# Assignment

## Write

Match each definition to its corresponding term.

1. interquartile range (IQR)
2. standard deviation
3. lower fence
4. upper fence
5. statistic
6. measure of central tendency
7. outlier

a. a value calculated using the formula Q1 − (IQR·1.5)
b. numeric characteristics of a data set
c. a value that is much greater or lesser than other values in a data set
d. a value calculated using the formula Q3 + (IQR·1.5)
e. a measure of spread from the mean
f. a value used to describe the overall clustering of data in a set
g. a measure of spread from the median

## Remember

The median is the better measure of central tendency and the IQR is the better measure of spread to use to describe a data set that is skewed. The mean is the better measure of central tendency and the standard deviation is the better measure of spread to use to describe a data set that is symmetric. Outliers in a data set are calculated using the formula Q1 − (IQR·1.5) to determine a lower fence and Q3 + (IQR· 1.5) to determine an upper fence. Any value outside these limits is an outlier.

## Practice

1. Consider each data set. Calculate the median, mean, IQR, and standard deviation of each set. Then, determine which measure of central tendency and which measure of spread is the most appropriate to use to describe the data set. Explain your reasoning.
   a. 1, 2, 2, 4, 8, 8, 8, 9, 9, 9, 10, 10, 10
   b. 5, 5, 6, 6, 6, 7, 7, 7, 8, 8, 8, 9, 9
   c. 0, 1, 2, 10, 12, 12, 16, 16, 16, 16, 18, 18, 20
   d. 2, 2, 2, 3, 3, 4, 4, 8, 9, 9, 10, 10, 10
2. The five number summaries for the average monthly precipitation in millimeters during the summer for the Western and Midwestern states are provided.

| West | Midwest |
|---|---|
| Min = 7 | Min = 68 |
| Q1 = 22 | Q1 = 81.5 |
| Med = 33 | Med = 99.5 |
| Q3 = 49 | Q3 = 102.5 |
| Max = 107 | Max = 111 |

   a. Construct box-and-whisker plots of each area's monthly precipitation using the same number line for each.
   b. Describe the distribution of both box-and-whisker plots and explain what they mean in terms of the problem situation.
   c. Determine if there are outliers in either data set. Show your work and explain how you determined your answer.
   d. Chen is considering a long camping trip this summer and hopes to avoid the rain. Would you recommend that he camp in the West or the Midwest? Explain your reasoning.