

**60080079 Introduction to Statistical Methods**  
**Semester 2 2023-2024**  
**Homework Assignment 9**

*21 CST H3Art*

For **Problems 1-10**, use a subset of the High School and Beyond data involving students who are in the low SES (hsb MS low.sav). We are interested in predicting science score from math score.

1. The estimates of the intercept and slope of the regression line are 14.\_58 and 0.\_95, respectively.
- 1) 4
  - 2) 5
  - 3) 6
  - 4) 7

Write your answer as a two-digit number.

Answer: 13

2. The SEs of the intercept and slope are 3.\_79 and 0.\_79, respectively.
- 1) 0
  - 2) 3
  - 3) 5
  - 4) 7

Write your answer as a two-digit number.

Answer: 41

3. When  $X = 48$ , the mean predicted score is 4\_.833.
- 1) 4
  - 2) 5
  - 3) 6
  - 4) 7

Write your answer as a single-digit number.

Answer: 4

4. The predicted score for an individual whose  $X = 48$  is \_?\_ the predicted mean score.
- 1) less than
  - 2) equal to
  - 3) greater than

Write your answer as a single-digit number.

**Answer: 2**

5. The SE of the mean prediction when  $X = 48$  is 0.468.

- 1) 4
- 2) 5
- 3) 6
- 4) 7

Write your answer as a single-digit number.

**Answer: 3**

6. The SE for an individual prediction for the same value of  $X$  is ? the SE of the mean prediction.

- 1) less than
- 2) equal to
- 3) greater than

Write your answer as a single-digit number.

**Answer: 3**

7. Which is NOT an assumption about the error terms?

- 1) They are independent.
- 2) They are normally distributed.
- 3) They can be positive or negative.
- 4) Their means and variances are identical.

Write your answer as a single-digit number.

**Answer: 3**

8. The lower limits of for the 99% CI estimates of the intercept and slope are 4.88 and 0.89, respectively. The upper limits are 24.329 and 0.901.

- 1) 3
- 2) 4
- 3) 5
- 4) 6

Write your answer as a two-digit number.

**Answer: 32**

9. When  $X = 48$ , the upper limits for the 90% mean and individual interval predictions are 8.9041 and 0.4529, respectively. The corresponding lower limits are 46.7617 and 35.2131.

- 1) 4
- 2) 5
- 3) 6
- 4) 7

Write your answer as a two-digit number.

Answer: 13

10. To test whether math and science are related, the null hypothesis is \_\_\_\_, the computed t-statistic is -.8, which will result in the rejection of the null hypothesis.

- 1)  $b_0 = 0$
- 2)  $b_1 = 0$
- 3) 3
- 4) 8
- 5) 77

Write your answer as a two-digit number.

Answer: 24