Greek Statistical Symbols

| **Symbol** | **Text Equivalent** | **Meaning** | **Formula** | **Link to Glossary (if appropriate)** |
| --- | --- | --- | --- | --- |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image002.png | Alpha | Type I error or Level of Significance | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image004.png[ Rejecting the null hypothesis | Null hypothesis is true ] . | [Hypothesis Testing](http://www.statistics.com/index.php?page=glossary&term_id=634) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image006.png | Beta | Type II error or Power of the test | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image008.png[ Accepting the null hypothesis | Null hypothesis is False]. | [Hypothesis Testing](http://www.statistics.com/index.php?page=glossary&term_id=634) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image010.png | Epsilon | “Error Term” in regression/statistics; more generally used to denote an arbitrarily small positive number | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image012.png | [Regression](http://www.statistics.com/index.php?page=glossary&term_id=397) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image014.png | Chi-square | Chi-square distribution | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image016.pngSum of n independent Standard normal variables | [Chi-square distribution](http://www.statistics.com/index.php?page=glossary&term_id=557) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image014.png | Chi-square | Chi-square distribution | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image018.pngwhere O is the observed frequency and E is the expected frequency.  Or  http://www.statistics.com/uploads/images/symbols/greekstat/clip_image020.png | [Goodness of fit test](http://www.statistics.com/index.php?page=glossary&term_id=627) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image022.png(n) | Gamma-n | Gamma function | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image024.png |  |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image026.png | Lambda | Parameter used for Poisson distribution | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image028.pngMean of Poisson distribution | [Poisson distribution](http://www.statistics.com/index.php?page=glossary&term_id=592) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image030.png | Mu | Arithmetic mean or Average of the population | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image032.png  http://www.statistics.com/uploads/images/symbols/greekstat/clip_image034.png |  |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image036.png | Mu-r | rth central moment | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image038.png | [Measures of central tendency.](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image040.png | Mu-r-dash | rth Raw moment | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image042.png | [Measures of central tendency.](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image044.png | Rho | Population correlation coefficient | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image046.png |  |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image048.png | Sigma | Summation | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image050.pngSum of x scores |  |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image052.png | Sigma | Population standard Deviation | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image054.png  http://www.statistics.com/uploads/images/symbols/greekstat/clip_image056.png  http://www.statistics.com/uploads/images/symbols/greekstat/clip_image058.png | [Measures of dispersion](http://www.statistics.com/index.php?page=glossary&term_id=748) |
| http://www.statistics.com/uploads/images/symbols/greekstat/clip_image060.png | Sigma square | Population variance | http://www.statistics.com/uploads/images/symbols/greekstat/clip_image062.png | [Measures of dispersion](http://www.statistics.com/index.php?page=glossary&term_id=748) |

