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ABSTRACT

This explanatory booklet and the materials that accompany it have two major purposes. The first purpose is to provide local school officials with information regaing the performance on basic skills achievement of each student who took the 1971-72 Michigan Educational Assessment Battery. The second purpose is to provide local officials with information that will assist them in understanding and interpreting their students' scores. This booklet has four major sections. The first section describes the content of each test--word relationships, reading, mechanics of written English, and mathematics--in the educational assessment battery. The second section describes cautions that must be exercised in the interpretation of individual pupil scores from the program. The third section explains how to interpret the materials that accompany this booklet. Explanations are provided for pupils' scores. The fourth section defines statistical terms used in the educational assessment program and provides technical information regarding the educational assessment battery. (Author/DEP)

# INDIVIDUAL PUPIL REPORT: EXPLANATORY MATERIALS

The Second Report of the 1971-72
Michigan Educational Assessment Program





Prepared by Research, Evaluation and Assessment Services

Michigan Department of Education

April, 1972

# State Board of Education

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## FOREWORD

The Michigan Educational Assessment Program was initiated by the State Board of Education, supported by the Governor, and funded by the legislature initially through enactment of Act 307 of the Public Acts of 1969, and subsequently under Act 38 of the Public Acts of 1970. This report, the second in the 1971-72 series, provides information which will assist school district staff in the interpretation of the educational assessment results for individual pupils.

The State Board of Education has adopted a six-step process as a guide or model for improving Michigan education. The six steps are: the identification of common goals, the development of performance objectives, the assessment of educational needs, the analysis of delivery systems, the evaluation and testing of these systems or programs, and recommendations for educational improvement. This report presents information for the third step--the assessment of educational needs. Educational assessment provides general information on student needs which, along with other information gathered by local educators, will assist in identifying areas of need on the part of local schools and pupils. Analysis of the systems for delivering educational services and the specific evaluations of the areas so identified may then be initiated by local school officials in order to determine the extent to which changes in curricula and resource allocations are justified. Thus, the educational assessment program can contribute to the improvement of educational programs for Michigan children and youth.

Thanks are due to a large number of individuals and groups for making the Michigan Educational Assessment Program a reality and for continuing to work with it in its third year, 1971-72: to the State Board of Education for initially proposing it and continuing to support it, to the Governor and legislature for actively supporting it, and to Michigan educators for assisting with it. The program was designed and administered by the Research, Evaluation, and Assessment Services Unit, Michigan Department of Education, with the assistance of Educational Testing Service of Princeton, New Jersey, and the counsel of several ad hoc advisory groups.

This report was prepared by Dr. David Donovan, Mr. Robert Huyser, Dr. Philip Kearney, Mrs. June Olsen, and Dr. Daniel E. Schooley. Questions or requests for additional information relative to this report should be directed to the educational assessment staff.

John W. Porter
Superintendent of
Public Instruction

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## INTRODUCTION

This explanatory booklet and the materials that accompany it have two major purposes. This first purpose is to provide local school officials with information regarding the performance on basic skills achievement of each student who took the 1971-72 Michigan Educational Assessment Battery. The second purpose is to provide local officials with information that will assist them in understanding and interpreting their students' scores.

This booklet has four major sections. The first section describes the content of each test--word relationships, reading, mechanics of written English, and mathematics--in the educational assessment battery. The second section describes cautions that must be exercised in the interpretation of individual pupil scores from the program. The third section explains how to interpret the materials that accompany this booklet. Explanations are provided for pupils' scores. The fourth section defines statistical terms used in the educational assessment program and provides technical information regarding the educational assessment battery.

SECTION I

## DESCRIPTION OF THE EDUCATIONAL ASSESSMENT MEASURES

The 1972 educational assessment battery was developed according to specifications developed jointly by Educational Testing Service and the Michigan Department of Education and reviewed and revised where necessary by Item Development Panels.[1] On the advice of these panels, specific changes were made in a number of the questions in this year's tests. Some of the changes suggested by panel members could not be implemented and still retain enough questions from the previous test to permit comparison of test results between years.

The 1971-72 educational assessment battery consisted of four different achievement measures--word relationships, reading, mechanics of written English, and mathematics. Each measure was a separate, timed test at the fourth and seventh grade. It is the purpose of this section to describe these tests.

### Word Relationships

The fourth grade word relationships test contained 45 verbal analogy problems which were designed to measure students' knowledge of the meaning of words and the relationships between words and concepts. The seventh grade test contained 50 questions of the same type. The time allowed to work on this test was 20 minutes at both grades.

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[1]Department members and an Educational Testing Service representative were also present at the panel meetings. The names and affiliations of these panel members are available upon request from the Bureau of Research, Evaluation and Assessment.

## Reading

The reading test contained 50 questions which assessed paragraph comprehension, ability to understand words from the context in which they are encountered, and ability to identify the correct synonym for a word. Students at both grade levels were allowed 35 minutes to work on this test.

## Mechanics of Written English

The mechanics of written English test consisted of four parts for fourth graders, and three for seventh graders, each separately timed. In part A, spelling, students were to identify misspelled words. The fourth grade test presented 15 items to be completed in 5 minutes; the seventh grade test presented 30 items to be completed in 6 minutes. Part B, effectiveness of written expression required students to select the best way of expressing a thought. The fourth grade test contained 14 items and 9 minutes were allowed for its completion; the seventh grade test contained 18 items and allowed 13 minutes for completion. The fourth grade was allowed 8 minutes for part C, written usage. The seventh grade test did not include written usage. Fourth graders were to recognize grammatical errors in 14 items. To recognize errors of punctuation and capitalization was the object of part D, for grade four and part C for grade seven. The fourth grade booklet had 12 items and allowed 8 minutes, and the seventh grade booklet had 20 items and allowed 11 minutes.

## Mathematics

The mathematics test at both grade levels involved mathematical

reasoning, problem solving and computation. In addition, problems in the seventh grade test involved algebraic and geometric concepts. Pupils at each grade level had 30 minutes in which to answer 40 questions.

## Composite Achievement

A composite achievement score was computed for each student. The composite score was obtained by averaging the individual's standard scores on the reading, the mechanics of written English, and the mathematics tests. The test scores were combined in this way so that each score would contribute equally to the average--despite the fact that the number of items was different on the three tests.

It should be noted that the word relationships test score was not included in the calculation of the composite achievement score. The word relationships are not a common subject of direct instruction and the word relationships score is believed to respond more slowly than the other scores to the influence of schooling. Therefore, it was excluded to focus the composite achievement score upon those aspects of basic skills achievement that respond most readily to change.

