

ABSTRACT OF THESIS

THE EVALUATION
OF A TESTING AND REMEDIAL READING
PROGRAM

Submitted by
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In partial fulfillment of the requirements
for the Degree of Master of Education
Colorado State College
of
Agriculture and Mechanic Arts
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ABSTRACT OF THESIS

Educators for a long time have recognized the fact that satisfactory personality adjustment depends in part upon successful progress in school, which in turn depends largely upon the ability to read. Many children with personality and behavior problems are failing to make adequate adjustment because they cannot read efficiently. Therefore much emphasis has been placed on the improvement of reading in all schools.

Being aware of the reading problems of pupils, the staff of the White Lake, Wisconsin, Grade School, upon recommendation of the state elementary school supervisor, decided in 1929 upon a testing and remedial program to meet the specific needs of the pupils. It is the purpose of the present study to determine whether the desired results are being obtained.

Problem setting

White Lake, Wisconsin, an industrial company-owned village, with a population of 550 inhabitants, is located in the northeastern part of Wisconsin. The village has one grade school with an enrollment of approximately 185 pupils. The school serves not only the village but also the surrounding rural area.

The problem and its analysis

Has the 4-year remedial and testing program in the White Lake Public Schools improved the silent reading skills of the pupils? To solve this problem the following questions must be answered.

1. What silent reading deficiencies do pupils have as they enter the 4-year remedial and testing program?
2. To what extent are these deficiencies removed year by year as they progress through this program?

Locating deficiencies in silent reading

The procedure for locating silent reading deficiencies was the administering of silent reading tests to the pupils. The test used in the program was the Sangren-Woody test, consisting of a series of seven parts so constructed as to measure the seven most important phases of silent reading ability, so far as may be determined by the generally accepted aims of silent reading instruction.

Remedial procedure

The school decided to carry on a testing and remedial program in 1939 for the pupils in grades 4 and 5. In 1940 the new fourth grade was tested and remedial work given. The following year, 1941, another fourth grade was administered the test and remedial work started.

The grades 4 and 5 that started in 1939 have now participated in the program for four years. The grade 4 that took the first diagnostic test in 1940 has now participated in the testing and remedial work for three years. The grade 4 that took the first diagnostic reading test in 1941 has had two years in the program.

It was decided to test the pupils two weeks after the end of the first semester each year, examine the results of the test, detect each pupil's weakness, and adjust instruction to meet the needs of the pupil.

Some of the materials used were the Gates-Pearson practice exercises in reading, the Webster's Goals in Spelling, the Houghton Mifflin Guidance Readers, My Weekly Reader, and exercises composed by individual teachers to suit the needs of their pupils.

Diagnosis

To discover the deficiencies of the pupils in silent reading it was necessary to administer a test to measure reading ability of the pupils. The group taking this test before remedial training began is referred to as the 0-group in this study. The 1-group is the one that took the second diagnostic test after one year of remedial training. The group referred to as the 2-group has taken the silent reading test a third time after two years of remedial treatment. The pupils taking the

fourth and final diagnostic test after three years of remedial treatment will be referred to as the 3-group.

Analysis

The statistical technique employed in this analysis was to compare the standard deviations of the scores of the 0-group with those of the 1-, 2-, and 3-groups.

The test used in the diagnostic testing program consisted of a series of seven parts, which were word meaning, rate, fact material, total meaning, central thought, following direction, and organization. The mean score was found for each part of the test for each group of pupils. Each raw score was then converted to percent of the mean score in its particular group of pupils. The standard deviations were then computed for each of the seven parts for the four groups of pupils.

If the standard deviations in a certain part of the test decreases as one goes from group 0 to group 3, it is assumed that part of this decrease is due to a progressive removal of deficiencies in going from group 0 to group 3.

To determine whether differences between two of these standards deviations are significant, the following formulas were used:

$$\sigma = \frac{\sigma}{\sqrt{2N}} \quad \text{Standard error of a standard deviation.}$$

$$\sigma_d = \sqrt{\sigma_1^2 + \sigma_2^2} \quad \text{Standard error of a difference.}$$

$$t = d/\sigma_d \quad \text{Where } d_0 = \sigma_0 - \sigma_1, d_1 = \sigma_1 - \sigma_2, \text{ etc.}$$

Summary

The findings relating to these annual changes in the dispersion of the pupil-group, in each of the seven phases of silent reading ability, are given below.

Word meaning.--The standard deviations with respect to word meaning diminish considerably not only over the 1-year periods, but also over the four years.

Rate.--The t-scores pertaining to rate show that the cumulative results are fair. Only one of the annual changes was significant.

Fact material.--The results from the fact material part of the test show that the standard deviation diminishes significantly over the 4-year period, but the annual changes were sometimes significant and sometimes not.

Total meaning.--In total meanings, the dispersion of the class is reduced significantly over the 4-year period, with three out of four annual changes significant.

Central thought.--The t-scores on central thought show the 4-year change to be of greater significance than changes in any other part of the test.

Following directions.--In the following directions part of the testing and remedial program, only the 4-year decrement is significant.

