

Seminar 21

1. Regression and correlation analyses are used to determine cause-and-effect relationships. (True / False)
2. The estimating equation is valid over only the same range as that given by the original sample data upon which it was developed. (True / False)
3. Suppose that we know the height of a student but do not know her weight. We use an estimating equation to determine an estimate of her weight based upon her height. We can therefore summarize that:
 - a) Weight is the independent variable.
 - b) Height is the dependent variable.
 - c) The relationship between weight and height is an inverse one.
 - d) None of these.
 - e) (b) and (c) but not (a).
4. Suppose it is calculated that a is 4 and b is 2 for a particular estimating line with one independent variable. If the independent variable has a value of 2, what value should be expected for the dependent variable?
 - a) 8 b) 10 c) -1 d) 0
5. Suppose the estimating equation $Y = 5 - 2X$ has been calculated for a set of data. Which of the following is true for this situation?
 - a) The y-intercept of the line is 2.
 - b) The slope of the line is negative.
 - c) The line represents an inverse relationship.
 - d) All of these.
 - e) (b) and (c) but not (a).

6. For the following set data:

X	13	16	14	11	17	9	13	17	18	12
Y	1.0	2.0	1.4	0.8	2.2	0.5	1.1	2.8	3.0	1.2

- a) Plot the scatter diagram.
 - b) Develop the estimating equation that best describe the data.
 - c) Predict Y for X = 10, 15, and 30.
7. Cost accountants often try to estimate overhead based on the number of units produced. The doll people from the problem above have collected information on overhead expenses and units produced at different plants, and would like to estimate a regression equation to predict overhead in the future.

Overhead	291	270	372	255	380	273	334	216	253	278
Units	40	42	53	35	56	39	48	30	37	40

- a. Determine the dependent and independent variables, and then develop the regression equation for the cost accountant.
- b. Predict overhead when 50 units are produced.
- c. Calculate the standard error of estimate.
- d. Interpret the y-intercept and slope of the regression equation.