SECTION II

## PRECAUTIONS IN THE INTERPRETATION OF PUPIL SCORES

A number of precautions should be observed in interpreting the individual pupil scores from the Michigan Educational Assessment Program. The following precautions are particularly important.

### Measurement Error

All measurement is subject to error. Scores resulting from educational assessment tests are no exception. Therefore, in any use of the results an allowance for error should be made. The discussion on reliability in Section IV of this report contains estimates of the amount of error associated with scores on each of the assessment instruments on which individual pupil scores are reported.

The score of a pupil at any time will be the result of a number of influences. These influences include, but are not limited to: previous educational experience, effectiveness of the school program, teaching effectiveness, home environment, and peer culture. Furthermore, a pupil's score is likely to reflect the combined impact of these forces over many years--even at the fourth grade level.

### Content is General

The educational assessment results provide a general idea of the basic skills achievement levels of each pupil compared to the basic skill levels of pupils throughout the state. In other words, the tests were purposely made general in their content so that they would be useful in the varied school situations that are to be found throughout the state. Thus, an effort has been made to focus upon the broader outcomes in reading, me-

chanics of writing, and mathematics sought by all schools. Because the tests are general, they will not reflect the skills and achievements that are taught less widely nor those unmeasurable in machine-scoreable tests.

## Results Not Diagnostic

General achievement batteries are not designed to provide diagnostic information about individuals upon which specific instructional plans may be based. The Michigan educational assessment tests, being general achievement batteries, do not provide diagnostic information. Rather, they provide a general indication of a pupil's skill levels. If a particular student's results on the achievement tests suggest a problem, an appropriate diagnostic instrument may provide information useful for planning instruction to correct the problem. Information about diagnostic tests* in each skill area may be found in the series of Mental Measurements Yearbooks prepared by O.K. Buros. However, the administration of full diagnostic batteries to all pupils is generally unnecessary and prohibitively expensive.

Many areas of pupil achievement and development are not included in the educational assessment battery. It must be remembered that the goals of local schools and of the Michigan Department of Education are much broader than those assessed by this battery. Therefore, persons wishing to judge the overall achievement of pupils must look to additional measures for judgment in other areas of pupil development.

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*A test is considered to be diagnostic if it provides a detailed analysis of strengths and weaknesses in an area. Such an analysis will often suggest possible causes for the deficiencies revealed and indicate possible remedial steps.

SECTION III

## INTERPRETATION OF PUPIL SCORES

The purpose of this section is to provide the reader with information which will facilitate his interpretation of pupil scores. This section contains three parts: a description of the norming group, definitions of the terms necessary for understanding the pupil rosters and labels, and descriptions of the pupil rosters and labels.

### Description of the Norming Group

The 1971-72 Michigan Assessment Battery was administered to public school students in the fourth and seventh grades. In non-graded programs pupils who were either identified as fourth or seventh graders or were in their fourth or seventh year beyond kindergarten were included. Also included were shared-time pupils who received instruction in the basic skills in the public school.

Excluded were all pupils receiving instruction in special classes for the handicapped in the content areas of reading, English, and mathematics; but remedial reading pupils were not excluded. Pupils receiving itinerant special education services (e.g., hard of hearing, physically handicapped, educable mentally retarded, emotionally disturbed) and who received instruction in the regular class program in the areas of reading, English and mathematics were included in the assessment.

### Definition of Terms

This part defines the terms which are necessary for understanding the pupil rosters and labels. The defined terms are: mean, standard

deviation, standard scores, and percent below.

Mean

A mean score is an average of a set of scores. It is obtained by adding all of the scores and dividing the sum by the number of scores.

Standard Deviation

In addition to establishing a mean for a distribution of scores, it is often useful to know the "spread" of the scores. Two groups of scores could have the same mean but still be quite different. For example, one district might have children whose scores on composite achievement are very similar and have a mean score of fifty. In this district, the "spread" of scores would be small. Another district might have a number of children with high scores and a number of children with low scores and still have a mean score of fifty. In this district, however, the "spread" of scores would be large.

One common way of indicating the "spread" of a set of scores is to calculate the standard deviation. Usually about two-thirds of the scores will fall between one standard deviation above and one standard deviation below the mean. The larger the standard deviation, the larger will be the "spread" or variability among the scores of a distribution. In the example above, the district with similar scores would have a smaller standard deviation than would the district with the mixture of high and low scores.

## Standard Scores

Standard scores are those that are derived from "raw" or response scores using the concepts of mean and standard deviation. In the Michigan Educational Assessment Program, standard scores were developed so that the pupil mean score from any assessment battery measure was fifty and the standard deviation was ten, when computed for all pupils at the same grade level. For example, a pupil with a standard score of forty on reading is one standard deviation below the state mean; a pupil with a score of sixty is one standard deviation above the mean; a pupil with a score of sixty-five is one and one-half standard deviations above the mean; and so forth.

## Percent Below

A percent below corresponding to any given standard score is the percentage of pupils in the norm group who received lower scores. Thus, a percent below score of 75 on word relationships indicates that 75 percent of the pupils in the state received a lower score, and that 25 percent of the pupils in the state received the same or higher score; a percent below score of 16 would mean that 16 percent of the pupils in the state received a lower score and 84 percent of the pupils received the same or a higher score. And so on.

## Description of Pupil Roster and Pupil Labels

The pupil roster and pupil labels yield exactly the same information in different formats. Therefore, only the pupil roster will be fully described.

ROSTER OF SCORES 1971-72

MICHIGAN DEPARTMENT OF EDUCATION · MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

SCHOOL NAME ABLE ELEMENTARY SCHOOL (3487) DISTRICT NAME MICHVILLE PUBLIC SCHOOLS (01-010) GRADE 4

| STUDENT NAME | | | DATE OF BIRTH | | SEX | WORD RELATIONSHIPS | | | READING | | | MECHANICS OF WRITTEN ENGLISH | | | MATH | | | COMPOSITE ACHIEVEMENT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAST | FIRST | M.I. | MONTH | YEAR | | NUMBER RIGHT / NUMBER OF QUESTIONS | STANDARD SCORE | PERCENT BELOW | NUMBER RIGHT / NUMBER OF QUESTIONS | STANDARD SCORE | PERCENT BELOW | NUMBER RIGHT / NUMBER OF QUESTIONS | STANDARD SCORE | PERCENT BELOW | NUMBER RIGHT / NUMBER OF QUESTIONS | STANDARD SCORE | PERCENT BELOW | STANDARD SCORE | PERCENT BELOW |
| AABERSON | ALEX | M | 07 | 62 | M | 25/45 | 49 | 46 | 30/50 | 49 | 41 | 35/55 | 54 | 60 | 20/40 | 46 | 33 | 50 | 46 |

