**First Problem. The file P02\_10.xlsx contains midterm and final exam scores for 96 students in a corporate finance course. Each row contains the two exam scores for a given student, so you might expect them to be positively correlated.**

a. Create a scatterplot of the final exam score (Y) versus the midterm score (X). Based on the visual evidence, would you say that the scores for the two exams are strongly related? Is the relationship a linear one?

b. Superimpose a trend line on the scatterplot and use the option to display the equation and the R2 value. What does this equation indicate in terms of predicting a student’s final exam score from his or her midterm score? Be specific.

c. Run a regression to confirm the trend-line equation from part b. What does the standard error of estimate say about the accuracy of the prediction requested in part b?

**Second Problem. A trucking company wants to predict the yearly maintenance expense (Y) for a truck using the number of miles driven during the year (X1) and the age of the truck (X2, in years) at the beginning of the year. The company has gathered the data given in the file P10\_16. xlsx, where each observation corresponds to a particular truck.**

a. Estimate a multiple regression equation using the given data. Interpret each of the estimated regression coefficients. Why is the magnitude of the Miles Driven coefficient so much lower than the magnitude of the Age of Truck coefficient? Is it because Miles Driven is not as important in predicting Maintenance Expense?

b. Interpret the s standard error of estimate se and R2 for these data.

**Third Problem. Suppose that a regional express delivery service company wants to estimate the cost of shipping a package (Y) as a function of cargo type, where cargo type includes the following possibilities: fragile, semi fragile, and durable. Costs for several randomly chosen packages of approximately the same weight and same distance shipped, but of different cargo types, are provided in the file P10\_28.xlsx.**

a. Estimate an appropriate multiple regression equation to predict the cost of shipping a given package.

b. Interpret the estimated regression coefficients. You should find that the estimated intercept and slope of the equation are sample means. Which sample means are they?

c. According to the estimated regression equation, which cargo type is the costliest to ship? Which cargo type is the least costly to ship?

d. How well does the estimated equation fit the given sample data? How do you think the model’s goodness of fit could be improved?

e. Given the estimated regression equation, predict the cost of shipping a package with semi fragile cargo.