

Analysis Statistics

Exam standard frequencies include: Test Statistics, Responded Statistics, Frequency Distribution, Item Statistics, Item Analysis, and Grade Reports.

Test Statistics

The Test Statistics node provides an overview of the test results, contained in one table. You may customize this table so that it only displays those statistics in which you are interested. The following statistics can be displayed:

Statistic	Description
Number of Tests Graded	The total number of tests that were graded.
Number of Graded Items	The number of items on the test that were graded.
Total Points Possible	The total number of points on the test.
Maximum Score	The highest score from the graded tests.
Minimum Score	The lowest score from the graded tests.
Median Score	The median of the scores from the graded tests.
Range of Scores Percentile (25 and 75)	The range is the distance between the highest and lowest score. Percentiles are values that divide a sample of data into one hundred groups containing (as far as possible) equal numbers of observations. For example, 25% of the data values lie below the 25th percentile.
Inter Quartile Range Mean Score	The difference between the 75th percentile and the 25th percentile. The average score of all of the graded tests.
Variance	The amount that each score deviates from the mean squared (by multiplying it by itself).
Standard Deviation	A statistic used to characterize the dispersion among the measures in a given population. It is calculated by taking the square root of the variance.
Confidence Interval (1, 5, 95 and 99%)	A confidence interval gives an estimated range of values that is likely to include an unknown population parameter, the estimated range being calculated from a given set of sample data. If independent samples are taken repeatedly from the same population, and a confidence interval calculated for each sample, then a certain percentage (confidence level) of the intervals will include the unknown population parameter. Remark Classic OMR calculates Confidence Intervals of 1%, 5%, 95% and 99%.
Kuder-Richardson Formula₂₀	An overall measure of internal consistency.
Coefficient (Cronbach) Alpha	A coefficient that describes how well a group of items focuses on a single idea or construct.

Respondent Statistics

The Respondent Statistics node provides a variety of statistics based on the current grade operation. By default, the Grade, Total Score and Percent Score for each student is displayed. The following table summarizes all of the available statistics:

Statistic	Meaning
Grade	Letter grade for the test.
Total Score	Total score for the test.
Percent Score	Corresponding percent score for the test
Objective Score	If using subjective score(s), the score for the objective portion of the test can be displayed separately.
Subjective Score	If using subjective score(s), the score for the subjective portion of the test can be displayed separately.
Z Score	The standard normal distribution is sometimes called the z distribution. A z score reflects the number of standard deviations above or below the mean a particular score represents.
T Score	Standard score having a mean of 50 and a standard deviation of 10 ($T=10z+50$).
ETS Score	Score used by Educational Testing Service that has a mean of 500 and a standard deviation of 100 ($ETS=100z+500$).
Deviation IQ	Standard score having a mean of 100 and a standard deviation of 15 ($DIQ=15z+100$).
Number Correct	The number of correct responses.
Number Incorrect	The number of incorrect responses.
Number Missing	The number of responses that are missing.

Item Statistics

The Item Statistics report allows you to choose specific variables from your data and then reports various statistics for that particular variable. The following table summarizes these statistics:

Statistic	Description
Sample Size	The total number of forms in the data set(s).
Number Missing	The number of responses that are missing (blank).
Mean	The average of the values in the population.