Organization.--The standard deviations decrease consistently not only for the three years or remedial instruction in organization, but also over the 4-year period.

Cumulative results

In the majority of cases the annual decrease in class dispersion were significant, and in all cases the 4-year decreases were very significant.

Conclusion

The writer concludes from these findings that the diagnostic testing and remedial reading program in his school is producing the desired results.

THE S I S

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SUPERVISION BY BERNARD G. LAABS
ENTITLED THE EVALUATION OF A TESTING AND REMEDIAL READ-
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BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE
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Permission to publish this thesis or any part of it
must be obtained from the Dean of the Graduate School.

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THE EVALUATION OF A TESTING AND REMEDIAL READING PROGRAM

Chapter I INTRODUCTION

Educators for a long time have recognized the fact that satisfactory personality adjustment depends in part upon successful progression in school, which in turn depends largely upon the ability to read. Many children with personality and behavior problems are failing to make adequate adjustment because they cannot read efficiently. Therefore much emphasis has been placed on the improvement of reading in all schools.

Reading is perhaps the most fundamental skill used in life for the formation of opinions and ideals, for recreation and information. There are few phases of life in society today to which reading does not contribute in some way.

Setting for the problem

White Lake, Wisconsin, an industrial, company-owned village with a population of 550 inhabitants, is located in the northeastern part of Wisconsin.

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The village has one grade school with an enrollment of approximately 185 pupils. The school serves not only the village but also the surrounding rural area.

The cultural background of the rural pupils is very meager. Fully one half of these pupils are known by the colloquial name "Kentuck"--squatters for the most part, living in 1- or 2-room tarpaper shacks. The background of most of the village pupils is not much better, their parents having very little formal education.

Being aware of the reading problems of these pupils, the staff of the White Lake Grade School, upon recommendation of the state elementary school supervisor, decided upon a testing and remedial program to meet the specific needs of the pupils. This elaborate testing and remedial program is rather costly to operate and should be continued only if it produces desirable results. It is the purpose of the present study to determine whether the desired results are being obtained.

The problem and its analysis

Has the 4-year remedial and testing program in the White Lake Public Schools improved the silent reading skills of the pupils?

1. What silent reading deficiencies do pupils have as they enter the 4-year remedial and testing program?

2. To what extent are these deficiencies removed year by year as they progress through this program?

The problem-solving procedure

In general, the annual scores of individual pupils on the seven parts of a diagnostic test were analyzed statistically to determine whether deficiencies tend to decrease year by year. The procedure is described more in detail in Chapter III.

Chapter II

REVIEW OF THE LITERATURE

A considerable amount of literature regarding testing and remedial work has been published and is being considered in this study. However, only a small portion of it is reviewed here. Only studies and publications having a very definite bearing on this study are included in this review.

In Anderson's report (1) of the Des Moines study, it was agreed by those participating, that if maximum growth is to result for each pupil, teacher and children must evaluate progress made.

In Benner's master's thesis (2) written in 1938, it was shown that there was considerable improvement in the reading ability of the seventh grade pupils of the West Chester grade school, after testing and remedial teaching.

E.A. Betts in his book (3) states that it behooves the educator of today to reappraise his care of individual differences in reading.

Children will rarely acquire and maintain facile reading skills unless they read voluntarily outside of school, says Durrell in his book (4).

Estep in 1931 (6) found that an entire class of 18 pupils responded favorably to the diagnostic and remedial program.

In 1937 Fitzgerald (7) said that the most obvious results from the diagnostic and remedial program in reading were the increased abilities and interests of the children. In three and one half months, the average gain in reading ability, according to the second testing, was 6.6 months.

Sister Fridiana (8) in 1941 said that a very important result of her survey study was the stirring up of interest and enthusiasm of teachers in the ways and means of improving the reading achievement in the school.

Gates (10), in his report of Center and Person's elaborate program of diagnosis and remediation in the Roosevelt High School, stated that there is a surprisingly large number of poor readers at each level, from the primary grades to the high school. They supplied evidence also that notable improvements can be secured through deliberate studies of the nature of the difficulties encountered, and of the organization of material adapted to the varying needs of pupils.

Harris (11), in analyzing reading ability, said that there are three questions to be asked. The first is concerned with what the pupil can read, the second deals with how the pupil reads, and the final

question asks why the difficulties have arisen. It is not always necessary, however, to carry the diagnosis through all three steps. For the purpose of assigning pupils to classes for reading instructions, only the first of the three questions must be answered.

Horn (12) said that it is a well-known fact that there are children in most elementary schools who suffer so seriously from one or more reading disability, that they are incapable of progressing in anything in a satisfactory manner.

Merton (13) found that much drill in answering thought questions required careful comprehensive reading which permits pupils to be prepared to answer fact questions with great accuracy.

A careful evaluation of their remedial project led Richardson and Franklin (15) to two chief conclusions.

1. That the project had been of definite value both to the pupils involved and to the entire school faculty, especially to the latter, because the regular classroom teachers became more conscious of specific problems and ways of solving them.
2. That remedial work of this kind should be a part of the regular class work rather than a separate program.

