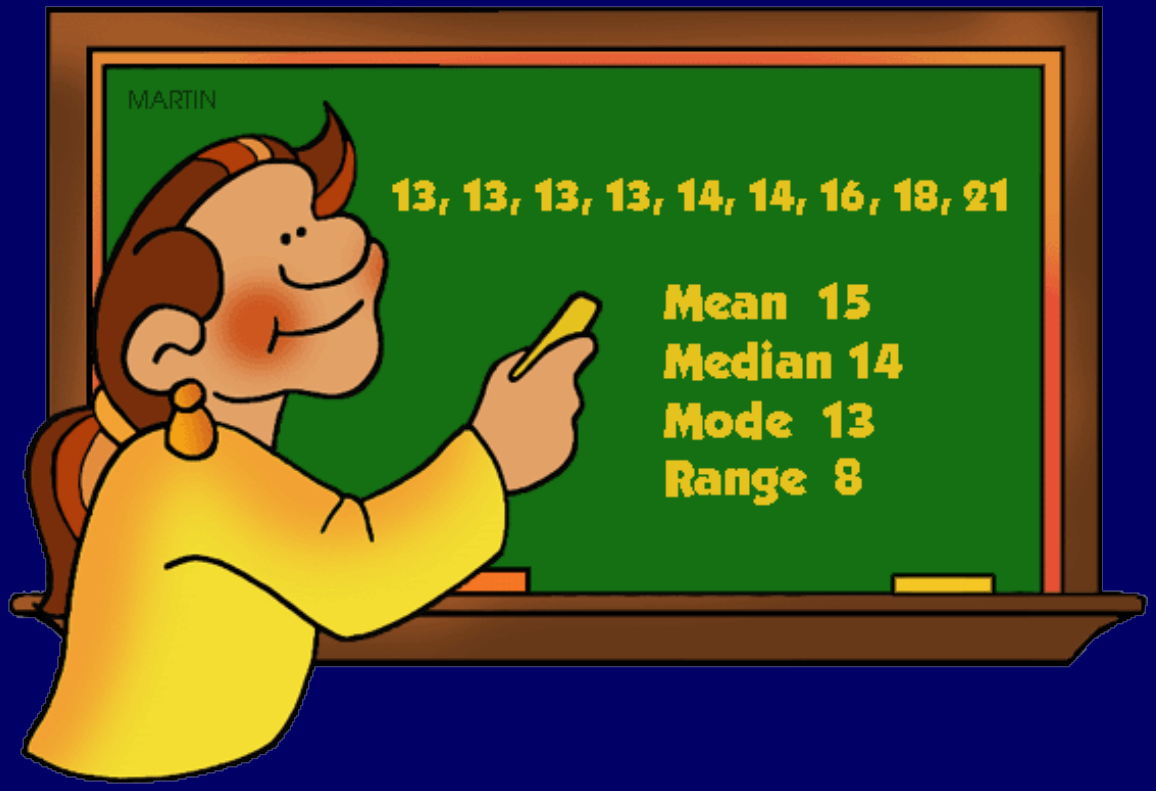
Analyzing Data Numerically



Data Table

Data refers to information that is collected.

2 cm 5 cm 7 cm

In science, data is usually collected during an experiment or investigation.

Data

When collecting data, it is much easier to keep the data organized by using a data table.

