Statistics AP

Linear Regression. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Car dealers across North America use the “Red Book” to help them determine the value of used cars that their customers trade in when purchasing new cars. The book lists on a monthly basis the amount paid at recent used/car auctions and indicates the values according to condition and optional features, but does not inform the dealers as to how odometer readings affect the trade-in value. In an experiment to determine whether the odometer reading should be included, ten 3-year old cars are randomly selected of the same make, condition, and options. The trade-in value and mileage are shown below.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trade in value  (in 100s) | 37 | 31 | 43 | 39 | 41 | 39 | 35 | 40 | 29 | 33 |
| Odometer  (in 1000s) | 59 | 92 | 61 | 72 | 52 | 67 | 88 | 62 | 95 | 83 |

a. Sketch the scatterplot of this data. b. Use your calculator to determine the least-squares regression line (LSRL)

c. Provide an interpretation of the slope of this line in the context of these data.

d. Calculate and plot () and graph it in the scatterplot. What do you notice about this point?

e. Find the correlation coefficient for the relationship. Interpret this number.

f. Find the coefficient of determination for the relationship. Interpret this number.

g. Predict the trade-in value of a car with 60,000 miles.

h. Is there sufficient evidence that there is a relationship between the trade in value and the odometer readings? Answer this two different ways.