1. When comparing two populations, use the mean and the MAD when each distribution is symmetric. Use the median and the IQR when either one or both distributions are skewed.

2. There will probably be little or no visual overlap of the data. The core (center) portions of the data are too far apart.

## Practice and Problem Solving

3. **a.** garter snake: mean = 25, median = 24.5, mode = 24, range = 20, IQR = 7.5, MAD ≈ 4.33
water snake: mean = 31.5, median = 32, mode = 32, range = 20, IQR = 10, MAD ≈ 5.08

**b.** The water snakes have greater measures of center because the mean, median, and mode are greater. The water snakes also have greater measures of variation because the interquartile range and mean absolute deviation are greater.

4. **a.** Team A:
median = 3, IQR = 2
Team B:
median = 7, IQR = 2
The variation in the goals scored is the same, but Team B usually scores about 4 more goals per game.

   **b.** The difference in the medians is 2 times the IQR.

5. **a.** Class A: median = 90, IQR = 12.5
Class B: median = 80, IQR = 10
The variation in the test scores is about the same, but Class A has greater test scores.

   **b.** The difference in the medians is 0.8 to 1 times the IQR.

6. **a.** volleyball: mean = 86, MAD = 19.6
basketball: mean = 185, MAD = 17.7
The variation in the attendances is about the same, but basketball has a greater attendance.

   **b.** The difference in the means is about 5.1 to 5.6 times the MAD.

7.

Compare the values in Exercises 4(b), 5(b), and 6(b): 2, 0.8 to 1, and 5.1 to 5.6. The value in Exercise 6(b) is the greatest, indicating that these data have less overlap than the data in Exercises 4 and 5.

Notice that greater numbers indicate less overlap, and lesser numbers indicate more overlap. The value in Exercise 5(b) is the least, indicating that these data have more overlap than the data in Exercises 4 and 6.