Figure 1

Pupil Roster

Figure 1, on page 10, represents a pupil roster. An example from it will now be described. Alex M. Aaberson was born in July, 1962, is a male, and is in fourth grade. He received a "raw" score of 25 out of a possible 45 questions on the word relationships test. This "raw" score of 25 translates to a standard score of 49, and 46 percent of the pupils in the state received a lower score. He answered correctly 30 of 50 questions on the reading test for a standard score of 49, a score which exceeded 41 percent of the pupils in the state. On mechanics of written English, Alex got 35 of 55 questions correct for a standard score of 54, and 60 percent of the students in the state received a lower score. On mathematics, he got 20 of 40 questions correct for a standard score of 46, and 33 percent of the students in the state received a lower score. Finally his composite achievement standard score was 50, and 46 percent of the pupils in the state received a lower score. The remaining names and scores on the roster may be described in a similar manner. A pupil roster is provided for each school in the district which has a fourth and/or seventh grade.

Pupil Labels

The pupil label is displayed below and contains the same information as the pupil roster.

Figure 2

MICHIGAN EDUCATIONAL ASSESSMENT

| NAME | | | GRADE | SEX | DATE OF BIRTH | |
|---|---|---|---|---|---|---|
| LAST | FIRST | MI | | | MONTH | YEAR |
| AABERSON | ALEX | M | 4 | M | 07 | 62 |

1971-72

| | WORD RELATIONSHIP | READING | MECHANICS OF WRITTEN ENG | MATHEMATICS | COMPOSITE ACHIEVEMENT |
|---|---|---|---|---|---|
| NUMBER/QUESTIONS RIGHT/ IN TEST | 25/45 | 30/50 | 35/55 | 20/40 | |
| STANDARD SCORE | 49 | 49 | 54 | 46 | 50 |
| PERCENT BELOW | 46 | 41 | 60 | 33 | 46 |

MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

SECTION IV

## STATISTICAL CHARACTERISTICS OF THE 1971-72 MICHIGAN EDUCATIONAL ASSESSMENT BATTERY

The purpose of this section is to provide information concerning the statistical properties of the tests. The section is divided into three major parts. The first part will define the statistical terms which are necessary for the readers' understanding of test characteristics. The next part will discuss the statistical characteristics of the achievement measures at the fourth grade and seventh grade levels. The final part will evaluate the test characteristics and will indicate the areas in which additional information is needed.

### Definition of Terms

This part defines the statistical terms: validity, reliability, difficulty, speededness, and standard error of measurement.

#### Validity

The validity of a test is an indication of the extent to which it measures what it is intended to measure. The most important type of validity for achievement tests is content validity. Content validity means that a test which claims to measure elementary mathematics, for example, should contain questions in mathematics and that those questions should be appropriate for the grade level for which the test is intended. The content validity of a test is dependent upon the extent to which the questions in the test constitute a representative sample of the

topics that comprise the subject tested.

It is virtually impossible to experimentally determine the content validity of a test of school achievement, or to report content validity as a numerical coefficient. The best available evidence of validity is found in the test itself and in a description of the procedures used to construct it.

Content validity is likely to be achieved if the development of the tests is the joint responsibility of specialists in test construction and specialists in the skills to be taught. The development of the achievement tests in the Michigan assessment battery has been described in Section I and could be expected to produce tests of high content validity.

Concurrent validity is another type of validity. Since it is reported as a correlation coefficient, it is useful in determining the extent to which two tests measure the same subject or characteristic.

Reliability

The reliability of a test provides an estimate of the test's consistency or stability. A test is reliable if it measures consistently whatever it measures; the most reliable tests yield relatively precise results for each student, and a student would receive roughly the same score on such a test if he could take it more than once under the same conditions. The reliability of a test is reported as a coefficient--that is, a two-place decimal figure. A reliability coefficient can range between .00 and 1.00. A test increases in reliability as the coefficient increases in value. An internal consistency method (Kuder-Richardson Formula #20) was used in estimating the reliability of the basic skills tests in the Michigan educational assessment battery. This method employs

information about the length of the test and the extent to which the questions in the test contribute mutually confirming or consistent information.

## Difficulty

The difficulty of a test is an indication of how well suited it is to the ability of the group being tested. A test of middle difficulty is appropriate when the group being tested is heterogeneous, such as the group being tested in the Michigan Educational Assessment Program. A test is of middle difficulty when the mean score is near the point midway between a perfect score and the expected chance score. If the test includes 50 items a perfect score would, of course, be 50. The expected chance score, when the 50 items each offer four alternative answers, is 1/4 of 50 or 12.5. Hence the ideal mean (midway between chance and perfect) is 31.25. Expressed as a percentage, this would be 62.5%. In the Michigan educational assessment battery, a percentage significantly higher than 62.5% would indicate an easy test; a percentage significantly lower than 62.5% would indicate a difficult one.

## Speededness

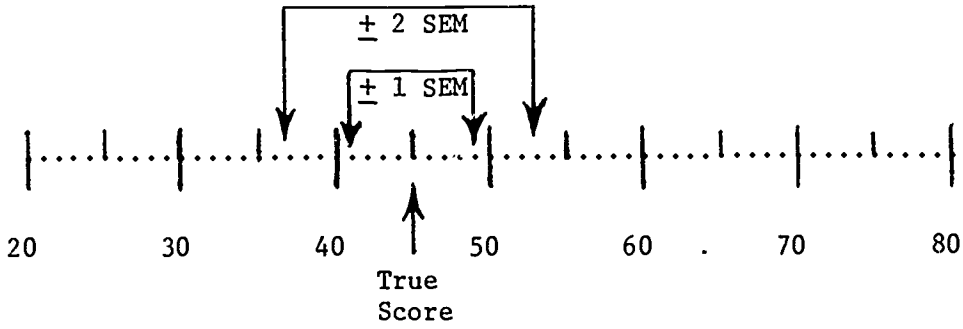
Speededness is a measure of the extent to which test performance is affected by the time limit placed on the test. The criterion used in judging the speededness of a test is two-fold: the proportion of students who answered (1) the last question and (2) the question that is three-quarters of the way through the test. This does not mean that the students answered all the questions up to these points; it means that they reached these particular items. If 80 percent of the students complete the last item and virtually all the students complete 75 percent

of the items, the test is usually judged to be unspeeded. It should be noted that it is desirable for tests in the Michigan Educational Assessment Program to be unspeeded.

