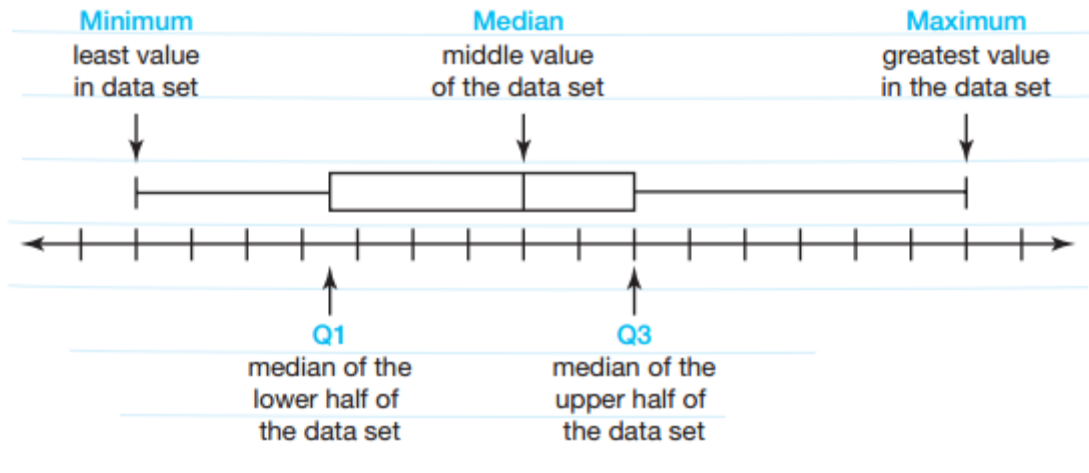


“Boxing It Up”

Another way to graphical represent a data distribution is a **box-and-whisker plot**. A box-and-whisker plot displays the data distribution using a **five number summary** that consists of the Minimum value, the 1st Quartile (Q1), the Median, the 3rd Quartile (Q3), and the Maximum value. **Quantitative data** is just another term for numerical data.

The five number summary is used to create a box-and-whisker plot. Each vertical line of the box-and-whisker plot represents a value from the summary.



There are 4 sections of the graphical display:
Minimum to Q1, Q1 to Median, Median to Q3, and Q3 to Maximum.

Each section of the box-and-whisker plot represents **25%** of the data set.

1. Determine the percentage of data values for each section of the box-and-whisker plot displayed.
 - a. Less than ($<$) Q1, Greater than ($>$) Q1
 - b. Less than ($<$) Q3, Greater than ($>$) Q3
 - c. Less than ($<$) the Median, Greater than ($>$) the Median
 - d. Between Q1 and Q3

- Construct a box-and-whisker plot showing the amount of sugar in one serving of each breakfast cereal from Problem 1, How Much Sugar Is Too Much? Before you start constructing, list the data values in order.



- Analyze the five number summary and box-and-whisker plot.

- Describe the data distribution shown in the box-and-whisker plot.

“Weekend Gamers”

Another way to display quantitative or measurable data is to create a **histogram**. A histogram displays quantitative data using vertical bars.

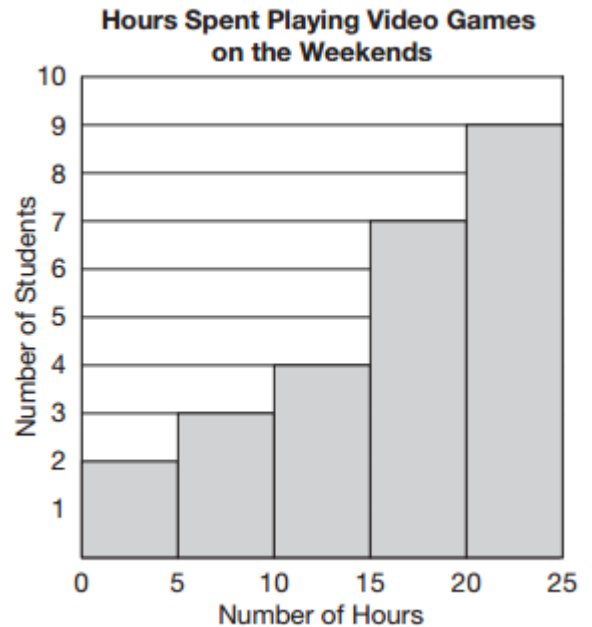
The width of a bar in a histogram represents an *interval of data* rather than individual data values and is often called a **bin**. The value shown on the left side of the bin is the smallest data value in the interval.

The height of each bar indicates the frequency or the number of times the data values are included in any given bin.

Histograms are effective in displaying large amounts of continuous data. Continuous data is data that can take any numerical value within a range.

The histogram shown represents the data distribution for the number of hours students spend playing video games on the weekends. The data is gathered to the nearest half-hour.

1. What conclusions can you draw from the histogram about the number of hours students spend playing video games on weekends?



2. Analyze the histogram.
 - a. How many students play 5 to 9.5 hours of video games on weekends?
 - b. How many total students are included in the data?
 - c. How many students play 22 hours of video games on the weekends?
 - d. What percent of the students play 10 or more hours of video games on the weekends?
3. Describe the data distribution displayed by the histogram.