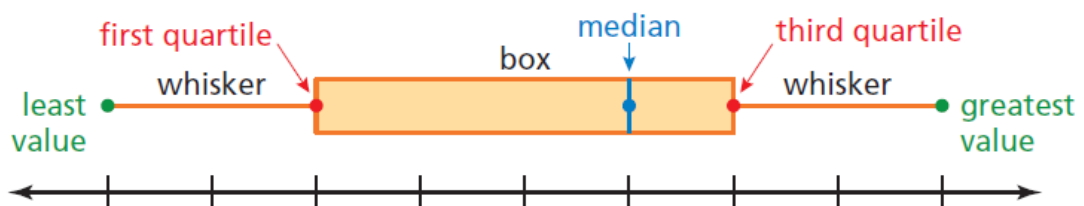


## Lesson 10.4 Box-and-Whisker Plots

### Key Idea

#### Box-and-Whisker Plot

A **box-and-whisker plot** represents a data set along a number line by using the least value, the greatest value, and the quartiles of the data. A box-and-whisker plot shows the *variability* of a data set.



The five numbers that make up the box-and-whisker plot are called the **five-number summary** of the data set.

### **Example 1: Making a Box-and-Whisker Plot**

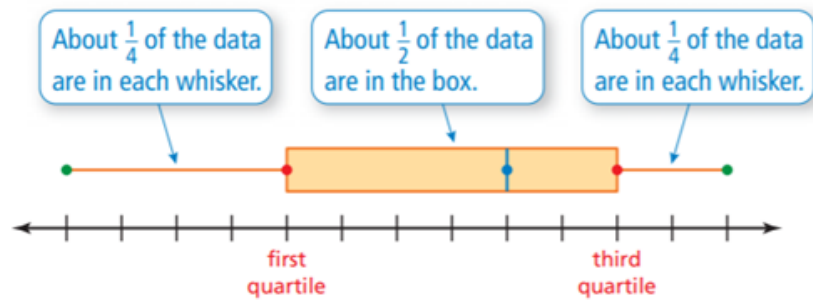
**Make a box-and-whisker plot for the ages (in years) of the spider monkeys at a zoo:**

**15, 20, 14, 38, 30, 36, 30, 30, 27, 26, 33, 35**

**Example 1: On Your Own**

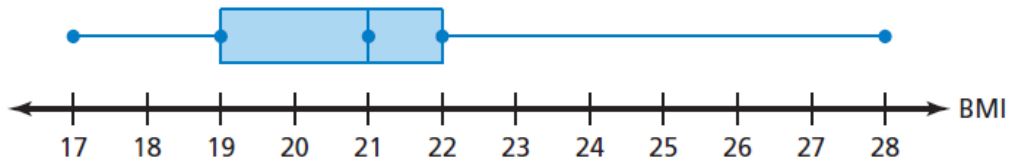
1. A group of friends spent 1, 0, 2, 3, 4, 3, 6, 1, 0, 1, 2, and 2 hours online last night. Make a box-and-whisker plot for the data.

The figure shows how data are distributed in a box-and-whisker plot.



**Example 2: Analyzing a Box-and-Whisker Plot**

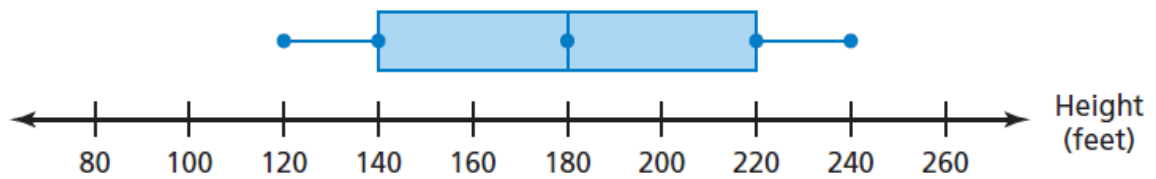
The box-and-whisker plot shows the body mass index (BMI) of a sixth grade class.



- What fraction of the students have a BMI of at least 22?
- Are the data more spread out below the first quartile or above the third quartile? Explain.
- Find and interpret the interquartile range of the data.

**Example 2: On Your Own**

2. The box-and whisker plot shows the heights of the roller coasters at an amusement park. (a) What fraction of the roller coasters are between 120 feet tall and 220 feet tall? (b) Are the data more spread out below or above the median? Explain. (c) Find and interpret the interquartile range of the data.



## Key Ideas

### Shapes of Box-and-Whisker Plots



*Skewed left*

- Left whisker longer than right whisker
- Most data on the right



*Symmetric*

- Whiskers about same length
- Median in the middle of the box

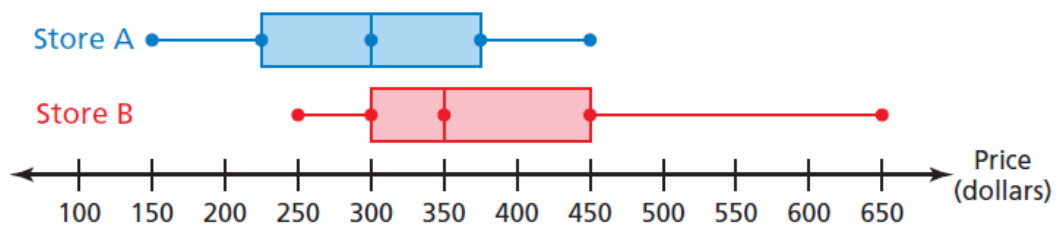


*Skewed right*

- Right whisker longer than left whisker
- Most data on the left

### Example 3: Comparing a Box-and-Whisker Plot

The double box-and-whisker plot represents the prices of snowboards at two stores.



a. Identify the shape of each distribution.

b. Which store's prices are more spread out? Explain.



### Example 3: On Your Own

3. The double box-and-whisker plot represents the life spans of crocodiles and alligators at a zoo. Identify the shape of each distribution. Which reptile's life spans are more spread out? Explain.

