

A Note on Notation

Statistics has borrowed a system of formulas and notation from mathematics with which you may or may not be familiar. Here are some examples of those symbols and how they are used.

ΣX The upper-case Greek letter "sigma" (also called a "summation sign") indicates that you are to add together all the values represented by X. For example if the X values were 10, 12, 14 and 8, then

$$\Sigma X = 10 + 12 + 14 + 8 = 44.$$

X^2 This superscript means to square the value represented by X. For example, if the value of X were 10, then $X^2 = 10^2 = 100$.

$\sqrt{X}$ This radical sign means to take the square root of the value represented by X. For example, if the value of X were 49, then $\sqrt{X} = \sqrt{49} = 7$.

() Parentheses tell you the order of computational steps -- always complete the computation inside the parentheses first. For example, $(3 + 4) * 5$ means to sum 3 and 4, then to multiple the sum by 5 -- so, $(3 + 4) * 5 = 7 * 5 = 35$.

Often the symbols are used together in a formula. When this happens the ORDER in which you complete the steps of the computation is important. For example, consider the difference between the following two formulas.

ΣX^2 means to square each X value and to add the squared values together. For example, if the X values were 10, 12, 14, and 8, this would be $10^2 + 12^2 + 14^2 + 8^2 = 100 + 144 + 196 + 64 = 504$.

$(\Sigma X)^2$ means to add the X values and then take the square of that sum. For example if the X values were 10, 12, 14 and 8, this would be $(10 + 12 + 14 + 8)^2 = 44^2 = 1936$.

If you are uncertain about what one of the formulas in this manual tells you to do, you should try to figure it out by following the example computation using that formula. Remember, learning statistical notation is something like learning a new language -- it will take some hard work and practice.