Disagreeing with this, Monroe and Backus (14), in their report of the Washington study, stated that the remedial program should be provided for by a regular time allotment. This should be done along with other valuable and essential activities.

In 1940 Stearns (16) found that after three years of testing and remedial work there has been ample evidence to justify the continuance of the program.

In the succeeding chapters the data are presented, analyzed, and discussed.

Chapter III

METHODS AND PROCEDURES

Locating student deficiencies in silent reading

The procedure for locating silent reading deficiencies was the administering of silent reading tests to the pupils. The test used in the program was the Sangren-Woody test, consisting of a series of seven parts so constructed as to measure the seven most important phases of silent reading ability, so far as these may be determined by the generally accepted aims of silent reading instruction.

Part 1 is designed to measure the extent of the child's silent reading vocabulary. It consists of a series of 40 exercises so constructed that the child indicates his knowledge of the meaning of the word by showing its proper use in a sentence. The multiple-choice method in this part was selected for use from the Teacher's Word Book by Edward L. Thorndike, use being made of words of different frequencies of occurrence in the child's vocabulary. In the tests the exercises are arranged in order of their increasing difficulty.

Part 2 of the test deals with the reading rate.

It has for its purpose the determination of the child's rate of reading a continuous selection. The test consists of a selection of approximately 400 words which the child is asked to read as rapidly as he can and still understand what he reads. The reading rate is indicated by the number of words read during the first minute. The selection is one which contains a rather large number of facts so stated as to appeal to the children of the grades tested.

Part 3 of the test is designed to determine the efficiency with which the child can read and get the facts from the material. These fact questions are answered by writing the answer, usually a single word, in a blank space provided. The material used and the type of the questions asked resemble closely those which are used in the reading and study of fact-subjects such as history, geography, and science.

The purpose of Part 4 of the test is to measure the efficiency with which the children read and grasp the total meaning of the paragraphs read. This part consists of a series of short, disconnected paragraphs which contain a rather definite total impression or meaning. To each of these paragraphs the child is asked to respond by underlining the one of four words following a question asked about it, which best indicates the total impression gained. The sort of reading involved is that which is encountered in descriptive

accounts of scenes, events, and circumstances.

Part 5 is designed to measure how efficiently the children read silently and detect the central thought of the paragraph read. The part is composed of a number of disconnected paragraphs, each of which contains a rather definite central or leading idea. The child indicates his response to each paragraph by checking the one of the four statements following it which he thinks is the central or most important thought of the paragraph. The reading activity involves is that which is encountered in expository material.

The following directions part of the test is intended to determine with what efficiency children read and follow directions. The test consists of a number of short, disconnected paragraphs, each containing some short simple directions which the child carries out to indicate his response.

Part 7, the last part of the test, is designed to determine how efficiently children can read and organize logically the ideas contained in a series of paragraphs read. This part consists of a number of sets of short paragraphs, followed by a series of four statements in a disarranged order, and the child arranges them in their proper order, by numbering them.

Remedial procedures

After some study and discussion, it was decided

to carry on a testing and remedial program in 1939 for the pupils in grades 4 and 5. In 1940 the new fourth grade was tested and remedial work given. The following year, 1941, another fourth grade was administered the test and remedial work started. The grades 4 and 5 that started in 1939 have now participated in the program for four years. The grade 4 that took the first diagnostic test in 1940 has now participated in the testing and remedial work for three years. The grade 4 that took the first diagnostic reading test in 1941 has had two years in the program.

It was decided to test the pupils two weeks after the end of the first semester each year, examine the results of the test, detect each pupils' weakness, and adjust instruction to meet the needs of the pupil.

In the remedial work it was decided that each child must "go it alone" as far as possible. Each pupil was assigned work on the basis of his interests, abilities, and deficiencies. The child's reading was first directed on such a difficulty-level that he could read with comprehension and understanding. He was taught to note details or to comprehend the general significance of a paragraph, as his needs demanded. If he was weak in an ability or skill, he was instructed how to succeed in that particular ability or skill.

In order to save time, when their needs demanded the same instruction, the pupils were instructed

in small groups; group discussion of what was read often was an important factor in understanding.

Materials used in the remedial program

Some of the materials used were the Gates-Pearson practice exercises in reading, the Websters Goals in Spelling, the Houghton Mifflin Guidance Readers, My Weekly Reader, and exercises composed by individual teachers to suit the needs of their pupils.

Another very effective help was the silent reading for fun. A number of easy books were left on a library table for browsing, and the children were encouraged to look over these books, take them home for recreational reading, or read them during free periods and during the noon hour. These books were sometimes a grade or two below actual reading achievement of many of the pupils. Picture books also created an interest in other books. Another device used was the issuing of honor seals for books read at home and reported on at school, either to the class or to the teacher.

