

STATISTICS

PRAXIS FLASHCARD #247 & #25

CENTRAL TENDENCY MEASURES (AVERAGE)

Measures of Central Tendency are statistical measures such as **mean**, **median**, and **mode**. Data has a tendency to cluster or center on certain values. The term “average” is also used to indicate measures of central tendency. The common meaning of an **average** is to find the **arithmetic mean**. To average a group of numbers, add all the numbers together and divide by how many numbers there are. For example, the average of 5, 7, 12, and 8 is $(5 + 7 + 12 + 8) / 4 = 8$. Some related statistical measures are median, mode, range, maximum, and minimum.

PRAXIS FLASHCARD #154 & 385

MEAN

The **mean** is used in statistics to describe one of three measures of central tendency. Find the mean by adding the data values and dividing by the number of data values. (Also known as **average**) When the data are consistently distributed and there are no outliers, the mean is the best measure of central tendency.

PRAXIS FLASHCARD #155 & #386

MEDIAN

The **median** is used in statistics to describe one of three measures of central tendency. To find the median, list all the data values in numerical order. The median is the middle data value. If there is an even number of values, find the mean (or average) of the middle two values. Medians are used instead of means when there are outliers in the list of values that would distort the average. A mnemonic used to remember this term is to think of the median in the center of a freeway. A statistical median is in the center of the data values.

PRAXIS FLASHCARD #156, #244, & #384

MODE

The **mode** is used in statistics to describe one of three measures of central tendency; it is used to track trends or popularity. To find the mode, list all the data values in numerical order. The data value that appears the most in the list is the mode. A data set of values can have no modes, one mode, or more than one mode. Mode is used to determine popularity or commonly recurring events.

A mnemonic used to remember this term is to think of the word "most," which is similar to “mode.” Mode is/are the values that appear the most. When a list of numbers has TWO numbers that appear the most, this distribution of numbers in the list is called a **bimodal distribution**. For example, this list is a bimodal distribution with 3 and 7 as the two modes:

1, 2, 3, 3, 3, 4, 5, 6, 7, 7, 7, 8, 9

PRAXIS FLASHCARD #157

RANGE

The **range** is used in statistics to describe the difference between the smallest value and the largest value in a data set. To find the range, find the smallest value (the minimum or min) and find the largest value (the maximum or max). The range is the difference when you subtract the min from the max.

PRAXIS FLASHCARD #150

QUARTILES

In statistics, **quartiles** are three points that divide a set of ordered data into four equal groups. The first quartile, also called the lower quartile, splits off the lower 25% of the data. It is denoted by Q_1 . The second quartile, also called the **median**, splits the data in half. It is denoted by Q_2 . The third quartile, also called the upper quartile, splits off the higher 25% of the data. It is denoted by Q_3 .

PRAXIS FLASHCARD #170

TREND

A **trend** is the general direction data tends to move. From a line graph, a trend can be obvious when the line is going in an up or down pattern. Example: In the stock market, when stocks are trending down, it is called a **bear market**. When stocks are trending up, it is called a **bull market**. (A mnemonic to remember which is which: A bear has claws that curve downward and a bull has horns which curve upward.)



PRAXIS FLASHCARD #270 & #288

DEDUCTIVE AND INDUCTIVE REASONING

Deductive reasoning is a form of logic starting with statements of fact and drawing logical conclusions. If the laws of logic are followed from the statements of fact, the conclusions are true. It often helps to draw logic circles when working with deductive reasoning. **Inductive reasoning** is making sufficient observations that conclusions can be formed. A mnemonic used to remember the difference:

Deductive reasoning = **D**rawing conclusions from statements of facts

Inductive reasoning = **I**-witness (eye-witness) conclusions from observations

PRAXIS FLASHCARD #293

LOGIC DIAGRAM

A **logic diagram** is a visual way to determine the truth or logic of statements. A truth table may also be used. With a logic diagram, use circles to show relationships. For example: (1) ALL cats have tails. (2) SOME cats are black. (3) Goldy is a cat. **ALL** means the circle is completely inside another circle. **SOME** means the circle is partially inside another circle. **NONE** means the circles are completely separate. From the logic diagram, we see that Goldy definitely has a tail but may or may not be black.

