Statistical Terms

Statistics reports include statistical terms based on http://statistics.berkeley.edu/~stark/SticiGui/Text/gloss.htm

Term	Description
Average	A sometimes vague term. It usually denotes the arithmetic mean, but it can also denote the median, the mode, the geometric mean, and weighted means, among other things.
Con Interval	A confidence interval (CI) is a particular kind of interval estimate of a population parameter and is used to indicate the reliability of an estimate. It is an observed interval (i.e. it is calculated from the observations), in principle different from sample to sample, that frequently includes the parameter of interest, if the experiment is repeated. How frequently the observed interval contains the parameter is determined by the confidence level or confidence coefficient. A confidence interval with a particular confidence level is intended to give the assurance that, if the statistical model is correct, then taken over all the data that might have been obtained, the procedure for constructing the interval would deliver a confidence interval that included the true value of the parameter the proportion of the time set by the confidence level
Highest	Highest value in the set
Inter Q Range	The interquartile range (IQR), also called the midspread or middle fifty, is a measure of statistical dispersion, being equal to the difference between the upper and lower quartiles.
Kurtosis	This is any measure of the "peakedness" of the probability distribution of a real-valued random variable. In a similar way to the concept of skewness, kurtosis is a descriptor of the shape of a probability distribution and, just as for skewness, there are different ways of quantifying it for a theoretical distribution and corresponding ways of estimating it from a sample from a population.
Lower 27	Bottom 27 percent students who have scored the maximum score defined for the question
Lowest	Lowest value in the set
Maximum	The highest value in a set.

Term	Description
Mean	The sum of a list of numbers, divided by the number of numbers
Median	A median is described as the numerical value separating the higher half of a sample, a population, or a probability distribution, from the lower half. The median of a finite list of numbers can be found by arranging all the observations from lowest value to highest value and picking the middle one. If there is an even number of observations, then there is no single middle value; the median is then usually defined to be the mean of the two middle values.
Minimum	The lowest value in a set.
N	The number of elements in a sample from a population
Number Missing	Total no. of students for an item (question) who have answered as "*" or score is -999.99. This type of question choice is defined having "*" as score. At the time of scoring system generates score -999.99 for the question. If one student comes twice within above criteria then this will be counted as 2 (i.e. no distinct).
Passing Cut-off	Passing cut off score for the Session /Category Group /Category/Competency within data pool. This will be calculated as : *Mean (for the entity) - (Sigma Cutoff * StdDev)*
Passing Score	Minimum Passing cut off defined for the Session/Case/Category.
Percentile 25	A percentile (or centile) is the value of a variable below which a certain percent of observations fall. In this case, the 25th percentile is the value (or score) below which 25 percent of the observations may be found.
Percentile 50	The 50th percentile is the value (or score) below which 50 percent of the observations may be found.
Percentile 75	The 75th percentile is the value (or score) below which 75 percent of the observations may be found.
Point-biserial	The point biserial correlation coefficient (rpb) is a correlation coefficient used when one variable (e.g. Y) is dichotomous; Y can either be "naturally" dichotomous, like gender, or an artificially dichotomized variable. In most situations it is not advisable to artificially dichotomize variables. When you artificially dichotomize a variable the new dichotomous variable may be conceptualized as having an underlying continuity. If this is the case, a biserial correlation would be the more appropriate calculation.

