A User's Guide to

Test Scoring and Item Analysis

The current version of Remark Classic OMR provides for the scoring of selection type tests that have been read from OPSCAN answer forms. The Data Center standardizes on Pearson Form 6703 or 4521; however custom forms can be created to suit any faculty needs. In addition to scoring a test and obtaining a test performance profile, the system provides a means of test analysis to identify poor or erroneous items. The instructor can use the information provided to improve test items for future use.

This new version of the Remark Classic OMR provides reports and data that will replace both **!Brilliant** and **!Excellent** post scoring processes that were used with the previous obsolete versions of Remark OPSCAN software. The Data Center can provide the OPSCAN results in a *.xlsx file format for faculty members that want to do post processing analysis of test data. !Brilliant and !Excellent will not function correctly with the output of the current version of Remark Classic OMR.

ITS will score tests submitted to the computer operations staff. Faculty should complete an Optical Scanner usage form at the pick-up window on the 4th floor of the E&CS Building. Any requested data files and program report output will be automatically emailed to the faculty ODU email account. A score transfer file can created in your choice of comma-delimited Excel format (*.xlsx) or a Blackboard ready import format (*new feature*).

Test Scoring Options

This version of the Remark Classic OMR provides the functionality for a wide variety of scoring methodologies and uses. Most simple single answer key uses can be accomplished by the use of paper answer keys. Most of the advanced uses require the creation of an electronic answer key. Electronic answer keys can be created in two methods which are defined later in this document. In general, the following functionality is available in the Test Scoring system:

- **Multiple Correct Answers for a single question**: You allow more than one correct answer for a single test item. (paper, electronic key file or electronic answer keys)
- **Multiple Test Versions**: Multiple test forms can be used and scanned in one pass. (paper, electronic key file or electronic answer keys)
- **Weighted Questions**: Test items may be weighted to award different point values to test item or answers (requires an electronic answer key)
- **Multiple Answers for a single questions**: You may assign points to more than one correct answer for a single test item (requires electronic key file or electronic answer key)
- **Learning Objectives**: Subsets of items may be defined and a subset score output to reports (requires an electronic answer key)
- **Grading Scales**: Grading scales can be assigned to tests (requires an electronic key)
- **Scaled Scores**: a scaled score converts a student's score on a test to a common scale that will allow for comparison among students. (requires an electronic answer key)

Test Key Attributes

When using the OPSCAN forms the following best practices should be managed to achieve accurate testing results and management of desired scoring through the use of the Test Key Attributes:

- If you are using a single paper answer key, the answer key should be the first page (first item scanned) for any OPSCAN Scanner request. If an electronic key has been configured, it should be specified on the OPSCAN Scanner request to insure proper grading.
- The fields read from the OPSCAN forms include the NAME, SEX, BIRTHDATE, STUDENT ID, SPECIAL CODE and all the ITEM RESPONSE fields. Only the Name, Student ID, Special Codes and Response Items are used in scoring tests.
- The best practice for the NAME field is for Students to entire their names Left justified and complete all unused columns with BLANKS.
- Best practice is for students to enter their STUDENT ID numbers left justified; unused columns of the ID field can remain blank but should be filled with ZEROs. No validation of the ID field occurs to prohibit scoring a test.
- The KLMNOP Columns of the Special Code field are read and stored in the data but is not used for any scoring attributes.
  - However, the KLMNOP field is active and can be used for Multiple Test versions. For example, you could have students enter a test form number 2r 1 Tf0.601 0 T -1(.)ʃJ (t)ak1nin Tw d(2r 1 T9

- Questions left blank on the answer key are not graded.
- If the answer key has a test item response with multiple answers specified, the system

	this information appears in the student column.
Grade	Displays the grade the student achieved based on the grade scale that was used during the time of process. This will be the default grade scale as noted above or a customized one if electronic keys were used.
Total	Displays the total score achieved by the student. The first number is the number of points the student received; the second number is the total number of possible points on the test.
Percent	Displays the percent score achieved by each student.
Z Score	Displays the Z Score, which indicates how many standard deviations a score is above or below the mean (symbolized by a + or -).

T Score

	Maximum Score	Displays the highest score from the graded tests.
	Minimum Score	Displays the lowest score from the graded tests.
Statistics	Mean Score	Displays the average score of all the graded tests.
	Mean percent Score	Displays the average percent score for all of the graded tests.
	Benchmark Score	Displays the benchmark percent score used for the test (if applicable).
	Range of Scores	Displays the distance between the highest and lowest score.
	Standard Deviation	A measure of dispersion of a set of the data from its mean. The more spread apart the data is, the higher its deviation. It is calculated by taking the square root of the variance.
	Variance	The amount that each score deviates from the mean squared (by multiplying it by itself).
Percentiles	Percentile (25 and 75)	Percentiles are the values that divide a sample of data into one hundred groups containing equal numbers of observations.
	Median Score	The median of the scores from the graded tests.
	Inter Quartile Range	The difference between the 75th percentile and the 25th percentile.

