1. Consider a situation involving two populations where population 1 is known to have a higher coefficient of variation than population 2. In this situation, we know that population 1 has a higher standard deviation than population 2. (True, False)

2. Which of the following measures is not affected by extreme values in the data?
   a. The mean
   b. The median (√)
   c. The range
   d. The standard deviation

3. Under what circumstances is it necessary to use the coefficient of variation to compare relative variability between two or more distributions?
   a. When the means of the distributions are equal
   b. When the means of the distributions are not equal (√)
   c. When the standard deviations of the distributions are not equal
   d. When the standard deviations of the distributions are equal

4. A company has two assembly lines. Line A produces an average of 335 units per day with a standard deviation equal to 11 units. Line B produces an average of 145 units per day with a standard deviation equal to 8 units.
   a. What is the coefficient of variation for Line A.
   b. What is the coefficient of variation for Line B.
   c. Which Line (Line A/Line B) is relatively more consistent?

   Line A: CV = 11/335*100% = 3.283582%
   Line B: CV = 8/145*100% = 5.51724%
   The Line with smaller CV is more consistent

5. Consider the following data as representing the population of cars sold in each of 8 weeks
   3 5 2 7 7 7 9 0
   Find the population standard deviation of cars sold. (Hint: The mean is 5 cars)
   Total = Mean * n = 5*8=40

   \[ \sum_{i=1}^{n} X_i^2 = 3^2 + 5^2 + ... + 0^2 = 266 \]

   \[ \sigma = \sqrt{\frac{\sum_{i=1}^{n} (X_i - \bar{X})^2}{N}} = \sqrt{\frac{\sum_{i=1}^{n} X_i^2 - \left(\frac{\sum_{i=1}^{n} X_i}{N}\right)^2}{N}} \]

   \[ = \sqrt{\frac{266 - (40)^2}{8}} = \sqrt{\frac{66}{8}} = \sqrt{8.25} = 2.872281 \]
1. If a set of data has 1,500 values, the 30\textsuperscript{th} percentile value will correspond to the 450\textsuperscript{th} value in the data when the data have been arranged in numerical order. (True, False)

2. If the age distribution of customers at a major retail chain is thought to be bell-shaped with a mean equal to 43 years and a standard deviation equal to 7 years, the percentage of customers between the ages of 29 and 50 years is:
   a. approximately 81.5. (√)
   b. approximately 68.
   c. at least 75.
   d. approximately 95.

3. The following data reflect the number of customers who test drove new cars each day for a sample of 20 days.
   \[
   \begin{array}{cccc}
   5 & 7 & 2 & 9 \\
   9 & 7 & 7 & 10 \\
   5 & 6 & 3 & 4 \\
   6 & 3 & 4 & 14 \\
   \end{array}
   \]
   Given these data, what is the inter-quartile range?
   a. 3 (√)
   b. 7
   c. 4
   d. 14

4. A company has two assembly lines. Line A produces an average of 335 units per day with a standard deviation equal to 11 units. Line B produces an average of 145 units per day with a standard deviation equal to 8 units.
   a. What is the coefficient of variation for Line A.
   b. What is the coefficient of variation for Line B.
   c. Which Line (Line A/Line B) is relatively less consistent?
   Line A: CV= 11/335*100% = 3.283582%
   Line B: CV= 8/145*100% = 5.51724%
   The Line with larger CV is less consistent

5. Consider the following data as representing the population of cars sold in each of 8 weeks
   \[3\ 5\ 2\ 7\ 7\ 7\ 9\ 0\]
   Find the population standard deviation of cars sold. (Hint: The mean is 5 cars)
   \[
   \text{Total} = \text{Mean} \times n = 5 \times 8 = 40 \\
   \sum_{i=1}^{8} x_i^2 = 3^2 + 5^2 + \ldots + 0^2 = 266 \\
   \sigma = \sqrt{\frac{\sum_{i=1}^{8} (x_i - \bar{x})^2}{N}} = \sqrt{\frac{\sum_{i=1}^{8} x_i^2 - \left(\sum_{i=1}^{8} x_i\right)^2}{N}} \\
   = \sqrt{\frac{266 - (40)^2}{8}} = \sqrt{\frac{66}{8}} = \sqrt{8.25} = 2.872281
   \]