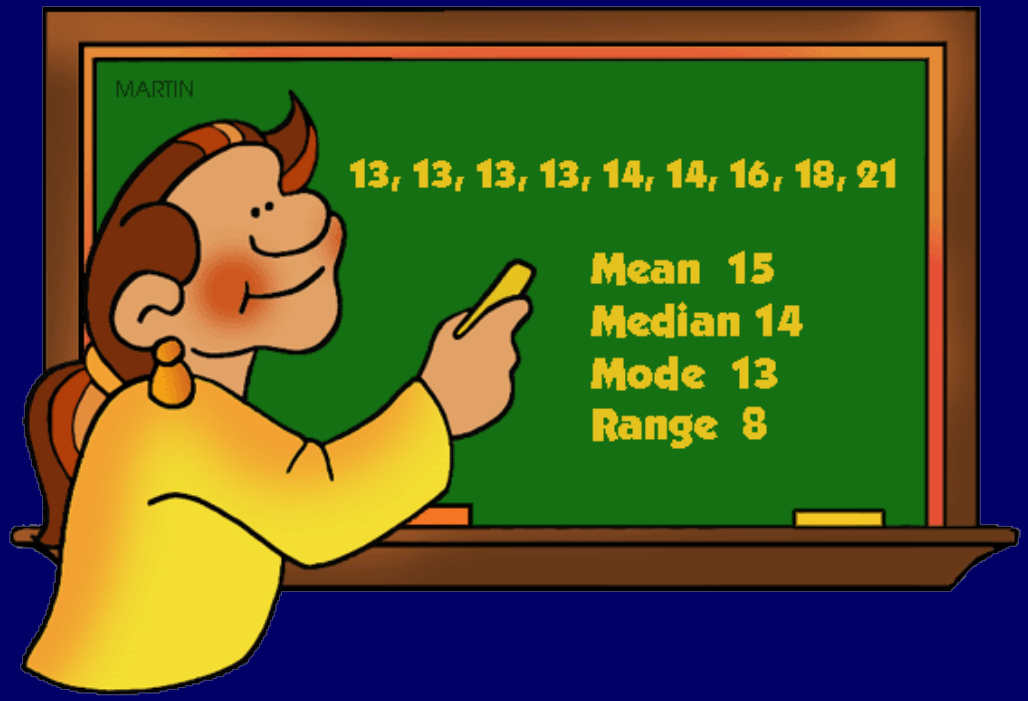
Plant Growth in Soils with Different pH Values

Plant Group	pH of Soil	Average Plant Growth (cm)
1	6.0	25.4
2	6.2	33.0
3	6.4	50.8
4	6.6	53.3
5	6.8	53.3
6	7.0	30.5
7	7.2	22.9

Data tables should always include a title for the table and for each column, as well as any units of measurement.

Data

Data can be analyzed numerically according to mean/average, median, mode, or range.



Mean/Average

The mean (average) of a data set is found by adding all numbers in the data set and then dividing by the number of values in the set.

Just remember RJ has a mean average.

Median

The median is the middle value for a set of data.

Step 1:
Make a list of the amounts in order from least to greatest.

Step 2:
Next, find the middle number in the list by counting in from each end.

1, 1, 2, 2, 3, 3, 4, 4, 4, 5, 11

Mia's soccer team goals

Game	Goals	Opponent
1	1	Warriors
2	11	Vikings
3	2	Raiders
4	3	Blazers
5	5	Sabers
6	4	Tigers
7	1	Barons
8	2	Bulldogs
9	4	Cougars
10	3	Lions
11	4	Spartans

Median is often used if one piece of data would skew the average or if one wants to know whether a piece of data is within the top half or bottom half of the data.

Mode

Mode refers to the most common data value that appears in a set of data.

Sam is the mode because it is the name that occurs most often.

Sam won the election!

mode = most often

Elections are determined by finding the mode.

Range

The range for a given data set is the difference between the highest and lowest values.

Repeating numbers make no difference to the steps:

1: Order the numbers from least to greatest.
2: Find the lowest number. Then, identify the highest number.
3: Subtract the lowest number from the highest number.

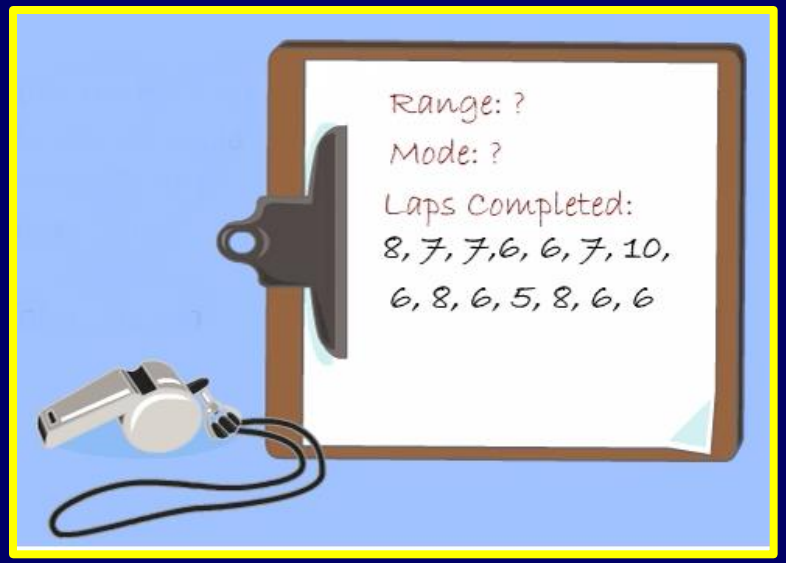
$$11 - 4 = 7$$

4 4 5 5 6 6 8 9 11

Knowing the range of numbers is often necessary information for creating a graph.