Report 106 - Condensed Test Report

The Condensed Test report provides a summary of basic tests statistics. The header optionally contains

Response	Displays the labels (answer choices) designated in the questions properties
Frequency	Displays the number of times a particular answer choice was chosen by students for this particular question.
Percent	Displays the corresponding percentage of the frequency.
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. The point biserial tells you if a question was a good discriminator between the better students and the poorer students. Point biserial ranges from -1 to 1. A positive value indicates that the students who did well on the test answered the question correctly.
Missing	Missing values are anything that is not valid data, such as a blank response.
Total	Displays the total number of valid responses and corresponding percentages. If you are including missing values, the total number missing is included in the total.
Objectives	Displays any Learning Objectives defined that utilize the question.

Optional Reports

The following reports are available as optional and can be requested at the time when the OPSCAN Usage form is completed when dropping off the request. Some reports are not available depending on the type of test submitted (multi-version, scaled etc).

Report 102 - Comparative Grade Report

The Comparative Grade Report allows you to see test scores broken down by specific criteria. You can select questions from the data on which to base the report. For example, this report is especially useful for comparing demographic groups. If your students mark a category such as ethnicity on their test answer sheet, you can view the data by ethnic group.

Report 107 – Demographic Grade Report

The Demographic Grade Report allows you to see test scores broken down by specific criteria. You can select questions from the data on which to base the report. For example, this report is especially useful for comparing demographic groups. If your students mark a category such as ethnicity on their test answer sheet, you can view the data by ethnic group. This report is very similar to the Comparative Grade Report, but is displayed in table format as opposed to hierarchical format.

Report 111 – Class Learning Objectives Report

The Class Learning Objectives report provides the average score for the overall test and each learning objective defined in the Grade Wizard. Objectives are listed down the left side of the report, and then the grade, total score and percent score are listed for each learning objective. If a scaled score is defined, it can also be displayed. If one or more subjective questions are included, the subjective total score is displayed. If a benchmark score was defined, the benchmark difference graph can be displayed.

Report 203 - Item Analysis Graph Report

The Item Analysis Graph Report contains similar graphs to those displayed in the Detailed Item Analysis and limited information pertaining to each graph. This report is a simplified version of the Detailed Item Analysis and provides a good way to view or export just the graph information. You may optionally show the Responses and Frequency Percent's that are used to generate the graphs.

Report 204 - Condensed Item Analysis Report

The Condensed Item Analysis report displays the same information from the Detailed Item Analysis report but in a condensed fashion. The question text (or question name if no question text was defined) is displayed at the top of each table. A bar chart is displayed to the right of the table containing the statistics. The bar chart displays the correct response(s) in green and the incorrect response(s) in red. If an incorrect response is chosen more than the correct response(s), its bar chart is yellow.

Report 207 - Test Item Statistics Report

The Test Item Statistics report displays descriptive statistics for each question on the test.

Report 208 - Crosstabulation Report

The Crosstabulation report generates a table displaying the number of cases falling into each combination of the categories of two or more categorical variables. Crosstabulation is a method of examining the relationships among variables that are at the nominal or ordinal level. The categories of one variable are listed in the rows and of a second variable in the columns. You choose specific questions from your data to use in the crosstabulation. The frequencies displayed in the Crosstabulation report can be totals or percent's. The correct answer for each question is marked with an asterisk. Please note that questions that allow more than one response cannot be used for crosstabulations.

Report 301 - Student Grade Report

The Student Grade Report provides a detailed grade report for each student included in the grade operation. You may print these reports and give them to your students, parents or other stakeholders. The report provides a summary of the students' answers and grade information from the test. If a benchmark score was defined using the Grade Wizard, you may include a bar chart depicting the

grouped by question (i.e. you will see the question and then the respondents' responses). You may choose whether to include an Analysis Respondent ID with the responses in the report properties.

Report 402 - Response Report by Respondent

The Response Report by Respondent displays respondents' answers to the questions on the form. By default, any questions that are not graded or tabulated on the form can be included on the Response Report by Respondent. You can choose from all questions, regardless of whether they are graded or tabulated, by adjusting the report pro

(25 & 75)	containing (as far as possible) equal numbers of observations. For example, 25% of the data values lie below the 25th percentile.
Median	The middle of a distribution: half the values are above the median and half are below the median.
Inter Quartile Range	The difference between the 75th percentile and the 25th percentile.