Measures of Center: a measure that describes a typical value of a data set. It summarizes the data into a single number.

- **Mean**: the equal distribution of the data values in the data set. (This is fair share division.) All of the data is gathered together (added) and equally shared (divided) among all of the data. NOTE: Mean is also known as average. Picture it like sharing all of the data on the line plot equally… like on a balanced teeter-totter.

Determine the mean of Trial #1. What does the mean tell you about the data set?

NOTE: This example data is from Mrs. Knouff's homeroom.

20 + 124 + 183 + 74 + 104 + 73 + 38 + 98 + 32 + 173 + 175 + 220 + 20 + 138 + 221 + 68 + 80 + 88 + 20 + 24 + 36 + 173 + 187 + 189 = 2558

2558 ÷ 24 = 106.58

If the cubes were shared equally among the boats each boat would hold 106.58 cubes.

- **Median**: order the data from least to greatest. The median is the middle value in entire data set.

Determine the median of Trial #1. What does the median tell you about the data set?

NOTE: This is example data from Mrs. Larger's homeroom.

~~2~~ ~~3~~ ~~6~~ ~~12~~ ~~16~~ ~~34~~ ~~39~~ ~~43~~ ~~45~~ ~~45~~ ~~46~~ ~~48~~ (66) ~~75~~ ~~99~~ ~~101~~ ~~109~~ ~~110~~ ~~120~~ ~~142~~ ~~150~~ ~~159~~ ~~180~~ ~~194~~ ~~195~~

Half of the boats held less than 66 cubes and half of the boats held more than 66 cubes

- **Mode**: The data value or values that occur the most often in a set of data. The can be one mode, multiple modes, or even no mode. When all of the values only occur once there is no mode.

Determine the mode for Trial #1. What does the mode tell you about the data set?

NOTE: The example data is from Mrs. Knouff's homeroom.

20 20 20 24 32 36 38 38 68 73 74 80 88 98 104
124 138 173 173 175 183 187 189 220 221

The most common number (occurred the most times) of cubes in the boats was 20 cubes.

- **Outlier**: a data value that is much greater or much less than all of the other values. When it is included in the data it will affect the mean. Data can have outlier but it does not have to have an outlier.

Does Trial #1 have an outlier? If so, what is it? How does the outlier affect the mean?

NOTE: This is example data from Mrs. Koverman's homeroom.
(* Using a line plot for outliers is very helpful!)

4 7 17 24 34 41 43 54 59 61 62 79 93
95 100 119 123 125 126 167 223

There is no outlier in the data. No number is much greater or much less than any other number. The mean will not be affected.

- **Range**: the difference between the greatest value and the least value. Range is a Measure of Variability. Measures of Variability describe the spread in a data set. Range is a number that can show how much the data is dispersed.

Determine the range for Trial #1? What does the range tell you about the data set?

NOTE: This is example from Mrs. Koverman's class.

Greatest number = 223
Least number = 4

223 - 4 = 219

The number of cubes the boats were able to hold was spread across 219 values.

NOTE: The number of data values is also known as observations. These data values can be described by HOW the data was measured and the UNITS of measurement (if applicable).

How many observations were in Trial #1 and Trial #2? How was the data measured? Are there units? → cubes

Koverman Data: There were 21 observations in Trial #1 and 20 observations in Trial #2.

Boats were built using 6in x 6in tin foil. 1cm x 1cm x 1cm cubes were placed into the boats until they took on water. The cubes from each boat were counted.