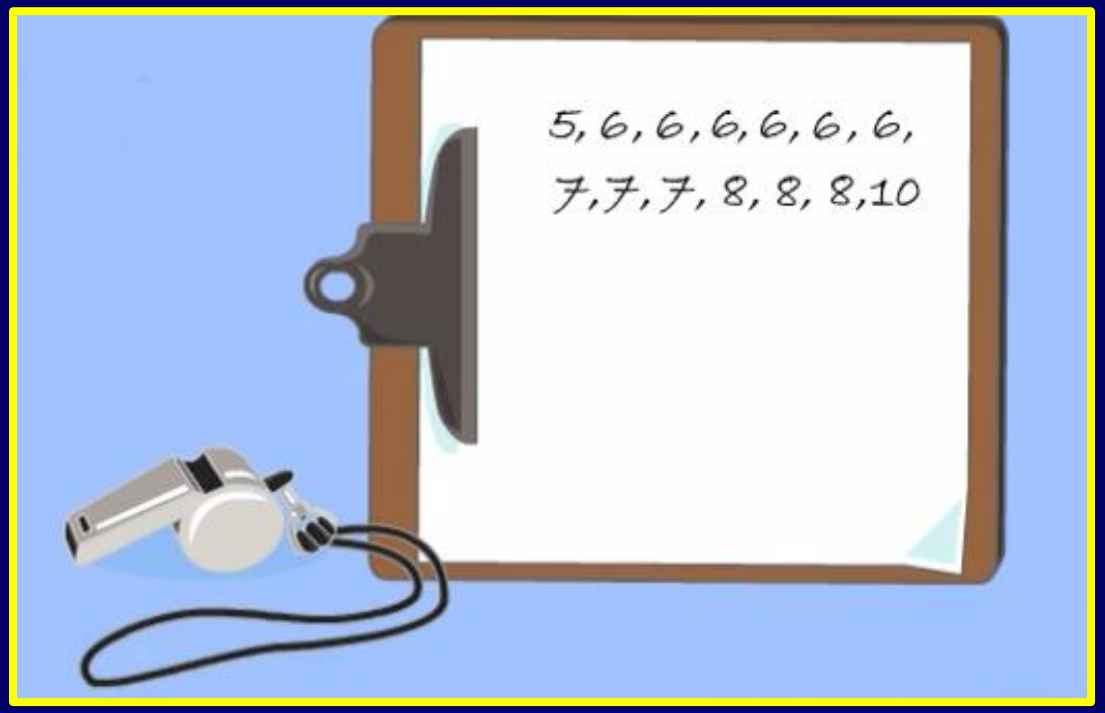
Line Plots

Line plots can be used to easily analyze the range and mode for a set of data and are also useful in helping organize data, during collection.



Line Plots

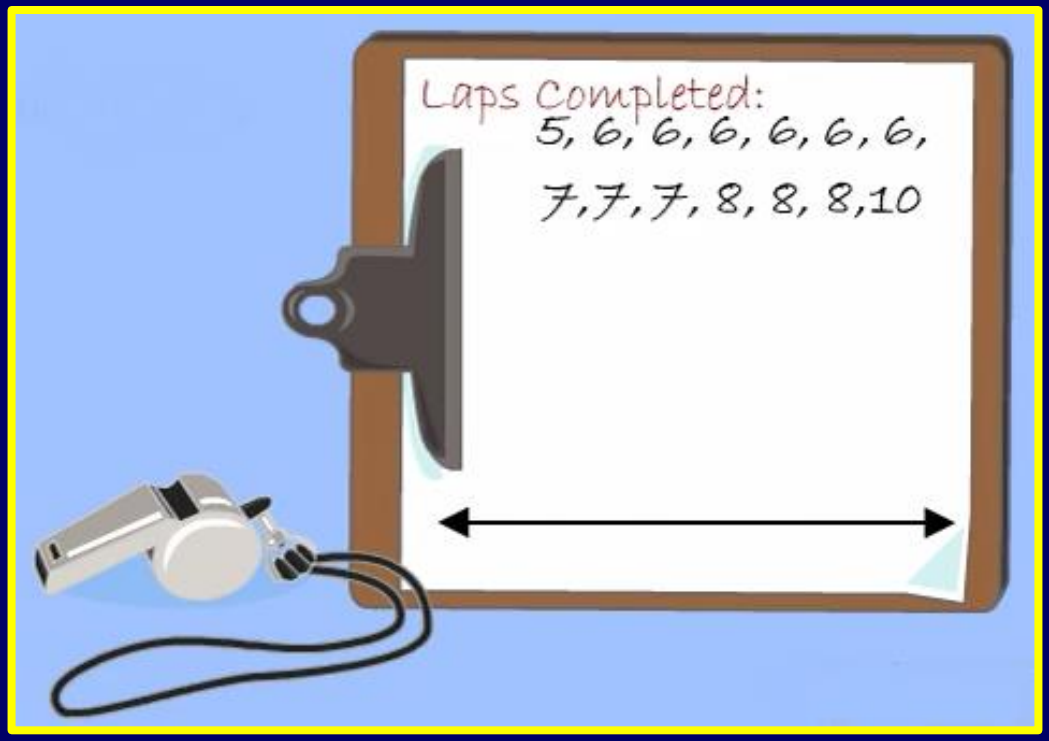
First Step: Put all your data in order from least to greatest.



