Used Car Blue Book Values

Car dealers across North America use the "Blue Book" to help them determine the value of used cars that customers trade in when purchasing new vehicles. The book lists on a monthly basis the amount paid at recent used-car auctions and indicates the trade-in values according to condition and optional features. A study was completed to determine whether the odometer reading would serve as a useful predictor of trade-in value. Five-year-old cars of the same make, model, condition, and options have been randomly selected. The trade-in value and mileage are shown below.

Odometer Reading	Trade-in Value ($)
58,000	3800
93,100	2400
72,200	3100
52,000	4000
67,700	3200
88,100	2700
62,500	3900
95,100	2500
83,100	2600
43,400	4300
39,000	5500

a) What kind of relationship would you expect between trade-in value and odometer reading for the randomly selected cars. Explain your answer.

b) Code the data to make it easier to use.

c) Construct a scatterplot of the coded data. Which variable should be the independent variable and which is the dependent variable? Do you think that odometer reading depends on trade- in value or trade-in value depends on the odometer reading? Remember to include scales and labels for your axes.

d) Does the scatterplot confirm your description in part (a)? Explain your answer.

e) On your scatterplot in part (b), draw a line that you think summarizes or *fits* the data. Pick two ordered pairs on the line you drew on the scatterplot of trade-in value and odometer reading. Use your ordered pairs to write an equation of the line. Write your answer in the form of y = mx + b.

f) What does the variable y represent in your equation? What does the variable x represent in your equation?

g) What is the slope of this line? Interpret the slope in the context of this problem.

h) Use your equation from part (e) to predict the trade-in value of a vehicle with 52,000 miles.

i) According to the data, the actual trade-in value of a car with 52,000 miles was $4,000. How close was your prediction? Calculate the residual. Did you over-predict or under-predict your estimate? Justify your answer.