**Alphabetical Statistical Symbols**

| **Symbol** | **Text Equivalent** | **Meaning** | **Formula** | **Link to Glossary (if appropriate)** |
| --- | --- | --- | --- | --- |
| a |  | Y- intercept of least square regression line | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image002.gif, for line http://www.statistics.com/uploads/images/symbols/alphastat/clip_image004.gif | [Regression](http://www.statistics.com/index.php?page=glossary&term_id=397): y on x |
| b |  | Slope of least squares regression line | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image006.gif  for line http://www.statistics.com/uploads/images/symbols/alphastat/clip_image004.gif | [Regression](http://www.statistics.com/index.php?page=glossary&term_id=397): y on x |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image008.gif | Binomial distribution with parameters n and p | Discrete probability distribution for the probability of number of successes in n independent random trials under the identical conditions. | If X follows http://www.statistics.com/uploads/images/symbols/alphastat/clip_image010.gifthen,http://www.statistics.com/uploads/images/symbols/alphastat/clip_image012.gif ,  Where, http://www.statistics.com/uploads/images/symbols/alphastat/clip_image014.gif,  r = 0,1,2, …….,n, | [Binomial Distribution](http://www.statistics.com/index.php?page=glossary&term_id=553) |
| c |  | Confidence level | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image016.gif | [Confidence interval](http://www.statistics.com/index.php?page=glossary&term_id=377) |
| nCr | n-c-r | Combinations (number of combinations of n objects taken r at a time) | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image018.gif, where http://www.statistics.com/uploads/images/symbols/alphastat/clip_image020.gif |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image022.gif | n-c-r | Combinations (number of combinations of n objects taken r at a time) | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image024.gif, where http://www.statistics.com/uploads/images/symbols/alphastat/clip_image026.gif |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image028.gif | Covariance between X and Y | Covariance between X & Y | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image030.gif |  |
| CV |  | Coefficient of variation | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image032.gif |  |
| df |  | Degree(s) of freedom |  |  |
| E |  | Maximal error tolerance | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image034.giffor large samples |  |
| E (f(x)) | Expected value of f(x) |  | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image036.gif |  |
| f |  | Frequency | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image038.gifnumber of times score. |  |
| F |  | F-distribution variable | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image040.gifwhere n1 and n2 are the  corresponding degrees of freedom. | [F-distribution](http://www.statistics.com/index.php?page=glossary&term_id=567), Hypothesis testing for equality of 2 variances. |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image042.gif  or  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image044.gif |  | Distribution function | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image046.gif. |  |
| f(x)  or  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image048.gif |  | Probability mass function | Depends on the distribution.  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image050.gif |  |
| H0 | H-naught | Null hypothesis | The null hypothesis is the hypothesis about the population parameter. | [Testing of hypothesis](http://www.statistics.com/index.php?page=glossary&term_id=634) |
| H1 | H-one | Alternate hypothesis | An alternate hypothesis is constructed in such a way that it is the one to be accepted when the null hypothesis must be rejected. | [Testing of hypothesis](http://www.statistics.com/index.php?page=glossary&term_id=634) |
| IQR |  | Interquartile range | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image052.gif | [Measures of central tendency.](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| MS | M-S | Mean square | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image054.gif | [Analysis of variance (ANOVA)](http://www.statistics.com/index.php?page=glossary&term_id=609) |
| n |  | Sample size. | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image056.gifnumber of units in a sample. |  |
| N |  | Population size | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image058.gifNumber of units in the population. |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image060.gif | n-p-r | Permutation (number of ways to arrange in order n distinct objects taking them r at a time) | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image062.gifwhere http://www.statistics.com/uploads/images/symbols/alphastat/clip_image064.gif |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image066.gif | n-p-r | Permutation (number of ways to arrange in order n distinct objects taking them r at a time) | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image068.gif, where http://www.statistics.com/uploads/images/symbols/alphastat/clip_image020.gif |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image070.gif | p-hat | Sample proportion | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image072.gif | [Binomial distribution](http://www.statistics.com/index.php?page=glossary&term_id=553) |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image074.gif | Probability of A given B | Conditional probability | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image076.gif |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image078.gif | Probability of x | Probability of x | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image080.gif |  |
| p-value |  | The attained level of significance. | P value is the smallest level of significance for which the observed sample statistic tells us to reject the null hypothesis. |  |
| Q |  | Probability of not happening of the event | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image082.gif |  |