Experimental and statistical methods

To discover the deficiencies of the pupils in silent reading, it was necessary to administer a test to measure reading ability of the pupils. The group taking this test before remedial training began is referred to as the O-group in this study. The I-group is the one

that took the second diagnostic test after one year of remedial training. The group referred to as the 2-group has taken the silent reading test a third time, after two years of appropriate remedial work. The pupils taking the fourth and final diagnostic test after three years of remedial treatment will be referred to as the 3-group.

The statistical technique employed in this analysis was to compare the standard deviations of the scores of the 0-group with those of the 1-, 2-, and 3-groups.

The test used in the diagnostic testing program consisted of a series of seven parts: word meaning, rate, fact material, total meaning, central thought, following directions, and organization. The mean score was found for each part of the test for each group of pupils. The pupils' raw scores were then adjusted to percentage scores, each score converted to percent of mean score in that particular group of pupils. The standard deviations were then computed for each of the seven parts for the four groups of pupils.

If the standard deviations in a certain part of the test decreased from 0-group to 3-group, it was assumed that part of this decrease is due to a progressive removal of deficiencies in going from 0-group to 3-group.

In collecting data over a 4-year period 228 tests were administered, and since each test had seven parts, 1,596 individual test scores were obtained. The statistical procedure involved finding 91 means and converting 1,596 raw scores to percent of one of these means; it involved finding 28 standard deviations and the standard error of each; and it involved finding 28 differences between standard deviations and the standard error of each difference. A conservative estimate of the labor required in the statistical work is 106 man-hours.

Chapter IV

ANALYSIS OF DATA

The present chapter deals with a statistical analysis of the data used in solving the problem.

Table 1 gives the standard deviations that are studied in this analysis. They are standard deviations in each pupil-group for each part of the diagnostic silent reading test, after raw scores had been converted to percent of the mean raw score in each case.

Table 1.--STANDARD DEVIATIONS OF DERIVED SCORES IN FOUR PUPIL-GROUPS ON EACH OF SEVEN PARTS OF THE DIAGNOSTIC READING TEST

| Test part | Group number | | | |
|---------------------------|--------------|-------|-------|-------|
| | 0 | 1 | 2 | 3 |
| Word meaning - - - - - | 73.42 | 30.14 | 19.43 | 11.09 |
| Rate - - - - - | 34.60 | 22.40 | 20.77 | 21.18 |
| Fact material - - - - - | 55.08 | 51.59 | 38.72 | 33.52 |
| Total meaning - - - - - | 47.99 | 23.64 | 33.06 | 26.13 |
| Central thought - - - - - | 60.83 | 38.07 | 34.87 | 11.65 |
| Following directions - - | 35.02 | 36.76 | 36.92 | 21.87 |
| Organization - - - - - | 42.91 | 28.73 | 15.77 | 20.63 |

To determine whether differences between two of these standard deviations are significant, the following formulas were used:

$$\sigma = \frac{\sigma}{\sqrt{2N}} \text{ Standard error of standard deviation.}$$

$$\sigma_d = \sqrt{\sigma_1^2 + \sigma_2^2} \text{ Standard error of a difference.}$$

$$t = \frac{d}{\sigma_d} \text{ Where } d_0 = \sigma_0 - \sigma_1, d_1 = \sigma_1 - \sigma_2, \text{ etc.}$$

When t was 1.96 the difference was considered significant.

Word meaning

The standard deviations for groups 0 to 3, their standard errors, the differences between standard deviations, and the standard errors of these differences are given in Table 2.

Table 2.--STATISTICS PERTAINING TO WORD MEANING

| Group | σ | σ | $\frac{1}{d}$ | σ_d | t |
|-------------|----------|----------|---------------|------------|------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 37.42 | 3.1 | 7.28 | 3.7 | 1.96 |
| 1 - - - - - | 30.14 | 2.5 | 10.71 | 3.03 | 2.07 |
| 2 - - - - - | 19.43 | 1.8 | 8.34 | 2.6 | 3.2 |
| 3 - - - - - | 11.09 | 1.9 | 26.33 | 3.32 | 7.1 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show that the dispersion of the class, with respect to knowledge of word meanings, decreases consistently year by year as they receive remedial reading instruction. Column 5 shows

the standard errors of these annual decrements, and column 6 gives them as t-scores. From these, one may conclude that each annual decrement is significant. The implication is that the remedial program produces desired results consistently over a 1-year period, insofar as word meaning is concerned. The last entries in columns 4, 5, and 6 show that the cumulative results over the 4-year period are extremely significant.

Rate

The standard deviations for groups 0 to 3, their standard errors, the differences between standard deviations, and the standard errors of these differences are given in Table 3.

Table 3.--STATISTICS PERTAINING TO RATE

| Group | σ | σ_d | $1/d$ | σ_d | t |
|-------------|----------|------------|-------|------------|------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 34.60 | 2.88 | 12.20 | 3.7 | 3.3 |
| 1 - - - - - | 22.40 | 1.87 | 1.66 | 2.7 | .61 |
| 2 - - - - - | 20.77 | 2.03 | -.41 | 3.2 | -.13 |
| 3 - - - - - | 21.18 | 2.06 | 13.43 | 3.9 | 3.5 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show that the dispersion of the groups, with respect to rate, decreases for the 1- and 2-groups, but increases for the 3-group. Column 5 shows the standard errors of these annual changes. From these, it is evident that only the first annual decrement is significant. The last entries in columns 4, 5, and 6 show that the cumulative results over the 4-year period are significant.

