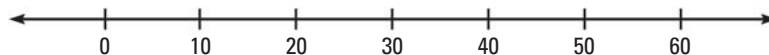


**INTERPRET A BOX-AND-WHISKER PLOT** A box-and-whisker plot separates data into four groups: the two parts of the box and the two whiskers. Each part contains approximately the same number of data values.

**INTERPRET VARIATION**

The interquartile range measures the variation in the middle half of the data and ignores the extreme values, whose variation may not be representative of the data.



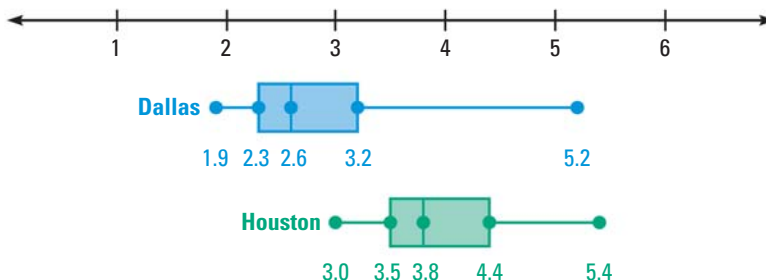
Each whisker represents about 25% of the data.

The box on each side of the median represents about 25% of the data.

You know that the range of a data set is the difference of the maximum value and the minimum value. The **interquartile range** of a data set is the difference of the upper quartile and the lower quartile.

**EXAMPLE 2 Interpret a box-and-whisker plot**

**PRECIPITATION** The box-and-whisker plots below show the normal precipitation (in inches) each month in Dallas and in Houston, Texas.



- For how many months is Houston's precipitation less than 3.5 inches?
- Compare the precipitation in Dallas with the precipitation in Houston.

**Solution**

- For Houston, the lower quartile is 3.5. A whisker represents 25% of the data, so for 25% of 12 months, or 3 months, Houston has less than 3.5 inches of precipitation.
- The median precipitation for a month in Dallas is 2.6 inches. The median for Houston is 3.8 inches. In general, Houston has more precipitation.

For Dallas, the interquartile range is  $3.2 - 2.3$ , or 0.9 inch. For Houston, the interquartile range is  $4.4 - 3.5 = 0.9$  inch. So, the cities have the same variation in the middle 50% of the data. The range for Dallas is greater than the range for Houston. When all the data are considered, Dallas has more variation in precipitation.

**INTERPRET QUARTILES**

When the number of data values is a multiple of 4, the median and quartiles will divide the data into four groups of exactly the same size.



**GUIDED PRACTICE** for Example 2

- PRECIPITATION** In Example 2, for how many months was the precipitation in Dallas more than 2.6 inches?