Standard Error of Measurement

The standard error of measurement yields an index of the error associated with a test score. It may be used to form an error band around a score extending from a given number of standard errors of measurement above the score to the same number of standard errors of measurement below the score. Figure 3 illustrates the error band around the true score for a standard error of measurement of 4 score units.

Figure 3




If many individuals with the same true score of 45 were tested about 68 percent of them would receive actual scores not more than one standard error of measurement (SEM) from 45, and about 95 percent would receive actual scores not more than two standard errors of measurement (SEM) from 45.

## Statistical Characteristics of the Fourth Grade Basic Skills Battery

A representative sample of 1,000 student tests was drawn from the number of fourth grade students who participated in the 1971-72 Michigan Educational Assessment Program. This sample's responses were used to analyze the characteristics of the fourth grade educational assessment battery.

### The Test Analysis Sample

The means and standard deviations for the sample and for the entire population are shown in Table 1 along with the number of questions contained in each test. From the table it can be seen that the characteristics of the sample conform closely to the characteristics of the entire fourth grade population. Therefore the results presented in the following tables may be generalized to the fourth grade population. Detailed information concerning the distributions of raw and standard scores is reported in the Appendix.

Table 1

STATISTICS ON THE GRADE FOUR 1971-72 EDUCATIONAL ASSESSMENT TESTS FOR THE TEST ANALYSIS SAMPLE AND FOR ALL FOURTH GRADERS TESTED

| | | Sample | | Population | |
|---|---|---|---|---|---|
| Score | Number of Questions | Mean | Standard Deviation | Mean | Standard Deviation |
| Word Relationships | 45 | 25.2 | 9.2 | 25.7 | 9.3 |
| Reading | 50 | 30.7 | 10.9 | 31.0 | 10.9 |
| Mechanics of Written English | 55 | 30.9 | 10.8 | 31.1 | 10.7 |
| Mathematics | 40 | 22.9 | 7.4 | 23.0 | 7.3 |

Reliability

Table 2 presents the reliability coefficients and standard errors of measurement. The reliability coefficients were: .906 for word relationships, .931 for reading, .916 for mechanics of written English, .872 for mathematics and .964 for composite achievement. The standard errors of measurement expressed in raw score units were: 2.8 on word relationships, 2.9 on reading, 3.1 on mechanics of written English, 2.6 on mathematics, and (not defined) on composite achievement. The standard errors of measurement expressed in standard score units were: 3.0 on word relationships, 2.6 on reading, 3.0 on mechanics of written English, 3.6 on mathematics, and 1.8 on composite achievement. The reliability coefficients are adequately high and the standard errors of measurement are adequately low to justify reporting of individual student scores.

Table 2

RELIABILITY COEFFICIENTS AND STANDARD ERRORS OF MEASUREMENT FOR A SAMPLE OF 1,000 FOURTH GRADERS ON THE 1971-72 EDUCATIONAL ASSESSMENT BATTERY

| Score | Reliability Coefficient | Standard Error of Measurement | |
|---|---|---|---|
| | | Raw Score Units | Standard Score Units |
| Word Relationships | .906 | 2.8 | 3.0 |
| Reading | .931 | 2.9 | 2.6 |
| Mechanics of Written English | .916 | 3.1 | 3.0 |
| Mathematics | .872 | 2.6 | 3.6 |
| Composite Achievement | .964 | (not defined) | 1.8 |

Difficulty and Speededness

Table 3 presents the difficulty and speededness indices. The difficulty indices on word relationships, reading, mechanics of written English, and mathematics are within an acceptable range of middle difficulty. The table does indicate that the word relationships test is speeded.

Table 3

DIFFICULTY AND SPEEDEDNESS FOR A SAMPLE OF 1,000 FOURTH GRADERS ON THE 1971-72 EDUCATIONAL ASSESSMENT BATTERY

| Score | Average Item Difficulty (Percent passing) | Speededness: Percent Reaching Last Item | Speededness: Percent Completing 75% of test |
|---|---|---|---|
| Word Relationships | 57.1 | 68.6 | 87.2 |
| Reading | 62.0 | 82.1 | 95.8 |
| Mechanics of Written English | 56.5 | * | * |
| a. Spelling | n.a. | 90.0 | 95.6 |
| b. Effectiveness of Written Expression | n.a. | 86.2 | 95.0 |
| c. Written Usage | n.a. | 91.2 | 95.6 |
| d. Punctuation and Capitalization | n.a. | 91.4 | 95.8 |
| Mathematics | 57.5 | 85.9 | 96.4 |

n.a. - not available
* - not applicable

## Statistical Characteristics of the Seventh Grade Basic Skills Battery

A representative sample of 1,000 student tests was drawn from the number of seventh grade students who participated in the 1971-72 Michigan Educational Assessment Program. This sample's responses were used to analyze the characteristics of the seventh grade educational assessment battery.

### The Test Analysis Sample

The means and standard deviations for the sample and for the entire population are shown in Table 4 along with the number of questions in each test. From the table it can be seen that the characteristics of the sample conform closely to the characteristics of the entire seventh grade population. Therefore the results presented in the following tables may be generalized to the seventh grade population. Detailed information concerning the distribution of raw and standard scores is reported in the Appendix.

Table 4

STATISTICS ON THE GRADE SEVEN 1971-72 EDUCATIONAL ASSESSMENT TESTS FOR THE TEST ANALYSIS SAMPLE AND FOR ALL SEVENTH GRADERS TESTED

| | | Sample | | Population | |
|---|---|---|---|---|---|
| Score | Number of Questions | Mean | Standard Deviation | Mean | Standard Deviation |
| Word Relationships | 50 | 29.5 | 8.7 | 29.3 | 8.8 |
| Reading | 50 | 34.2 | 10.0 | 33.9 | 10.0 |
| Mechanics of Written English | 60 | 35.4 | 10.3 | 35.1 | 10.5 |
| Mathematics | 40 | 23.9 | 8.0 | 23.8 | 8.1 |

Reliability

Table 5 presents the reliability coefficients and standard errors of measurement. The reliability coefficients were: .887 for word relationships, .921 for reading, .900 for mechanics of written English, .892 for mathematics and .962 for composite achievement. The standard errors of measurement expressed in raw score units were: 2.9 on word relationships, 2.8 on reading, 3.3 on mechanics of written English, 2.6 on mathematics, and (not defined) on composite achievement. The standard errors of measurement expressed in standard score units were: 3.4 on word relationships, 2.8 on reading, 3.1 on mechanics of written English, 3.3 on mathematics, and 1.8 on composite achievement. The reliability coefficients are adequately high and the standard errors of measurement are adequately low to justify reporting of individual student score.