Fact material

Information similar to that given in previous tables is given in Table 4, except that it pertains to mastery of fact material.

Table 4.--STATISTICS PERTAINING TO FACT MATERIAL

| Group | σ | σ | $\frac{1}{d}$ | σd | t |
|-------------|----------|----------|---------------|------------|------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 55.08 | 4.6 | 3.41 | 6.3 | .540 |
| 1 - - - - - | 51.59 | 4.3 | 12.77 | 5.7 | 2.24 |
| 2 - - - - - | 38.72 | 3.8 | 5.20 | 4.1 | 1.68 |
| 3 - - - - - | 33.52 | 5.1 | 21.46 | 6.2 | 3.46 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

With respect to knowledge of fact material, the figures in column 6 show that in one progression the result is significant, while in another it approaches

significance. The last entries in column 4, 5, and 6 show that the cumulative result over the 4-year period is significant, that the remedial program produced desired results over the 4-year period.

Total meaning

The same type of information given in previous tables is given in Table 5, except that it pertains to total meaning.

Table 5.--STATISTICS PERTAINING TO TOTAL MEANING

| Group | σ | σ | $1/d$ | σ_d | t |
|-------------|----------|----------|-------|------------|------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 47.99 | 3.1 | 24.35 | 3.6 | 7.3 |
| 1 - - - - - | 23.64 | 1.9 | -9.42 | 3.7 | -2.5 |
| 2 - - - - - | 33.06 | 3.2 | 7.83 | 4.5 | 1.74 |
| 3 - - - - - | 26.13 | 3.2 | 21.86 | 4.45 | 4.6 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show that the dispersion of the class, with respect to knowledge of total meanings, decreases considerably over the 4-year period; and the last entry in column 6 indicates that this is significant.

Central thought

The standard deviations for groups 0 to 3, their standard error, the differences between standard deviations, and the standard errors of these differences are given in Table 6.

Table 6.--STATISTICS PERTAINING TO CENTRAL THOUGHT

| Group | σ | σ_d | $\frac{1}{d}$ | σ_d | t |
|-------------|----------|------------|---------------|------------|-----|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 60.83 | 5.1 | 22.82 | 5.9 | 3.8 |
| 1 - - - - - | 38.01 | 3.1 | 3.14 | 4.2 | .75 |
| 2 - - - - - | 34.87 | 2.9 | 23.22 | 3.2 | 7.2 |
| 3 - - - - - | 11.65 | 1.4 | 49.18 | 5.29 | 9.2 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show that the dispersion of the class, with respect to knowledge of central thought, decreases consistently year by year as they receive remedial instruction. Column 5 shows the standard errors of these annual decrements. From the size of the figures in column 6, annual decrements save one are significant. The implication is that the remedial reading program produces desired results insofar as central thought is concerned. The last entries in columns 4, 5, and 6 show that the cumulative results

over the 4-year period are extremely significant.

Following directions

Information similar to that given in previous tables is given in Table 7, except that it pertains to mastery of following directions.

Table 7.--STATISTICS PERTAINING TO FOLLOWING DIRECTIONS

| Group | σ | σ | $\frac{1}{d}$ | σ_d | t |
|-------------|----------|----------|---------------|------------|------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 35.02 | 2.9 | -1.74 | 4.24 | -.41 |
| 1 - - - - - | 36.76 | 3.1 | .06 | 2.35 | .03 |
| 2 - - - - - | 36.92 | 3.6 | 5.05 | 3.3 | 1.50 |
| 3 - - - - - | 21.87 | 2.67 | 13.15 | 3.9 | 3.4 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show the dispersion of the groups. Column 5 shows the standard errors of these annual changes. Only the decrement over a 4-year period is significant.

Organization

The standard deviations for group 0 to group 3, their standard errors, the difference between standard deviations, and the standard errors of these differences are given in Table 8.

Table 8.--STATISTICS PERTAINING TO ORGANIZATION

| Group | σ | σ | $\frac{1}{d}$ | σd | t |
|-------------|----------|----------|---------------|------------|-------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 0 - - - - - | 42.91 | 2.6 | 14.18 | 3.50 | 4.05 |
| 1 - - - - - | 28.73 | 2.4 | 12.96 | 2.80 | 4.79 |
| 2 - - - - - | 15.77 | 1.5 | -4.86 | 2.9 | -1.69 |
| 3 - - - - - | 20.63 | 2.5 | 22.28 | 3.6 | 6.19 |

1/ The difference between the standard deviation in one group and in the next group following in column. The last entry in columns 4, 5, and 6, respectively, pertains to the difference between the standard deviation in group 0 and the standard deviation in group 3.

The figures in column 2 show that the dispersion of the groups decrease consistently the first three years they receive remedial instruction. Column 5 shows the standard errors of these changes. The last entries in columns 4, 5, and 6, show that the cumulative results over the 4-year period are very significant.

