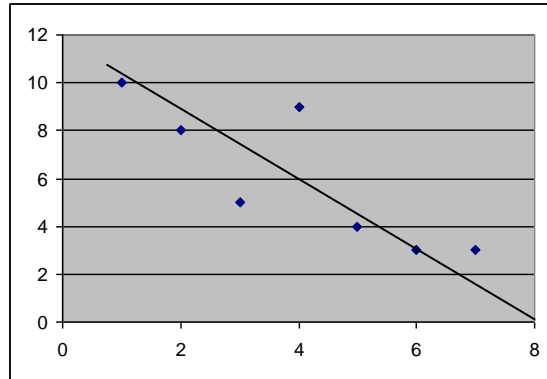


Prob/Stat/Discrete
7.2 Worksheet Day 1

Name _____

For #1 – 3, use the scatter plot shown.

- 1) Estimate the residual for $x = 4$.
- 2) Estimate the residual for $x = 3$.
- 3) Estimate the residual for $x = 6$.



For # 4 – 6, use the data shown about the ages (in years) of seven children and the number of words in their vocabulary.

Ages, x	3	4	4	5	6	2	3
Vocabulary Size, y	1100	1300	1500	2100	2600	460	1200

- 4) Use your calculator to create a scatter plot. Describe the type of correlation in *words* **and** find the correlation coefficient, r .
- 5) Find the equation of the regression line.
- 6) What percentage of the data can be explained by \hat{y} ?

For #7 – 9, use the data below describing the age (in years) and the number of hours slept in one day by 11 infants.

Age, x	0.1	0.2	0.4	0.7	0.6	0.9	0.1	0.2	0.4	0.9	0.8
Hours, y	14.9	14.5	13.9	14.1	13.9	13.7	14.3	13.9	14.0	14.1	14.8

7) What is the value of the correlation coefficient?

8) What percentage of the data can be explained by the linear regression line?

9) Use your calculator to display a scatter plot. Should a linear regression line be used to describe this data? Explain your answer.

For #10 – 12, use the data shown comparing the age (in years) of electrical engineers to their salary (in thousands of dollars).

Age, x	22	25	29	34	39	43	48	53	56	61	64	65
Salary, y in thousands	53.5	56.3	59.8	63.1	65.9	69.7	73.6	75.8	78.1	80.3	79.4	80.3

10) Would it be appropriate to use a linear regression line to model this data? Explain your reasoning.

11) What is the equation of the regression line?

12) What percentage of the data can be explained by the regression line?

Prob/Stat/Discrete
7.2 Worksheet Day 2

Name _____

For # 1 – 4, use the data shown about the ages (in years) of seven children and the number of words in their vocabulary.

Ages, x	3	4	4	5	6	2	3
Vocabulary Size, y	1100	1300	1500	2100	2600	460	1200

1) The linear regression line has the equation $\hat{y} = 510.79x - 504.47$. Predict the number of words in the vocabulary of a 2-year old.

2) Predict the number of words in the vocabulary of a 7-year old.

3) At what age would you expect a child to have a vocabulary size of 4000 words?

4) Find the residual for $x = 5$. (*Hint*: first predict the number of words by using the regression line, and then compare this to the observed # of words in the table for a 5-year old.)

5) Find the residual for $x = 6$.

For #6 – 8, use the data shown comparing the age (in years) of electrical engineers to their salary (in thousands of dollars).

Age, x	22	25	29	34	39	43	48	53	56	61	64	65
Salary, y in thousands	53.5	56.3	59.8	63.1	65.9	69.7	73.6	75.8	78.1	80.3	79.4	80.3

- 6) The linear regression line has the equation $\hat{y} = 0.64x + 41.31$. Predict the salary for a 30-year-old electrical engineer.
- 7) At what age would an electrical engineer earn \$100,000?
- 8) Why is your result from # 7 unreasonable?
- 9) The heights (x) of 11 trees have a mean of 75.5 feet with a standard deviation of 8.2. The diameters (y) of those same trees have a mean of 13.1 feet with a standard deviation of 2.8 feet. The correlation coefficient between the height and the diameter is 0.8. Find the equation of the linear regression line.
- 10) The weights (y) of 8 cars have a mean of 4900 pounds with a standard deviation of 350 pounds. The variability of braking distances (x) of those same cars have a mean of 1.9 feet with a standard deviation of 0.3 feet. The correlation coefficient between these variables is 0.91. Find the equation of the linear regression line.