Table 5

RELIABILITY COEFFICIENTS AND STANDARD ERRORS OF MEASUREMENT FOR A SAMPLE OF 1,000 SEVENTH GRADERS ON THE 1971-72 EDUCATIONAL ASSESSMENT BATTERY

| | | Standard Error of Measurement | |
|---|---|---|---|
| Score | Reliability Coefficient | Raw Score Units | Standard Score Units |
| Word Relationships | .887 | 2.9 | 3.4 |
| Reading | .921 | 2.8 | 2.8 |
| Mechanics of Written English | .900 | 3.3 | 3.1 |
| Mathematics | .892 | 2.6 | 3.3 |
| Composite Achievement | .962 | (not defined) | 1.8 |

Difficulty and Speededness

Table 6 presents the difficulty and speededness indices. The difficulty indices on word relationships, reading, mechanics of written English, and mathematics are within an acceptable range of middle difficulty. All of the tests are unspeeded.

Table 6

DIFFICULTY AND SPEEDEDNESS FOR A SAMPLE OF 1,000 SEVENTH GRADERS ON THE 1971-72 EDUCATIONAL ASSESSMENT BATTERY

| Score | Average Item Difficulty (Percent passing) | Speededness: Percent Reaching Last Item | Speededness: Percent Completing 75% of Test |
|---|---|---|---|
| Word Relationships | 58.6 | 82.4 | 96.0 |
| Reading | 67.8 | 93.9 | 98.9 |
| Mechanics of Written English | 58.5 | * | * |
| a. Spelling | n.a. | 94.2 | 98.8 |
| b. Effectiveness of Written Expression | n.a. | 96.3 | 98.7 |
| c. Punctuation and Capitalization | n.a. | 94.9 | 97.8 |
| Mathematics | 59.5 | 89.5 | 96.5 |

n.a. - not available
* - not applicable

## Summary

A perusal of tables 1 through 6 indicates the statistical strength of the achievement batteries. However, certain types of statistical data are presently not available in the Michigan Educational Assessment Program.

The Michigan Educational Assessment Program has provided reasonable content validity in the achievement battery. Programs are currently underway to make the content of the assessment battery even more relevant to Michigan's curricula. Concurrent validity information is available upon request.

# APPENDIX

Table of Word Relationships Raw Scores, Standard Scores and Percents Below

| | Grade 4 | | | Grade 7 | | |
|---|---|---|---|---|---|---|
| Raw Score | Standard Score | Number of Pupils | Percent Below | Standard Score | Number of Pupils | Percent Below |
| 50 | | | | 74 | 20 | 100.0 |
| 49 | | | | 72 | 106 | 99.9 |
| 48 | | | | 71 | 346 | 99.7 |
| 47 | | | | 70 | 670 | 99.3 |
| 46 | | | | 69 | 1150 | 98.6 |
| 45 | 71 | 307 | 99.8 | 68 | 1670 | 97.6 |
| 44 | 70 | 889 | 99.3 | 67 | 2283 | 96.2 |
| 43 | 69 | 1722 | 98.2 | 66 | 2878 | 94.4 |
| 42 | 67 | 2347 | 96.7 | 64 | 3645 | 92.1 |
| 41 | 66 | 3076 | 94.8 | 63 | 4092 | 89.6 |
| 40 | 65 | 3576 | 92.6 | 62 | 4724 | 86.7 |
| 39 | 64 | 3878 | 90.1 | 61 | 5105 | 83.6 |
| 38 | 63 | 4261 | 87.5 | 60 | 5645 | 80.1 |
| 37 | 62 | 4458 | 84.7 | 59 | 6019 | 76.4 |
| 36 | 61 | 4553 | 81.9 | 58 | 6266 | 72.5 |
| 35 | 60 | 4729 | 78.9 | 56 | 6285 | 68.6 |
| 34 | 59 | 4849 | 75.9 | 55 | 6451 | 64.7 |
| 33 | 58 | 4859 | 72.8 | 54 | 6591 | 60.6 |
| 32 | 57 | 5088 | 69.7 | 53 | 6496 | 56.6 |
| 31 | 56 | 5061 | 66.5 | 52 | 6407 | 52.6 |
| 30 | 55 | 5158 | 63.3 | 51 | 6358 | 48.7 |
| 29 | 54 | 5205 | 60.0 | 50 | 6225 | 44.9 |
| 28 | 52 | 5347 | 56.7 | 48 | 6114 | 41.1 |
| 27 | 51 | 5600 | 53.2 | 47 | 5859 | 37.5 |
| 26 | 50 | 5799 | 49.6 | 46 | 5741 | 34.0 |
| 25 | 49 | 5835 | 46.0 | 45 | 5412 | 30.6 |
| 24 | 48 | 5861 | 42.3 | 44 | 5236 | 27.4 |
| 23 | 47 | 5916 | 38.6 | 43 | 5051 | 24.3 |
| 22 | 46 | 5824 | 35.0 | 42 | 4932 | 21.2 |
| 21 | 45 | 5622 | 31.5 | 41 | 4895 | 18.2 |
| 20 | 44 | 5656 | 27.9 | 39 | 4600 | 15.4 |
| 19 | 43 | 5445 | 24.5 | 38 | 4312 | 12.7 |
| 18 | 42 | 5229 | 21.3 | 37 | 3879 | 10.3 |
| 17 | 41 | 4854 | 18.2 | 36 | 3455 | 8.2 |
| 16 | 40 | 4358 | 15.5 | 35 | 3008 | 6.4 |
| 15 | 39 | 4125 | 12.9 | 34 | 2463 | 4.8 |
| 14 | 37 | 3884 | 10.5 | 33 | 2010 | 3.6 |
| 13 | 36 | 3357 | 8.4 | 31 | 1617 | 2.6 |
| 12 | 35 | 3011 | 6.5 | 30 | 1221 | 1.9 |
| 11 | 34 | 2548 | 5.0 | 29 | 914 | 1.3 |
| 10 | 33 | 2058 | 3.7 | 28 | 690 | 0.9 |
| 9 | 32 | 1659 | 2.6 | 27 | 500 | 0.6 |
| 8 | 31 | 1309 | 1.8 | 26 | 322 | 0.4 |
| 7 | 30 | 956 | 1.2 | 25 | 207 | 0.2 |
| 6 | 29 | 687 | 0.8 | 23 | 136 | 0.2 |
| 5 | 28 | 510 | 0.5 | 22 | 101 | 0.1 |
| 4 | 27 | 349 | 0.3 | 21 | 62 | 0.1 |
| 3 | 26 | 217 | 0.1 | 20 | 39 | 0.0 |
| 2 | 25 | 127 | 0.0 | 19 | 28 | 0.0 |
| 1 | 24 | 56 | 0.0 | 18 | 11 | 0.0 |
| 0 | 22 | 19 | 0.0 | 17 | 7 | 0.0 |