Be sure to write down number, even if it repeats.

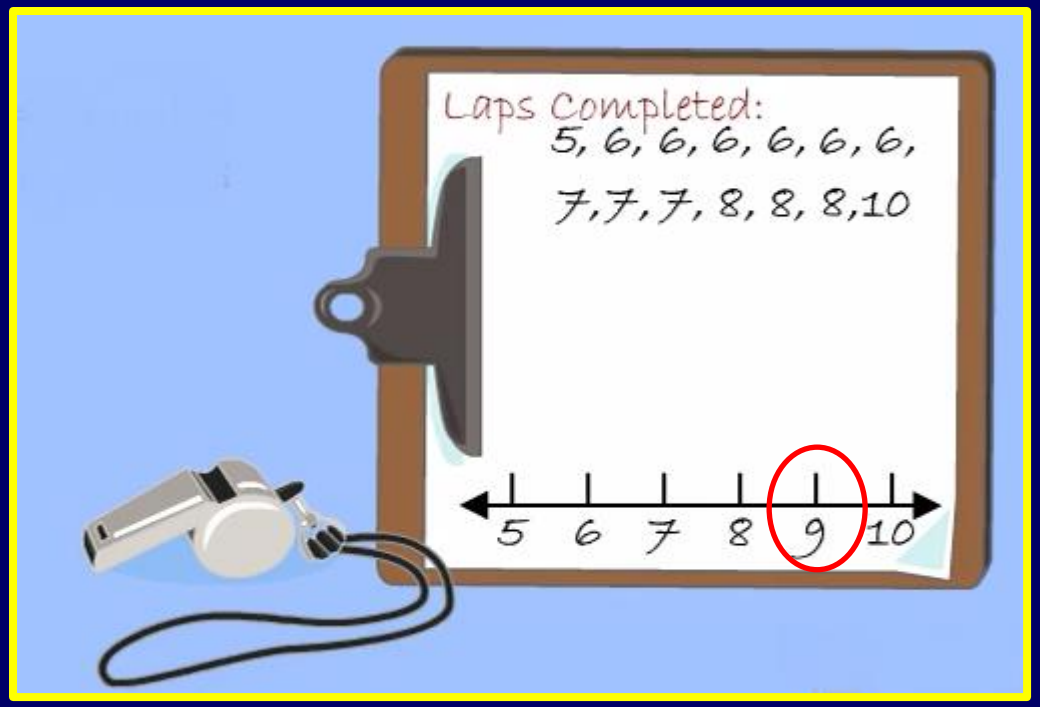
Line Plots

Second Step: Draw a horizontal line with arrows at each end and give your line plot a title.