Summary

In the majority of cases the annual decrease in class dispersion is significant, and in all cases the 4-year decreases are very significant.

The findings presented in the foregoing pages will be discussed in the following chapter.

Chapter V

DISCUSSION

Explanation of peculiar findings

The problem of this study was to evaluate the effectiveness of a remedial and diagnostic testing program.

There were 72 pupils in the 0-group, 71 pupils in the 1-group, 52 pupils in the 2-group, and 33 pupils in the 3-group, included in the study.

It was found that the t-scores were very significant in all parts of the test over a 4-year period, but in some cases the annual difference between two groups was not significant.

In Table 3 on rate, the t-score for the 1-group is 3.3, while that of the 2-group is only .61. Going back to the derived scores and checking the same pupils in the 1-group and 2-group, one observes that in many cases the derived score in the 2-group is less than the score in the 1-group. Such cases are illustrated below.

Table 9.--ILLUSTRATIONS OF LOSS IN RATE SCORES

| Pupil number | Derived scores | |
|-------------------|----------------|---------|
| | 1-group | 2-group |
| Pupil 1 - - - - - | 112 | 75 |
| Pupil 2 - - - - - | 81 | 52 |
| Pupil 3 - - - - - | 123 | 93 |
| Pupil 4 - - - - - | 140 | 102 |
| Pupil 5 - - - - - | 275 | 133 |

At the same time, the derived scores showed that some pupils made great gains. Illustrative cases are shown below.

Table 10.--ILLUSTRATIONS OF GAIN IN RATE SCORES

| Pupil number | Derived scores | |
|-------------------|----------------|---------|
| | 1-group | 2-group |
| Pupil 1 - - - - - | 76 | 137 |
| Pupil 2 - - - - - | 81 | 104 |
| Pupil 3 - - - - - | 50 | 93 |
| Pupil 4 - - - - - | 128 | 160 |

The t-score in rate for the 2-group was .61; for the 3-group it is only -.13. Checking back to the derived scores, one finds that 17 pupils had a smaller derived score in the 3-group than they had in the 2-group.

One can readily see the effect of these results on the standard deviation and the t-scores. This causes the dispersion to increase and the t-scores to lessen, thereby making the t-score less significant.

The statistics in Table 5 on total meaning show a drop from a very significant t-score of 7.3 in group 0 to -2.5 in the 2-group.

On checking the derived scores, it is found that 28 pupils had a lower derived score in group 2 than they had in group 1. Two pupils had dropped 50 points in their derived score. With so many cases of lowered scores, the standard deviations spread considerably and the resulting t-score was, therefore, far from significant.

The following illustrations of derived scores in group 2 and group 3 in the fact material part of the test, show how just a few cases of drop in scores in the small 3-group can cause a highly significant t-score of 2.24 to be lessened to 1.68.

Table 11.--ILLUSTRATIONS OF LOSS IN FACT MATERIAL SCORES

| Pupil number | Derived scores | |
|-------------------|----------------|---------|
| | 2-group | 3-group |
| Pupil 1 - - - - - | 120 | 98 |
| Pupil 2 - - - - - | 120 | 98 |
| Pupil 3 - - - - - | 133 | 78 |
| Pupil 4 - - - - - | 160 | 127 |
| Pupil 5 - - - - - | 200 | 147 |

In Table 7 on following directions only the t-score for the whole 4-year program is significant. One other score, the 3-group t-score, approaches significance, indicating some weakness in this phase in the

remedial program.

The statistics pertaining to central thought in Table 6 show that the first t-score 3.8 is significant. The second t-score .75 is insignificant, but is followed by the third very significant score of 7.3. Checking back to the derived scores, one observes that 16 out of 33 pupils made notable gains, indicating that this part of the remedial program was successful.

Implications

Diagnosis and remedial treatment of pupils deficient in reading abilities were used in this study because they are practical and usable and give a measure of the individual pupil's progress in silent reading mastery. A keen interest has also been manifested in the testing program by the upper grade teachers. This is partly due to the fact that the diagnostic testing program located for the teachers the specific reading disabilities of their pupils. Another result was that the teachers learned how to attack the problem of remedial reading systematically, instead of leaving the adjustment to chance.

The pupils who had reading deficiencies seemed to be helped more by having remedial instruction definitely scheduled two 15- or 20-minute periods a day. For longer periods their attention was hard to hold and most of the extended time was wasted.

In the development of word meaning, presenting seven or eight new words a day was found to be the best for retention.

It is best to start the remedial work at, or slightly below, the child's reading ability. It may be interesting to note that three boys in the fourth grade started their remedial work in a primer. By the end of the school year they had advanced enough to pass a third grade achievement test.

The statistics show that where we employ the help of commercial aids, such as work books and practice exercises, our testing results were more gratifying.

Plans for continued study

During the next school year, the data accumulated will be added to the past four years' data, thereby increasing the size of the sampling and making the study more reliable. The writer plans to continue this process of accumulation until there are four classes in the final group tested. This plan would make any findings much more reliable.