Table of Reading Raw Scores, Standard Scores and Percents Below

| | Grade 4 | | | Grade 7 | | |
|---|---|---|---|---|---|---|
| Raw Score | Standard Score | Number of Pupils | Percent Below | Standard Score | Number of Pupils | Percent Below |
| 50 | 67 | 214 | 99.9 | 66 | 1496 | 99.1 |
| 49 | 67 | 906 | 99.3 | 65 | 3138 | 97.1 |
| 48 | 66 | 1867 | 98.1 | 64 | 4296 | 94.5 |
| 47 | 65 | 3003 | 96.3 | 63 | 5251 | 91.3 |
| 46 | 64 | 3988 | 93.8 | 62 | 5661 | 87.8 |
| 45 | 63 | 4750 | 90.8 | 61 | 5920 | 84.1 |
| 44 | 62 | 5370 | 87.5 | 60 | 6308 | 80.2 |
| 43 | 61 | 5818 | 83.8 | 59 | 6421 | 76.3 |
| 42 | 60 | 5953 | 80.1 | 58 | 6361 | 72.4 |
| 41 | 59 | 6072 | 76.3 | 57 | 6386 | 68.4 |
| 40 | 58 | 6046 | 72.5 | 56 | 6096 | 64.7 |
| 39 | 57 | 5880 | 68.9 | 55 | 6061 | 60.9 |
| 38 | 56 | 5816 | 65.2 | 54 | 5890 | 57.3 |
| 37 | 55 | 5580 | 61.8 | 53 | 5755 | 53.8 |
| 36 | 55 | 5469 | 58.4 | 52 | 5490 | 50.4 |
| 35 | 54 | 5150 | 55.1 | 51 | 5314 | 47.1 |
| 34 | 53 | 4961 | 52.0 | 50 | 5159 | 43.9 |
| 33 | 52 | 4778 | 49.1 | 49 | 4973 | 40.9 |
| 32 | 51 | 4585 | 46.2 | 48 | 4737 | 37.9 |
| 31 | 50 | 4388 | 43.5 | 47 | 4663 | 35.1 |
| 30 | 49 | 4041 | 40.9 | 46 | 4404 | 32.3 |
| 29 | 48 | 4089 | 38.4 | 45 | 4294 | 29.7 |
| 28 | 47 | 3885 | 36.0 | 44 | 4116 | 27.2 |
| 27 | 46 | 3515 | 33.8 | 43 | 3959 | 24.7 |
| 26 | 45 | 3452 | 31.6 | 42 | 3718 | 22.4 |
| 25 | 44 | 3422 | 29.5 | 41 | 3631 | 20.2 |
| 24 | 44 | 3239 | 27.5 | 40 | 3499 | 18.0 |
| 23 | 43 | 3224 | 25.4 | 39 | 3198 | 16.1 |
| 22 | 42 | 3216 | 23.4 | 38 | 3079 | 14.2 |
| 21 | 41 | 3159 | 21.5 | 37 | 2970 | 12.3 |
| 20 | 40 | 3139 | 19.5 | 36 | 2825 | 10.6 |
| 19 | 39 | 3187 | 17.5 | 35 | 2641 | 9.0 |
| 18 | 38 | 3277 | 15.5 | 34 | 2465 | 7.5 |
| 17 | 37 | 3351 | 13.4 | 33 | 2215 | 6.1 |
| 16 | 36 | 3337 | 11.3 | 32 | 2041 | 4.8 |
| 15 | 35 | 3242 | 9.3 | 31 | 1805 | 3.7 |
| 14 | 34 | 3093 | 7.3 | 30 | 1623 | 2.7 |
| 13 | 33 | 2818 | 5.6 | 29 | 1277 | 1.9 |
| 12 | 33 | 2481 | 4.0 | 28 | 1038 | 1.3 |
| 11 | 32 | 1922 | 2.8 | 27 | 776 | 0.8 |
| 10 | 31 | 1493 | 1.9 | 26 | 510 | 0.5 |
| 9 | 30 | 1054 | 1.3 | 25 | 302 | 0.3 |
| 8 | 29 | 725 | 0.8 | 24 | 208 | 0.2 |
| 7 | 28 | 479 | 0.5 | 23 | 143 | 0.1 |
| 6 | 27 | 283 | 0.3 | 22 | 65 | 0.1 |
| 5 | 26 | 213 | 0.2 | 21 | 37 | 0.0 |
| 4 | 25 | 130 | 0.1 | 20 | 29 | 0.0 |
| 3 | 24 | 84 | 0.1 | 19 | 12 | 0.0 |
| 2 | 23 | 54 | 0.0 | 18 | 13 | 0.0 |
| 1 | 22 | 29 | 0.0 | 17 | 4 | 0.0 |
| 0 | 21 | 8 | 0.0 | 16 | 2 | 0.0 |

Table of Mechanics of Written English Raw Scores, Standard Scores and Percents Below