Term	Description
	The point-biserial correlation is mathematically equivalent to the Pearson (product moment) correlation, that is, if we have one continuously measured variable X and a dichotomous variable Y, rXY = rpb. This can be shown by assigning two distinct numerical values to the dichotomous variable.
Range	The difference between the highest and the lowest values in a set
Range High	The highest score obtained by a student for Session/Case/Scenario/Category Group /Category/Competency within data pool.
Range Low	The lowest score obtained by a student for Session/Case/Scenario/Category Group /Category/Competency within data pool.
SD (Standard Deviation)	The standard deviation of a set of numbers is the Root-mean-square of the set of deviations between each element of the set and the mean of the set.
Sigma Cut-off	The Sigma value provided during report selection. This value can be 1/2/3/4/5. Sigma values will be calculated to display data in different colors. Calculation will be: One Sigma Below = Mean - (1* StdDev) One Sigma Above = Mean + (1* StdDev) Two Sigma Below = Mean - (2* StdDev) Two Sigma Above= Mean - (2* StdDev)
Skewness	This is a measure of the asymmetry of the probability distribution of a real-valued random variable. The Skewness value can be positive or negative, or even undefined. Qualitatively, a negative skew indicates that the tail on the left side of the probability density function is longer than the right side and the bulk of the values (possibly including the median) lie to the right of the mean. A positive skew indicates that the tail on the right side is longer than the left side and the bulk of the values lie to the left of the mean. A zero value indicates that the values are relatively evenly distributed on both sides of the mean, typically but not necessarily implying a symmetric distribution.
Standard Error	The Standard Error of a random variable is a measure of how far it is likely to be from its expected value; that is, its scatter in repeated experiments. The SE of a random variable X is defined to be $SE(X) = [E((X - E(X))^2)]^{½}$.

Term	Description
	That is, the standard error is the square-root of the expected squared difference between the random variable and its expected value. The SE of a random variable is analogous to the SD of a list.
Sum of Scores	Sum of scores for a sample size.
Sum of Squares	Sum of Square of score for a sample size.
T Value	This T Value also known as Welch's t-test is used only when the two population variances are assumed to be different (the two sample sizes may or may not be equal) and hence must be estimated separately. The t statistic to test whether the population means are different can be calculated as follows: $$t = \frac{\overline{X}_1 - \overline{X}_2}{s_{\overline{X}_1 - \overline{X}_2}}$$ where $$s_{\overline{X}_1 - \overline{X}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}.$$ Where s2 is the unbiased estimator of the variance of the two samples, n = number of participants, 1 = group one, 2 = group two. This can be achieved by calculating the following statistics, for two sets, based on top 25 percent students within data pool for the case and for the item (question): N (say N1 and N2) Mean (say Mean1 and Mean2) SD (say SD1 and SD2) If SD is 0 for both sets then ***T Value*** will be displayed as "**N.A.**", otherwise ***T Value*** will be calculated as:

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	(Mean1-Mean2)/SQRT((SQUARE(SD1)/N1) + (SQUARE(SD2)/N2)) This calculation excludes ***Number Missing*** criteria.
Upper 27	Top 27 percent students who have scored the maximum score defined for the question
Variance	The variance of a list is the square of the standard deviation of the list, that is, the average of the squares of the deviations of the numbers in the list from their mean.
XY	XY will be calculated as: For Session: First get top 1 average Session score for the candidate within data pool. Say this value is SessionScore. Then get no. of questions scored for the candidate within data pool for the Session. Say this value is NoOfQuestions. Then XY for the case will be: XY = (SessionScore /100) * NoOfQuestions + ' /' + NoOfQuestions For example if SessionScore is 76.60 and NoOfQuestions is 61 then XY will be (47/61). This calculation will be rounded to 0. For Case: First get top 1 case score for the candidate within data pool for the case. Say this value is CaseScore. Then get no. of questions scored for the candidate within data pool for the case. Say this value is NoOfQuestions. Then XY for the case will be: XY = (CaseScore/100) * NoOfQuestions + ' /' + NoOfQuestions For example if CaseScore is 82.00 and NoOfQuestions is 38 then XY will be (31/38). This calculation will be rounded to 0. For Skills: First get average skill score for the candidate within data pool. Say this value is SkillScore. Then get no. of questions scored for the candidate within data pool for the skill. For competencies, this will be total no. of competencies scored by the candidate within data pool. Say this value is No Of Questions. Then XY for the case will be: X / Y XY = (SkillScore /100) * No Of Questions + ' / ' + No Of Questions

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	For example if SkillScore is 91.48 and No Of Questions is 21 then XY will be (19/21). This calculation will be rounded to 0. If skill is category then average will be calculated for the category scores having weight is greater than 0. All above average calculations will excludes Number Missing Criteria.