| Q1 | Q-one | First quartile | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image084.gifMedian of the lower half of the data that is data below median. | [Measures of central tendency](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| Q2 | Q-two | Second quartile Or Median | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image086.gifCentral value of an ordered data. | [Measures of central tendency](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| Q3 | Q-three | Third quartile | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image088.gifMedian of the upper half of the data that is data above the median. | [Measures of central tendency](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| R |  | Sample Correlation coefficient | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image090.gif |  |
| r2 | r-square | Coefficient of determination | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image092.gif |  |
| R2 | r-square | Multiple correlation coefficient | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image094.gif |  |
| S |  | Sample standard deviation | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image096.giffor ungrouped data.http://www.statistics.com/uploads/images/symbols/alphastat/clip_image098.gif for grouped data. | [Measures of dispersion](http://www.statistics.com/index.php?page=glossary&term_id=748) |
| S2 | S-square | Sample variance | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image100.giffor ungrouped data.  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image102.giffor grouped data. | [Measures of dispersion](http://www.statistics.com/index.php?page=glossary&term_id=748) |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image104.gif | s-e- square | Error variance | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image106.gif |  |
| SD |  | Sample Standard deviation | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image096.giffor ungrouped data.http://www.statistics.com/uploads/images/symbols/alphastat/clip_image098.gif for grouped data. |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image108.gif |  | Bowley’s coefficient of skewness | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image110.gif | [Measures of skew ness](http://www.statistics.com/index.php?page=glossary&term_id=356) |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image112.gif |  | Pearson’s coefficient of skewness | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image114.gif | [Measures of skew ness](http://www.statistics.com/index.php?page=glossary&term_id=356) |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image116.gif |  | Sum of squares | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image118.giffor ungrouped data  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image120.giffor grouped data |  |
| t |  | Student’s t variable | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image122.gif | [t-distribution](http://www.statistics.com/index.php?page=glossary&term_id=602) |
| tc | t critical | The critical value for a confidence level c. | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image124.gifNumber such that the area under the t distribution for a given number of degrees of freedom falling between http://www.statistics.com/uploads/images/symbols/alphastat/clip_image126.gifand http://www.statistics.com/uploads/images/symbols/alphastat/clip_image128.gifis equal to c. | [Testing of hypothesis](http://www.statistics.com/index.php?page=glossary&term_id=634) |
| Var(X) | Variance of X | Variance of X | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image130.gif |  |
| X |  | Independent variable or explanatory variable in regression analysis | Eg. In the study of, yield obtained & the irrigation level, independent variable is, http://www.statistics.com/uploads/images/symbols/alphastat/clip_image132.gifIrrigation level. |  |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image134.gif | x-bar | Arithmetic mean or Average of X scores. | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image136.giffor ungrouped data.  http://www.statistics.com/uploads/images/symbols/alphastat/clip_image138.giffor grouped data | [Measures of central tendency](http://www.statistics.com/index.php?page=glossary&term_id=724) |
| y |  | Dependent variable or response variable in regression analysis | Eg. In the study of, yield obtained & the irrigation level, dependent variable is, http://www.statistics.com/uploads/images/symbols/alphastat/clip_image140.gifYield obtained. |  |
| Z | Z-score | Standard normal variable (Normal variable with mean = 0 & SD = 1) | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image142.gif, where X follows Normal http://www.statistics.com/uploads/images/symbols/alphastat/clip_image144.gif. | [Standard normal distribution](http://www.statistics.com/index.php?page=glossary&term_id=600) |
| http://www.statistics.com/uploads/images/symbols/alphastat/clip_image146.gif | z critical | The critical value for a confidence level c. | http://www.statistics.com/uploads/images/symbols/alphastat/clip_image148.gifNumber such that the area under the standard normal curve falling between http://www.statistics.com/uploads/images/symbols/alphastat/clip_image150.gifand http://www.statistics.com/uploads/images/symbols/alphastat/clip_image146.gifis equal to c. | [Testing of hypothesis Confidence interval](http://www.statistics.com/index.php?page=glossary&term_id=377) |

**Mathematical Statistical Symbols**

| **Symbol** | **Text Equivalent** | **Meaning** | **Formula** | **Link to Glossary (if appropriate)** |
| --- | --- | --- | --- | --- |
| ! | Factorial | Product of all integers up to the given number | http://www.statistics.com/uploads/images/symbols/mathstat/clip_image002.png;  http://www.statistics.com/uploads/images/symbols/mathstat/clip_image004.png |  |
| c | Complement | not | For example: http://www.statistics.com/uploads/images/symbols/mathstat/clip_image006.pngis not http://www.statistics.com/uploads/images/symbols/mathstat/clip_image008.png |  |
| http://www.statistics.com/uploads/images/symbols/mathstat/clip_image010.png | Union | or | For example: http://www.statistics.com/uploads/images/symbols/mathstat/clip_image012.pngis happening of either event A or event B. |  |
| http://www.statistics.com/uploads/images/symbols/mathstat/clip_image014.png | Intersection | And | For example: http://www.statistics.com/uploads/images/symbols/mathstat/clip_image016.pngis happening of both event A and event B. |  |