| | Grade 4 | | | Grade 7 | | |
|---|---|---|---|---|---|---|
| Raw Scores | Standard Score | Number of Pupils | Percent Below | Standard Score | Number of Pupils | Percent Below |
| 60 | | | | 74 | 39 | 100.0 |
| 59 | | | | 73 | 122 | 99.9 |
| 58 | | | | 72 | 282 | 99.7 |
| 57 | | | | 71 | 449 | 99.5 |
| 56 | | | | 70 | 681 | 99.0 |
| 55 | 72 | 73 | 100.0 | 69 | 976 | 98.4 |
| 54 | 72 | 246 | 99.8 | 68 | 1275 | 97.6 |
| 53 | 71 | 519 | 99.5 | 67 | 1713 | 96.6 |
| 52 | 70 | 817 | 99.0 | 66 | 2023 | 95.3 |
| 51 | 69 | 1271 | 98.2 | 65 | 2446 | 93.8 |
| 50 | 68 | 1495 | 97.2 | 64 | 2789 | 92.1 |
| 49 | 67 | 2016 | 96.0 | 63 | 3205 | 90.1 |
| 48 | 66 | 2391 | 94.5 | 62 | 3711 | 87.9 |
| 47 | 65 | 2823 | 92.7 | 61 | 4140 | 85.3 |
| 46 | 64 | 3289 | 90.7 | 60 | 4436 | 82.6 |
| 45 | 63 | 3460 | 88.5 | 59 | 4638 | 79.7 |
| 44 | 62 | 3832 | 86.1 | 58 | 4966 | 76.7 |
| 43 | 61 | 4129 | 83.5 | 58 | 5274 | 73.4 |
| 42 | 60 | 4321 | 80.8 | 57 | 5560 | 70.0 |
| 41 | 59 | 4628 | 77.9 | 56 | 5669 | 66.5 |
| 40 | 58 | 4690 | 75.0 | 55 | 5835 | 62.9 |
| 39 | 57 | 4830 | 72.0 | 54 | 5755 | 59.3 |
| 38 | 57 | 4782 | 69.0 | 53 | 5790 | 55.8 |
| 37 | 56 | 4825 | 66.0 | 52 | 5700 | 52.3 |
| 36 | 55 | 5182 | 62.8 | 51 | 5704 | 48.8 |
| 35 | 54 | 4975 | 59.7 | 50 | 5544 | 45.3 |
| 34 | 53 | 5023 | 56.5 | 49 | 5281 | 42.1 |
| 33 | 52 | 5009 | 53.4 | 48 | 5105 | 38.9 |
| 32 | 51 | 4884 | 50.3 | 47 | 4935 | 35.9 |
| 31 | 50 | 4949 | 47.2 | 46 | 4819 | 32.9 |
| 30 | 49 | 4682 | 44.3 | 45 | 4612 | 30.1 |
| 29 | 48 | 4895. | 41.3 | 44 | 4176 | 27.5 |
| 28 | 47 | 4755 | 38.3 | 43 | 4167 | 24.9 |
| 27 | 46 | 4550 | 35.5 | 42 | 3980 | 22.5 |
| 26 | 45 | 4669 | 32.5 | 41 | 3746 | 20.2 |
| 25 | 44 | 4540 | 29.7 | 40 | 3502 | 18.0 |
| 24 | 43 | 4452 | 26.9 | 39 | 3355 | 16.0 |
| 23 | 42 | 4305 | 24.2 | 39 | 3177 | 14.0 |
| 22 | 41 | 4223 | 21.6 | 38 | 2940 | 12.2 |
| 21 | 41 | 4098 | 19.0 | 37 | 2759 | 10.5 |
| 20 | 40 | 3964 | 16.6 | 36 | 2608 | 8.9 |
| 19 | 39 | 3852 | 14.2 | 35 | 2573 | 7.3 |
| 18 | 38 | 3576 | 11.9 | 34 | 2184 | 6.0 |
| 17 | 37 | 3255 | 9.9 | 33 | 1971 | 4.7 |
| 16 | 36 | 3113 | 7.9 | 32 | 1757 | 3.7 |
| 15 | 35 | 2688 | 6.3 | 31 | 1508 | 2.7 |
| 14 | 34 | 2340 | 4.8 | 30 | 1188 | 2.0 |
| 13 | 33 | 1982 | 3.6 | 29 | 937 | 1.4 |
| 12 | 32 | 1556 | 2.6 | 28 | 765 | 1.0 |
| 11 | 31 | 1248 | 1.8 | 27 | 511 | 0.6 |
| 10 | 30 | 960 | 1.2 | 26 | 336 | 0.4 |
| 9 | 29 | 649 | 0.8 | 25 | 244 | 0.3 |
| 8 | 28 | 418 | 0.5 | 24 | 148 | 0.2 |
| 7 | 27 | 323 | 0.3 | 23 | 104 | 0.1 |
| 6 | 26 | 203 | 0.2 | 22 | 68 | 0.1 |
| 5 | 26 | 132 | 0.1 | 21 | 43 | 0.1 |
| 4 | 25 | 78 | 0.1 | 21 | 31 | 0.0 |
| 3 | 24 | 68 | 0.0 | 20 | 21 | 0.0 |
| 2 | 23 | 32 | 0.0 | 19 | 23 | 0.0 |
| 1 | 22 | 33 | 0.0 | 18 | 9 | 0.0 |
| 0 | 21 | 7 | 0.0 | 17 | 5 | 0.0 |

Table of Mathematics Raw Scores, Standard Scores and Percents Below

| | Grade 4 | | | Grade 7 | | |
|---|---|---|---|---|---|---|
| Raw Score | Standard Score | Number of Pupils | Percent Below | Standard Score | Number of Pupils | Percent Below |
| 40 | 73 | 94 | 99.9 | 70 | 287 | 99.8 |
| 39 | 72 | 313 | 99.7 | 69 | 1155 | 99.1 |
| 38 | 71 | 726 | 99.3 | 68 | 2301 | 97.7 |
| 37 | 69 | 1231 | 98.5 | 66 | 3434 | 95.6 |
| 36 | 68 | 1959 | 97.3 | 65 | 4523 | 92.8 |
| 35 | 67 | 2840 | 95.5 | 64 | 5119 | 89.6 |
| 34 | 65 | 3754 | 93.2 | 63 | 5593 | 86.2 |
| 33 | 64 | 4605 | 90.3 | 61 | 5691 | 82.6 |
| 32 | 62 | 5360 | 86.9 | 60 | 5923 | 79.0 |
| 31 | 61 | 5953 | 83.2 | 59 | 6155 | 75.2 |
| 30 | 60 | 6667 | 79.0 | 58 | 6153 | 71.4 |
| 29 | 58 | 7020 | 74.7 | 56 | 6189 | 67.6 |
| 28 | 57 | 7348 | 70.1 | 55 | 6251 | 63.7 |
| 27 | 56 | 7542 | 65.3 | 54 | 6272 | 59.8 |
| 26 | 54 | 7561 | 60.6 | 53 | 6318 | 55.9 |
| 25 | 53 | 7729 | 55.8 | 51 | 6332 | 52.0 |
| 24 | 51 | 7489 | 51.1 | 50 | 6410 | 48.1 |
| 23 | 50 | 7455 | 46.4 | 49 | 6150 | 44.3 |
| 22 | 49 | 7318 | 41.9 | 48 | 6161 | 40.5 |
| 21 | 47 | 7203 | 37.3 | 47 | 6180 | 36.7 |
| 20 | 46 | 6983 | 33.0 | 45 | 6172 | 32.8 |
| 19 | 45 | 6708 | 28.8 | 44 | 6086 | 29.1 |
| 18 | 43 | 6418 | 24.8 | 43 | 6010 | 25.4 |
| 17 | 42 | 5977 | 21.0 | 42 | 5760 | 21.8 |
| 16 | 40 | 5721 | 17.5 | 40 | 5619 | 18.4 |
| 15 | 39 | 5161 | 14.2 | 39 | 5317 | 15.1 |
| 14 | 38 | 4768 | 11.2 | 38 | 5016 | 12.0 |
| 13 | 36 | 4141 | 8.7 | 37 | 4527 | 9.2 |
| 12 | 35 | 3536 | 6.4 | 35 | 3994 | 6.7 |
| 11 | 34 | 2924 | 4.6 | 34 | 3384 | 4.6 |
| 10 | 32 | 2396 | 3.1 | 33 | 2659 | 3.0 |
| 9 | 31 | 1757 | 2.0 | 32 | 1935 | 1.8 |
| 8 | 29 | 1229 | 1.2 | 30 | 1258 | 1.0 |
| 7 | 28 | 775 | 0.8 | 29 | 754 | 0.5 |
| 6 | 27 | 534 | 0.4 | 28 | 439 | 0.3 |
| 5 | 25 | 297 | 0.2 | 27 | 232 | 0.1 |
| 4 | 24 | 193 | 0.1 | 25 | 107 | 0.1 |
| 3 | 23 | 84 | 0.1 | 24 | 61 | 0.0 |
| 2 | 21 | 58 | 0.0 | 23 | 20 | 0.0 |
| 1 | 20 | 34 | 0.0 | 22 | 17 | 0.0 |
| 0 | 18 | 14 | 0.0 | 20 | 5 | 0.0 |

