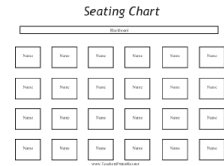


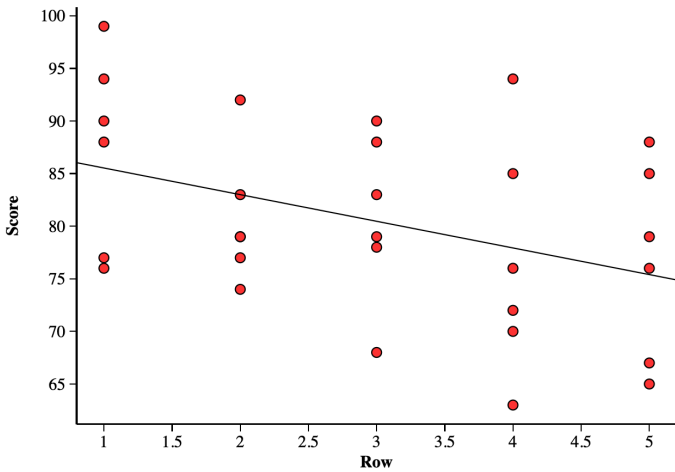
Name: _____ Hour: _____ Date: _____



Does seat location matter?



Do students who sit in the front rows do better than students who sit farther away?
 Mr. Wilcox randomly assigns his students to rows at the beginning of a semester and then measures their exam scores the end of the semester. Following are the results.

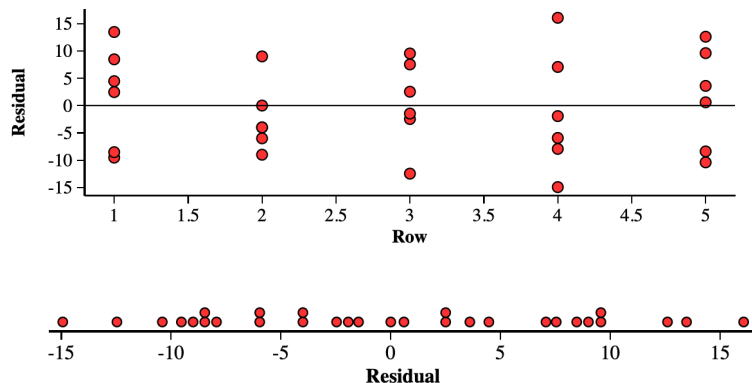


Regression Analysis: Score versus Row

| Predictor | Coef | SE Coef | T | P |
|-----------|-------|---------|-------|-------|
| Constant | 88.07 | 3.68 | 23.94 | 0.000 |
| Row | -2.53 | 1.11 | -2.28 | 0.03 |

S = 8.59 R-Sq = 15.7% R-Sq(adj) = 12.7%

1. Is this an observational study or an experiment? Explain.
2. Why is it important to randomly assign the students to seats rather than letting each student choose their own seat?
3. Find the equation of the least squares regression line (LSRL): _____
4. Interpret the slope.
5. What information does each of the following graphs reveal?



Name: _____ Hour: _____ Date: _____

6. Do the data provide convincing evidence of a negative linear relationship between row and score?

STATE:

Parameter:

Statistic:

H_0 :

H_a :

α level:

PLAN: Name of procedure:

(1) Linear:

(2) Independent:

(3) Normal:

(4) Equal SD:

(5) Random:

DO: General Formula:

Picture:

Specific Formula:

Work:

Test statistic:

P-value:

CONCLUDE:

7. Construct and interpret a 95% confidence interval for the true slope of the population LSRL. Explain how this result is consistent with the conclusion from the significance test.

Name: _____ Hour: _____ Date: _____

Significance Test for Slope

Important ideas:

Check Your Understanding (2011 #5)

Windmills generate electricity by transferring energy from wind to a turbine. A study was conducted to examine the relationship between wind velocity in miles per hour (mph) and electricity production in amperes for one particular windmill. For the windmill, measurements were taken on twenty-five randomly selected days, and the computer output for the regression analysis for predicting electricity production based on wind velocity is given below. The regression model assumptions were checked and determined to be reasonable over the interval of wind speeds represented in the data, which were from 10 miles per hour to 40 miles per hour.

| Predictor | Coef | SE Coef | T | P |
|---------------|-------|---------|-------|-------|
| Constant | 0.137 | 0.126 | 1.09 | 0.289 |
| Wind velocity | 0.240 | 0.019 | 12.63 | 0.000 |

S = 0.237 R-Sq = 0.873 R-Sq (adj) = 0.868

Is there statistically convincing evidence that electricity production by the windmill is related to wind velocity? Explain.