Problem for further study

The hindrance to school progress by reading disabilities, both silent and oral through the upper grades and high school, justifies a remedial reading program in our schools. By far the most frequent reason given for school failures in geography, history,

and arithmetic, may and do result from the inability to read well. Costly grade repetition can be avoided to a large degree by an effective remedial reading program. Therefore, our diagnostic and remedial program should be started earlier in the school curriculum. This program should be started in our first, second, and third grades. The resultant early correction of milder disabilities should lighten the later program.

Administrators, in making plans for a similar remedial program, should make their plans on a long time or permanent basis.

Weaknesses of the study

One of the weaknesses of the study was the small number of pupils in the 2- and 3-groups. In computing the mean score of a particular part of the test, a very high or low raw score made by any one pupil affected the total result considerably. This was also true when computing the standard deviation of any part of the test for the 2- and 3-groups. With larger groups, these deviations would have been absorbed.

The Sangren-Woody reading test is a time limit test. It has been proven that working under pressure of a time limit tends to upset some pupils who do not do as well as they might, had they been measured by some other type of reading test. The same thing holds true for the slow reader who might have scored higher in

central thought and total meaning if allowed to proceed at his own speed in taking the test.

If we had the money to finance the program, we would have included tests for vision and hearing defects. Instruments for measuring eye movements are very helpful, but costly. Our job was to do the best we could with the materials at hand.

Chapter VI

SUMMARY AND CONCLUSION

In this study the writer attempted to discover whether the testing and remedial reading program carried on in his school has produced desirable results. He administered annually a diagnostic silent reading test having seven parts to pupils in grades 4 to 8, and provided remedial instruction to each individual pupil according to his needs.

As each pupil has his reading deficiencies removed or partly removed annually, the dispersion in the reading ability of the pupil-group will thereby be decreased annually. The present study examines the annual standard deviation in each of the seven reading abilities to see whether it decreases, assuming, if it does decrease, that the remedial program has been, in part at least, the cause.

The findings relate to these annual changes in the dispersion of the pupil-group, in each of the seven parts of silent reading ability.

Word meaning

The standard deviations with respect to word meaning diminish considerably, over not only the 1-year

periods, but also over the four years.

Rate

The statistics pertaining to rate show that the cumulative results are fair, but the deviations increased for the final year.

Fact material

The results of the fact material part of the test show that one change is significant, one approaches significance, and one shows no significance; but for the entire 4-year program, the change was significant.

Total meaning

In total meanings, the dispersion of the class is reduced over the 4-year period, with three out of four annual results significant.

Central thought

The standard deviation on central thought shows the best cumulative result of the whole program.

Following directions

The following directions part of the testing and remedial program shows that only one annual decrement in the standard deviation is significant; however, the decrement over a 4-year period was significant.

Organization

The standard deviations decrease consistently not only for the three years of remedial instruction in organization, but also over the 4-year period.

Cumulative

In all cases the 4-year decreases were significant.

Conclusion

The writer concludes from these findings that the diagnostic testing and remedial reading program in his school is producing the desired results.

APPENDIX

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SANGREN-WOODY READING TEST

39

By PAUL V. SANGREN, PH.D.

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and CLIFFORD WOODY, PH.D.

Director of Educational Reference and Research
University of Michigan

TEST: FORM A

For Grades 4 to 8

Name Grade

Age Date 19

Years Months

Name of school Examiner

City

| PART | SCORE |
|--------------------------|-------|
| I. Word Meaning | |
| II. Rate | |
| III. Fact Material | |
| IV. Total Meaning | |
| V. Central Thought | |
| VI. Following Directions | |
| VII. Organization | |
| Total score | |

NOTE. This first sheet may be torn off and filed as a record.

PART I. WORD MEANING


DIRECTIONS. On page 3 are such exercises as:

A book is something to 1 wear, 2 read, 3 eat, 4 sail (2)

Here the word that completes the meaning of the sentence or makes it true is "read"; so a line is drawn under "read." The sentence now reads, "A book is something to read." As the word "read" is No. 2, a figure 2 is placed in the parentheses at the end of the sentence. In each exercise on page 3 there is a choice of four words or groups of words, but only one completes the meaning of the sentence or makes it true. Draw a line under that word which makes the sentence true, as shown in the sample above. Then put the number of the right word in the parentheses at the end of the line. Work as rapidly as you can, being sure that all your marks are correct. Do not start until you are told, and when you are told to stop you must stop at once.