Table of Composite Achievement Standard Scores and Percents Below

| Standard Score | Grade 4 Number of Pupils | Grade 4 Percent Below | Grade 7 Number of Pupils | Grade 7 Percent Below |
|---|---|---|---|---|
| 71 | 7 | 100.0 | 0 | 100.0 |
| 70 | 92 | 99.9 | 9 | 100.0 |
| 69 | 302 | 99.7 | 116 | 99.9 |
| 68 | 654 | 99.3 | 445 | 99.6 |
| 67 | 1170 | 98.6 | 943 | 99.1 |
| 66 | 1735 | 97.5 | 1651 | 98.0 |
| 65 | 2411 | 96.0 | 2375 | 96.6 |
| 64 | 3138 | 94.0 | 3036 | 94.7 |
| 63 | 3864 | 91.6 | 3762 | 92.3 |
| 62 | 4247 | 88.9 | 4454 | 89.6 |
| 61 | 4903 | 85.8 | 5129 | 86.4 |
| 60 | 5432 | 82.4 | 5458 | 83.0 |
| 59 | 5685 | 78.8 | 5792 | 79.4 |
| 58 | 5948 | 75.1 | 5858 | 75.7 |
| 57 | 6043 | 71.3 | 6136 | 71.9 |
| 56 | 6158 | 67.4 | 6319 | 68.0 |
| 55 | 6227 | 63.5 | 6430 | 64.0 |
| 54 | 6184 | 59.6 | 6285 | 60.1 |
| 53 | 5895 | 55.9 | 6158 | 56.3 |
| 52 | 5573 | 52.4 | 6045 | 52.5 |
| 51 | 5411 | 49.0 | 5987 | 48.8 |
| 50 | 5401 | 45.6 | 5829 | 45.2 |
| 49 | 5299 | 42.3 | 5589 | 41.7 |
| 48 | 4965 | 39.2 | 5440 | 38.3 |
| 47 | 4923 | 36.1 | 5214 | 35.1 |
| 46 | 4887 | 33.0 | 5085 | 31.9 |
| 45 | 4791 | 30.0 | 4775 | 28.9 |
| 44 | 4558 | 27.1 | 4648 | 26.0 |
| 43 | 4452 | 24.3 | 4548 | 23.2 |
| 42 | 4211 | 21.7 | 4275 | 20.6 |
| 41 | 4331 | 18.9 | 4130 | 18.0 |
| 40 | 4217 | 16.3 | 3933 | 15.6 |
| 39 | 4055 | 13.7 | 3728 | 13.2 |
| 38 | 3842 | 11.3 | 3503 | 11.1 |
| 37 | 3677 | 9.0 | 3150 | 9.1 |
| 36 | 3351 | 6.9 | 2995 | 7.2 |
| 35 | 3006 | 5.0 | 2654 | 5.6 |
| 34 | 2448 | 3.5 | 2332 | 4.1 |
| 33 | 1942 | 2.2 | 2051 | 2.9 |
| 32 | 1433 | 1.3 | 1600 | 1.9 |
| 31 | 911 | 0.8 | 1202 | 1.1 |
| 30 | 508 | 0.5 | 838 | 0.6 |
| 29 | 279 | 0.3 | 457 | 0.3 |
| 28 | 180 | 0.2 | 273 | 0.1 |
| 27 | 92 | 0.1 | 126 | 0.1 |
| 26 | 87 | 0.1 | 50 | 0.0 |
| 25 | 44 | 0.0 | 34 | 0.0 |
| 24 | 26 | 0.0 | 14 | 0.0 |
| 23 | 6 | 0.0 | 11 | 0.0 |
| 22 | 4 | 0.0 | 2 | 0.0 |
| 21 | 1 | 0.0 | 2 | 0.0 |

Raw and Standard Score Means and Standard Deviations
For the Standardization Group

| Test | Statistic | Grade 4 Raw Score | Grade 4 Standard Score | Grade 7 Raw Score | Grade 7 Standard Score |
|---|---|---|---|---|---|
| Word Relationships | Mean | 25.7 | 50.0 | 29.3 | 50.0 |
| | Standard Deviation | 9.3 | 10.0 | 8.8 | 10.0 |
| Reading | Mean | 31.0 | 50.0 | 33.9 | 49.9 |
| | Standard Deviation | 10.9 | 10.0 | 10.0 | 10.0 |
| Mechanics of Written English | Mean | 31.1 | 50.0 | 35.1 | 50.0 |
| | Standard Deviation | 10.7 | 10.0 | 10.5 | 10.0 |
| Mathematics | Mean | 23.0 | 50.0 | 23.8 | 50.0 |
| | Standard Deviation | 7.3 | 10.0 | 8.1 | 10.0 |
| Composite Achievement | Mean | * | 50.0 | * | 50.0 |
| | Standard Deviation | * | 9.3 | * | 9.1 |

* - not applicable