Variance	A measure of how spread out a distribution is. It is computed as the average squared deviation of each number from its mean.
Standard Deviation	A statistic used to characterize the dispersion among the measures in a given population. It is calculated by taking the square root of the variance.
Standard Error	The standard deviation of the sampling distribution of that statistic. Standard errors reflect how much sampling fluctuation a statistic will show.
Minimum	The minimum value in a range.
Maximum	The maximum value in a range.
Median	The middle of a distribution: half the values are above the median and half are below the median.
Range	The distance between the maximum and minimum value.
Sum	The sum of the frequency of the labels multiplied by their corresponding value.
Sum of Squares	The sum of the frequency of the labels multiplied by their corresponding value squared.
Skewness	A measure of the symmetry or lack of it in a set of data as evident from the shape of the distribution. A distribution is symmetric if the left half of the graph of the distribution is the mirror image of the right half. If a distribution is skewed to the right (positive skewness) the mean is greater than median, which in turn is greater than the mode, in which case the skewness coefficient is greater than zero. If a distribution is skewed to the left (negative skewness) then the relationship is reversed, in which case the coefficient is less than zero. If there is no skewness or the distribution is symmetric like the bell-shaped normal curve then the mean = median = mode.
Kurtosis	Kurtosis is based on the size of a distribution's tails. Distributions with relatively large tails are called "leptokurtic"; those with small tails are called "platykurtic". A distribution with the same kurtosis as the normal distribution is called "mesokurtic."
T-Value	A measure on a random sample (or pair of samples) in which a mean (or pair of means) appears in the numerator and an estimate of the numerator's standard deviation appears in the denominator. The latter estimate is based on the calculated s square or s squares of the samples. If these calculations yield a value of (t) that is sufficiently different from zero, the test is considered to be statistically significant.
Mean Absolute Deviation	A measure of variation, which calculates the average distance a data value is from the mean.
Percentile (25, 50 & 75)	Percentiles are values that divide a sample of data into one hundred groups containing (as far as possible) equal numbers of observations. For example, 25% of the data values lie below the 25th percentile.
Inter Quartile Range	The difference between the 75th percentile and the 25th percentile.

Confidence Intervals

A confidence interval gives an estimated range of values that is likely to include an unknown population parameter, the estimated range being calculated from a given set of sample data. If independent samples are taken repeatedly from the same population, and a confidence interval calculated for each sample, then a certain percentage (confidence level) of the intervals will include the unknown population parameter. Remark Classic OMR calculates Confidence Intervals of 1%, 5%, 95% and 99%.

P Value

The probability of getting a value of the test statistic as extreme as or more extreme than that observed by chance alone, if the null hypothesis H_0 , is true. It is the probability of wrongly rejecting the null hypothesis if it is in fact true.

Point Biserial

A measurement of the discrimination of an item. It indicates the relationship between a response for a given item and the overall test score of the respondent. A high value indicates that students scoring well on the test chose this response. The point biserial statistic applies to grading only.

Item Analysis

The Item Analysis node provides an in-depth look at individual question statistics. Each item displays in a separate table. The following table describes the statistics that are displayed:

Statistic	Meaning
Label	The output label designated in the template.
Value	The corresponding numeric value for each output label.
Weight	The points assigned to correct, incorrect and missing responses. The weight statistic applies to grading only.
Frequency	The number of times a particular label was chosen (appears in the data set).
Percent	The corresponding percentage of the frequency.
Cumulative Percent	The sum of the percents from the first response up to and including the current response.
Valid Percent	The percent not including missing items.
Cumulative Valid Percent	The sum of the valid percents from the first response up to and including the current response.
Point Biserial	A measurement of the discrimination of an item. It indicates the relationship between a response for a given item and the overall test score of the respondent. A high value indicates that students scoring well on the test chose this response. The point biserial statistic applies to grading only.
Total	The sum of the frequencies and percentages.

Grade Reports

The Grade Reports node provides a detailed student grade report for each student included in the grade operation. You may print these reports and give them to your students. The report provides a table of the basic statistics. The following options can be included in the reports:

Option	Meaning
Grade	Letter grade for the test.
Percent Score	Corresponding percent score.
Total Score	Total raw score.
Number of Tests Graded	The total number of tests graded.
High Score	The highest score of all of the graded tests.
Low Score	The lowest score of all of the graded tests.
Mean Score	The average score of all of the graded tests.
Median Score	The middlemost value when all the scores are arranged in numeric order (ascending or descending).
Responses	The questions and students' answers are displayed. For an incorrect answer, the correct answer is also displayed.

Frequency Distribution

The Frequency Distribution node illustrates the dispersion of students over the selected interval. The table displays the selected interval, the start range, the end range and the number of students that fall within that range.