

## Lesson 4: Describing Quantitative Data: Center, & Spread

### Preparation

### Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

| Problem | Part                | Solution   |
|---------|---------------------|--|
| 1       | Shape               | c. Symmetric, bell-shaped, skewed right, and skewed left, uniform, unimodal, bimodal, or multimodal  |
| 1       | Center              | a. Average, mean, median, mode   |
| 1       | Spread              | b. Standard deviation, variance  |
| 2       | -                   | The standard deviation is a measure of the spread in a distribution. If the standard deviation is small then the data tend to be closer together. If the standard deviation is large, the data is usually more spread out. |
| 3       | -                   | Answers will vary  |
| 4       | -                   | Sample variance is also a measure of spread in a data set. The sample variance is an estimator of the true population variance. The sample variance is just the sample standard deviation squared or $s^2$ .               |
| 5       | Percentiles         | A percentile is a number such that a specified percentage of the data are at or below this number, such as at the 50th percentile, this value is as large or larger than 50% of all the data.                              |
| 5       | Quartiles           | Quartiles are just three special percentiles, 25 <sup>th</sup> , 50 <sup>th</sup> , and 75 <sup>th</sup> percentiles divide the data into fourths.   |
| 5       | Five-number summary | The five number summary is comprised of the minimum, first quartile, median, third quartile, and maximum. It is just a good way to summarize the data into just five numbers.  |
| 5       | Boxplot             | A boxplot is a graphical representation of the five-number summary.  |
| 6       | -                   | Answers may vary, students should choose a company and justify why. They will probably choose B or C, because they have the highest means.   |
| 7       | -                   | 0.377  |