Line Plots

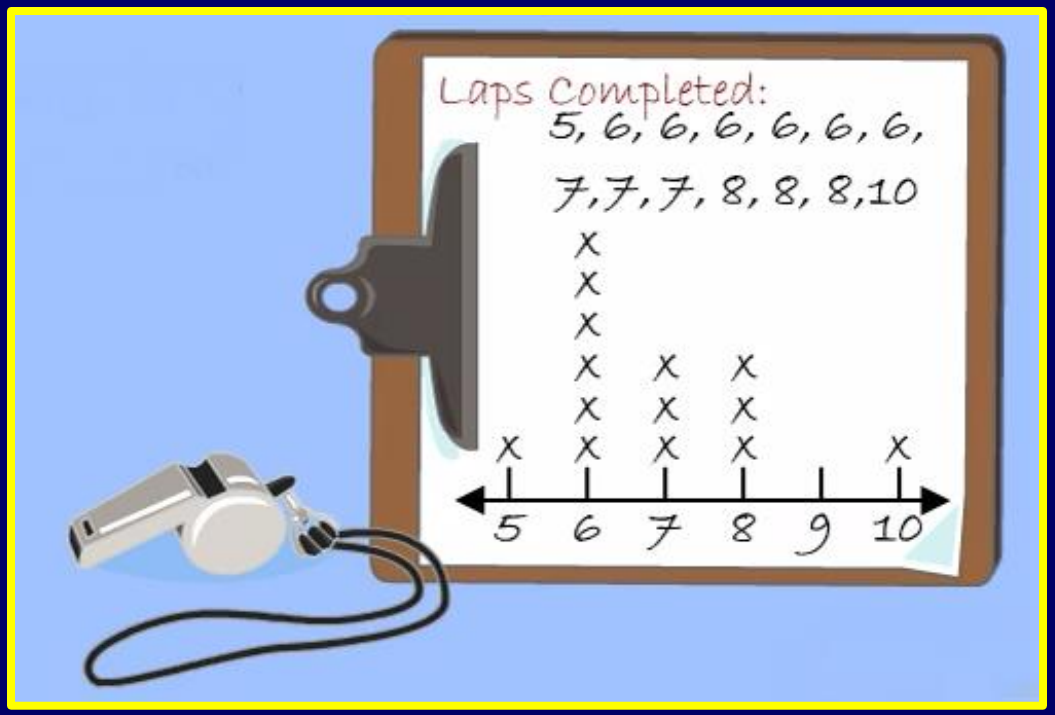
Third Step: Make a mark on the line for each number and write the number labels below the line.



Be sure to include numbers that are not in your data set but are within the range.

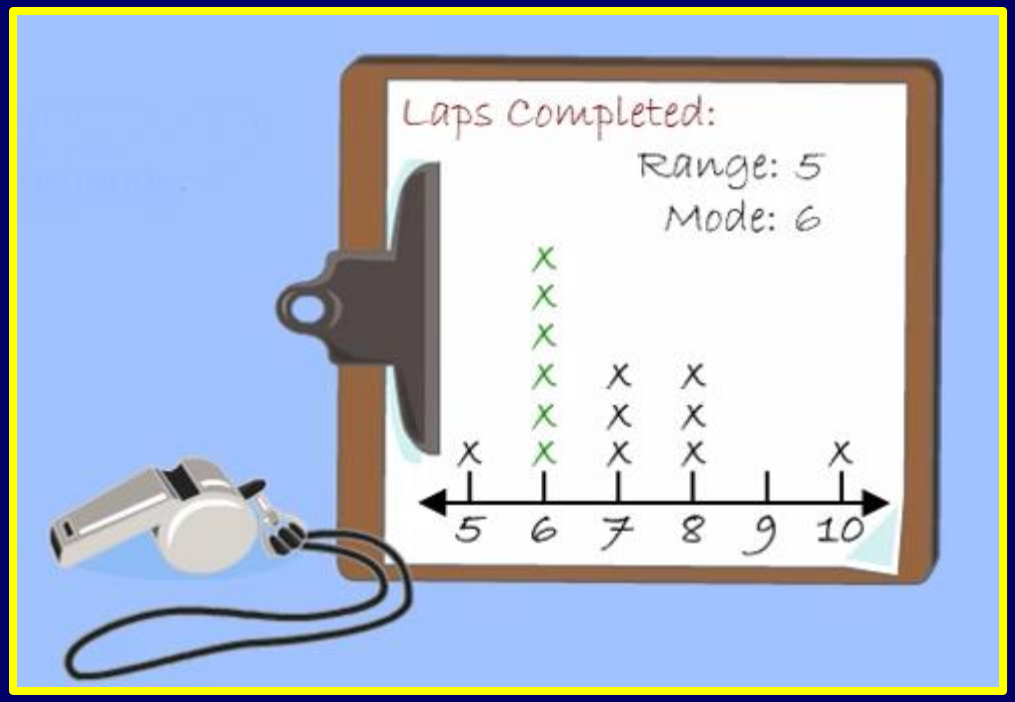
Line Plots

Fourth Step: Place an “X” above the line for each time that number occurs in the data set.



Line Plots

Find the range by subtracting the greatest number by the least number on the line plot.



The mode will be the number with the most amounts of "X"s.

The End