimate of the expected value of y will be wider than the prediction interval.
- C. The prediction interval of y for the given value of x can be calculated but the confidence interval estimate of the expected value of y cannot be calculated.
- D. The confidence interval estimate of the expected value of y can be calculated but the prediction interval of y for the given value of x cannot be calculated.

Correct Answers:

- B
- A

4. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-17.pg

Find the least-squares regression line $\hat{y} = b_0 + b_1x$ through the points

$$(-1, 0), (1, 8), (6, 14), (8, 20), (11, 25).$$

For what value of x is $\hat{y} = 0$?

$x =$ _____

Correct Answers:

- -1.83958333333333

5. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-03.pg

Suppose that a regression yields the following sum of squares:

$$\Sigma(y_i - \bar{y})^2 = 200, \quad \Sigma(y_i - \hat{y}_i)^2 = 90, \quad \Sigma(\hat{y}_i - \bar{y})^2 = 110$$

Then the percentage of the variation in y that is explained by the variation in x is:

Answer = _____%

Correct Answers:

- 55

6. (1 point) Library/UVA-Stat/setStat212-Homework12/stat212-HW
12-14.pg

Find the coefficients for the least-squares regression line $\hat{y} = b_0 + b_1x$ through the points

$$(-3, 1), (3, 9), (5, 15), (8, 20), (9, 24).$$

$b_0 =$ _____

$b_1 =$ _____

Correct Answers:

- 5.53070175438597
- 1.87938596491228

7. (1 point) Library/ASU-topics/setStat/lines4.pg

For the equation $y = 2 + 2x$,

- a. the y -intercept is _____, and the slope is _____.
- b. the line

- A. slopes upward
- B. is horizontal
- C. slopes downward
- D. none of the above

c. use two points to graph the equation.

Correct Answers:

- 2
- 2
- A

8. (1 point) Library/ASU-topics/setStat/lines1.pg

Regarding linear equations with one independent variable:

Which is the general form of such an equation:

- A. $y = b_0x + b_1z$
- B. $y = b_0 + b_1x$
- C. $y = b_0/x + b_1$
- D. $y = b_0 + b_1x^2$
- E. $y = b_0x^{b_1}$

The rest of the problem refers to the expression you selected above.

The letter b_0 is

- A. a constant
- B. the independent variable
- C. the dependent variable
- D. none of the above

The letter b_1 is

- A. a constant
- B. the independent variable
- C. the dependent variable
- D. none of the above

The letter x is

- A. a constant
- B. the independent variable
- C. the dependent variable
- D. none of the above

The letter y is

- A. a constant
- B. the independent variable
- C. the dependent variable
- D. none of the above

Correct Answers:

- B
- A
- A
- B
- C

9. (1 point) Library/ASU-topics/setStat/duck4_2_1.pg

Heights (in centimeters) and weights (in kilograms) of 7 supermodels are given below. Find the regression equation, letting the first variable be the independent (x) variable, and predict the weight of a supermodel who is 169 cm tall.

Height	168	176	176	174	178	176	172
Weight	50	56	55	54	58	54	52

The regression equation is $\hat{y} = _ + _ x$.

The best predicted weight of a supermodel who is 169 cm tall is _____.

Correct Answers:

- -74.3559322033898
- 0.73728813559322
- 50.2457627118644

10. (1 point) Library/ASU-topics/setStat/gust17.pg

The regression line is the straight line that bests fits a set of data points according to what?

- A. Most accurate regression criterion
- B. Least-squares criterion.
- C. Greatest-squares criterion
- D. None of the above

Correct Answers:

- B

11. (1 point) Library/ASU-topics/setStat/lines2.pg

Consider the linear equation $y = b_0 + b_1x$.

a. In the equation, b_0 is

- A. the dependent variable
- B. the slope
- C. the y -intercept
- D. the independent variable

b. In the equation, b_1 is

- A. the independent variable
- B. the slope
- C. the dependent variable
- D. the y -intercept

c. Give the geometric interpretation of b_0 . It indicates

- A. the x -value where the straight-line graph of the linear equation intersects the x -axis
- B. how much the x -value on the straight line changes when the y -value increases by unit
- C. how much the y -value on the straight line changes when the x -value increases by unit
- D. the y -value where the straight-line graph of the linear equation intersects the y -axis

d. Give the geometric interpretation of b_1 . It indicates

- A. how much the x -value on the straight line changes when the y -value increases by unit
- B. how much the y -value on the straight line changes when the x -value increases by unit
- C. the y -value where the straight-line graph of the linear equation intersects the y -axis

- D. the x -value where the straight-line graph of the linear equation intersects the x -axis

Correct Answers:

- C
- B
- D
- B

12. (1 point) Library/ASU-topics/setStat/gust19.pg

Before determining a regression line, it is important to do what?

- A. Plot the data to make sure it does not appear linear.
- B. Make sure that every x value has exactly one corresponding y value
- C. Plot the data to make sure it appears somewhat linear.
- D. None of the above

Correct Answers:

- C