Descritive Statistics	Organizing and summerizing information; includes basic computations and graphs
Inferential Statistics	Drawing conclusions about a population using data collected from a sample
Observational Study	Researcher observes w/o manipulation; can establish association
Design Study	Researcher determines treatments and uses a control; can establish causation

Population	All of the individuals in a study
Sample	Some of the individuals of a population
Simple Random Sample	Sampling where each individual of the population is equally likely to be selected.
Variables	Characteristics that can have changing values.

Qua**lit**ative Variable	Variable with non-numerical values, eg: eye color
Qua**nt**itative Variable	Variable with numerical values
Discrete Variable	Quantitative variable that corresponds to a count or list, eg: integers
Continuous Variable	Quantitative variable with values that are continuous numbers

Frequency	The number of times that a variable occurs
Relative Frequency	Ratio of the frequency of occurrence to the total number of observations
Frequency Distribution Table	Table of Variables and Their Corresponding Frequency
Relative Frequency Distribution Table	Table of Variables and Their Corresponding Relative Frequency

Pie Chart	Display of Qualitative Variables as wedges in a circle chart
Bar Graph	Display of Qualitative Variables in separated bars
Histogram	Visual Display of Frequency Distribution
Dot plot	Number Line with dots that show the distribution of the data with replicas shown vertically

stem & leaf diagram	Display of quantitative data where stem represents base values (tens, hundreds) and leaf represents individual numbers (ones)
ordered stem & leaf diagram	stem & leaf diagram with values in sequence
Mean	$$\frac{\Sigma \text{ observations}}{\text{No. of observations}}$$
Median	Value in the middle of ordered data

Mode	Value that occurs most often
Range	Max - Min
Sample Standard Deviation (defining formula)	$s = \sqrt{\dfrac{\Sigma(x_i - \bar{x})^2}{n-1}}$
Sample Standard Deviation (computing formula)	$s = \sqrt{\dfrac{\Sigma x_i^2 - (\Sigma x_i)^2/n}{n-1}}$

First Quartile (Q1)	25% of data is lower = 25th percentile
Second Quartile (Q2)	Median, 50% of data is lower
Third Quartile (Q3)	75% of data is lower = 75th percentile
Five Number Summary	Min, Q1, Q2(median), Q3, Max

InterQuartile Range (IQR)	$Q_3 - Q_1$
Box Plot	Graphical representation of the Five Number Summary in which the middle 50% of the data is enclosed in a box.
Probability of an Event	frequency of occurrence / total possible outcomes
Values of Probability	$0 \leq p \leq 1$

p = 0	Event impossible
p = 1	Event guaranteed
Venn Diagram	a visual representation of all the possible outcomes and events
Mutually Exclusive	Events with no common outcomes (cannot simultaneously occur)

General Addition Rule $\qquad$ $P(A \text{ or } B) = P(A) + P(B) - P(A\&B)$

ComplementationRule $\qquad$ $P(D) = 1 - P(\text{not } D)$