Solutions to Quiz 10 (version A & B)

Version A:

1. Which of the following statement is not true?
   A. In multiple regression, the objective is to build a probabilistic model that relates a dependent variable y to more than one independent or predictor variables.
   B. $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots\cdots + \beta_k x_k + \varepsilon$, where $E(\varepsilon) = 0$ and $V(\varepsilon) = \sigma^2$ is the equation of the general additive multiple regression model.
   C. The coefficient β_1 in the multiple regression model $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots\cdots + \beta_k x_k + \varepsilon$ is interpreted as the expected change in *Y* when x_1 is held constant (fixed).

   ANSWER: C
2. A model has the form $\hat{Y} = 5 + 3x_1 + 2x_2$. As x_1 increases by 1-unit, while holding x_2 fixed, then *y* will be expected to
   A. increase by 10
   B. increase by 5
   C. increase by 3
   D. decrease by 3
   E. decrease by 6

   ANSWER: C

Version B:

3. A multiple regression model has the form $\hat{Y} = 10 - 4x_1 + 3x_2$, where the dependent variable *Y* represents (in dollars), x_1 represents unit price (in dollars), and x_2 represents advertisement (in dollars). As x_1 increases by \$1, while holding x_2 fixed, then sales are expected to
   A. increase by \$7
   B. increase by \$13
   C. decrease by \$4
   D. remain the same

   ANSWER: C

4. Which of the following statement is not true?
   A. In multiple regression, the objective is to build a probabilistic model that relates a dependent variable y to more than one independent or predictor variables.
   B. The coefficient β_1 in the multiple regression model $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots\cdots + \beta_k x_k + \varepsilon$ is interpreted as the expected change in *Y* when x_1 is held constant (fixed).
   C. $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots\cdots + \beta_k x_k + \varepsilon$, where $E(\varepsilon) = 0$ and $V(\varepsilon) = \sigma^2$ is the equation of the general additive multiple regression model.

   ANSWER: B

[4 points for attendance. 3 points for each question. Total is 10.]