2. The owner of the Original Italian Pizza restaurant chain would like to predict the sales of his specialty, deep-dish pizza. He has gathered data on the monthly sales of deep-dish pizzas at his restaurants and observations on other potentially relevant variables for each of his 15 outlets in central Indiana. These data are provided in the **file P10_04.xlsx.**

a. Estimate a multiple regression model between the quantity sold (Y) and the explanatory variables in columns C-E.

b. Is there evidence of any violations of the key assumptions of regression analysis?

c. Which of the variables in this equation have regression coefficients that are statistically different from zero at the 5% significance level?

d. Given your findings in part c, which variables, if any, would you choose to remove from the equation estimated in part a? Why?

6. An antique collector believes that the price received for a particular item increases with its age and the number of bidders. **The file P10_18.xlsx** contains data on these three variables for 32 recently auctioned comparable items.

a. Estimate an appropriate multiple regression model using the given data.

b. Interpret the ANOVA table for this model. In particular, does this set of explanatory variables provide at least some power in explaining the variation in price?

Report a p-value for this hypothesis test.

11. A multiple regression with 36 observations and three explanatory variables yields the ANOVA table in Table 11.1.

Table 11.1 ANOVA Table

	Degrees of Freedom	Sum of Squares
Explained		1211
Unexplained		
Total		2567

a. Complete this ANOVA table.

b. Can you conclude at the 1% significance level that these three explanatory variables have some power in explaining variation in the dependent variable?

14. Consider the data for Business Week's top U.S. MBA programs in the MBA Data sheet of **the file P10_21.xlsx.**
Use these data to estimate a multiple regression model to assess whether there is a relationship between the enrolment and the following explanatory variables:

(a) the percentage of international students,

(b) the percentage of female students,

(c) the percentage of Asian American students,

(d) the percentage of minority students, and

(e)the resident tuition and fees at these business schools.

a. Determine whether each of the regression coefficients for the explanatory variables in this model is statistically different from zero at the 5% significance level. Summarize your findings.

b. Is there evidence of multicollinearity in this model? Explain why or why not.