

EXERCISES

1. A consumer testing laboratory measured the calories per hot dog in 20 brands of beef hot dogs. Here are the results:

186	181	176	149	184	190	158	139	175	148
152	111	141	153	190	157	131	149	135	132

- Find the five-number summary of this distribution. Explain how you arrived at your answer.
- Compute the range and interquartile range. Explain what these numbers tell you about the variability in calories in different brands of all-beef hot dogs.
- Would a beef hot dog with 175 calories be in the top quarter of the data? Support your answer.

2. Return to the data on all-beef hot dog calories from exercise 1.

- Draw a basic boxplot for the calories per hot dog.
- In which quarter – the first, second, third, or fourth – are the data most concentrated? Explain how you can answer this question based on the boxplot from (a).
- In which quarter – the first, second, third, or fourth – is the data most spread out? Explain how you can answer this question based on the boxplot from (a).
- If a data value is more than $1.5 \times \text{IQR}$ below the first quartile or more than $1.5 \times \text{IQR}$ above the third quartile, it is considered an outlier. Should any of the calorie counts for the beef hot dogs be classified as outliers? Explain.

3. Make a stemplot of the calories in the sample of beef hot dogs from exercise 1. What do you learn from the stemplot that you could not learn from the boxplot?

4. The calories for 20 brands of veggie dogs are given below. (Notice these data have been ordered from smallest to largest.)

40	45	45	45	50	50	55	57	60	60
70	80	80	81	90	95	100	100	110	190

- Make a five-number summary of the veggie dog calories.
- Make a modified boxplot for the veggie dog data. Use asterisks (*) to indicate any mild outliers and open circles to indicate any extreme outliers. (Leave room to add another graph to this graphic display.)
- Add a modified boxplot for the beef hot dog calories next to your display in (b). This will allow you to compare the calorie distributions of the two types of hot dogs.
- Based on your displays in (c), compare the distributions of calories for beef dogs and veggie dogs.

5. Refer to the baseball data from Table 3.4, Unit 3. Focus on the variable career home runs. (Keep in mind there are 104 players listed because of ties in career batting averages.)

- Order the number of career home runs from smallest to largest. (You may want to use software such as Excel or your graphing calculator to do the ordering. Otherwise, try using a stemplot to help you order these data.)
- Create a five-number summary of the career number of home runs.
- Make a modified boxplot of the career number of home runs. Mark mild outliers with asterisks (*) and extreme outliers with open circles. Show your calculations for the fences. Write the names of the players above each of the outliers.
- Would you describe the shape of the distribution as symmetric, skewed to the right, or skewed to the left? Justify your choice.