

## Indicators

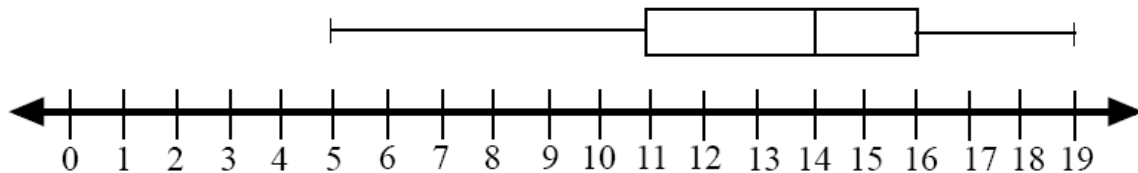
### Objective:

**4.03 Describe how the mean, median, mode, range, frequency distribution, and inter-quartile range of a set of data affect its graph.**

Vocabulary and Resources		
box-and-whisker plot	upper quartile	inter-quartile range
quartile	third quartile	measures of central tendency
lower quartile	minimum value	
first quartile	maximum value	
middle quartile/median	outlier	frequency table
second quartile	range	interval

**A.** The box-and-whisker plot below shows the height of six plants that the students measured: 19 in., 5 in., 13 in., 16 in., 11 in., 15 in.

**HEIGHT OF PLANT (INCHES)**



- The students measured a seventh plant (8 inches) and added it to the data set. Which of the following will change: median, mode, range, inter-quartile range, lower quartile, upper quartile? How will the graph change?
- If the height of an eighth plant (1 inch) is added to the data set, which of the following will change: median, mode, range, inter-quartile range, lower quartile, upper quartile? How will the graph change?
- The last three plants the students measured each had a height of 8 inches. Which of the following will change: median, mode, range, inter-quartile range, lower quartile, upper quartile? How will the graph change?

**B.** Thirty people in Max's neighborhood participated in a Walk-A-Thon fundraiser. The ages of the walkers were: 12, 8, 32, 35, 15, 47, 9, 15, 52, 55, 70, 18, 36, 29, 12, 11, 16, 45, 44, 19, 62, 60, 8, 23, 27, 10, 34, 74, 13, 59

- a) Make a histogram for the set of data.
- b) Determine the mean and median for this data set.
- c) Explain how the median for this data relates to the graph of the data.
- d) If the seven youngest participants did not walk and seven members of the Golden Oldies Club (over 70 years of age) took their place, how would this change the graph of the data? Determine the mean and median for this new data set.

**C.** Use the frequency table from 4.02 D and add the following student scores:

Score	Students
95	14
85	2
75	29
65	5

How do these additional scores affect the mean, median, mode and range for the test scores?