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READING PROFILE CHART

SHOWING THE READING STATUS OF THE PUPIL IN SILENT READING

| GRADE EQUIVALENT | PART I WORD MEANING | PART II RATE | PART III FACT MATERIAL | PART IV TOTAL MEANING | PART V CENTRAL THOUGHT | PART VI FOLLOWING DIRECTIONS | PART VII ORGANIZA- TION | TOTAL | GRADE EQUIVALENT |
|------------------|---------------------------|-----------------|------------------------------|-----------------------------|------------------------------|------------------------------------|-------------------------------|-------|------------------|
| 10 ¹⁰ | 33 | 27 | 15 | 11 | 9 | 10 | 12 | 115 | 10 ¹⁰ |
| 10 ⁵ | 32 | 26 | 14 | 10 | 8 | 10 | 12 | 110 | 10 ⁵ |
| 9 ¹⁰ | 31 | 25 | 13 | 9 | 7 | 9 | 11 | 105 | 9 ¹⁰ |
| 9 ⁵ | 30 | 24 | 12 | 8 | 6 | 8 | 10 | 100 | 9 ⁵ |
| 8 ¹⁰ | 29 | 23 | 11 | 7 | 5 | 7 | 9 | 95 | 8 ¹⁰ |
| 8 ⁵ | 28 | 22 | 10 | 6 | 4 | 6 | 8 | 90 | 8 ⁵ |
| 7 ¹⁰ | 27 | 21 | 9 | 5 | 3 | 5 | 7 | 85 | 7 ¹⁰ |
| 7 ⁵ | 26 | 20 | 8 | 4 | 2 | 4 | 6 | 80 | 7 ⁵ |
| 6 ¹⁰ | 25 | 19 | 7 | 3 | 1 | 3 | 5 | 75 | 6 ¹⁰ |
| 6 ⁵ | 24 | 18 | 6 | 2 | 1 | 2 | 4 | 70 | 6 ⁵ |
| 5 ¹⁰ | 23 | 17 | 5 | 1 | 1 | 1 | 3 | 65 | 5 ¹⁰ |
| 5 ⁵ | 22 | 16 | 4 | 1 | 1 | 1 | 2 | 60 | 5 ⁵ |
| 4 ¹⁰ | 21 | 15 | 3 | 1 | 1 | 1 | 1 | 55 | 4 ¹⁰ |
| 4 ⁵ | 20 | 14 | 2 | 1 | 1 | 1 | 1 | 50 | 4 ⁵ |
| 3 ¹⁰ | 19 | 13 | 1 | 1 | 1 | 1 | 1 | 45 | 3 ¹⁰ |
| 3 ⁵ | 18 | 12 | 1 | 1 | 1 | 1 | 1 | 40 | 3 ⁵ |
| 2 ¹⁰ | 17 | 11 | 1 | 1 | 1 | 1 | 1 | 35 | 2 ¹⁰ |
| 2 ⁵ | 16 | 10 | 1 | 1 | 1 | 1 | 1 | 30 | 2 ⁵ |
| | 15 | 9 | 1 | 1 | 1 | 1 | 1 | 25 | |
| | 14 | 8 | 1 | 1 | 1 | 1 | 1 | 20 | |
| | 13 | 7 | 1 | 1 | 1 | 1 | 1 | 15 | |
| | 12 | 6 | 1 | 1 | 1 | 1 | 1 | 10 | |
| | 11 | 5 | 1 | 1 | 1 | 1 | 1 | 5 | |

DIRECTIONS. Draw a small circle around the number in each column representing the score of the pupil in that part; then join the circles with lines to form the profile. The abilities in which the pupil is strong or weak then stand out clearly.

PART I. WORD MEANING

DIRECTIONS. Underline the word that makes the sentence true. Then write the number of that word in the parentheses.

SAMPLE. A book is something to 1 wear, 2 read, 3 eat, 4 sail.....(2)

Begin here.

1. A dress is something to 1 drink, 2 eat, 3 wear, 4 throw.....()
2. A letter comes in the 1 water, 2 wind, 3 store, 4 mail.....()
3. A rock is a big 1 stone, 2 animal, 3 train, 4 flower.....()
4. To buy something means to 1 drink, 2 pay for, 3 run, 4 play.....()
5. A yardstick is three feet 1 heavy, 2 hard, 3 long, 4 smooth.....()
6. A lake is made of 1 sand, 2 water, 3 hills, 4 oceans.....()
7. Spain is the name of a 1 king, 2 country, 3 woman, 4 car.....()
8. An automobile is a kind of 1 paper, 2 chair, 3 car, 4 horse.....()
9. A kettle is used for 1 colds, 2 games, 3 fishing, 4 cooking.....()
10. Honest means to be 1 funny, 2 old, 3 truthful, 4 pretty.....()
11. An enemy is one who 1 loves, 2 pleases, 3 weeps, 4 hates.....()
12. Freedom means to have 1 war, 2 liberty, 3 care, 4 trouble.....()
13. To reply means to 1 answer, 2 cry, 3 laugh, 4 sleep.....()
14. To strike means to 1 carry, 2 stop, 3 hit, 4 play.....()
15. A huge rock is one that is 1 big, 2 rough, 3 pretty, 4 smooth.....()
16. To enlist is to 1 accept, 2 enroll, 3 disgrace, 4 explain.....()
17. A reward is a kind of 1 town, 2 story, 3 payment, 4 school.....()
18. A member is one who 1 speaks, 2 believes, 3 belongs, 4 talks.....()
19. A tribe is a big 1 house, 2 animal, 3 family, 4 plant.....()
20. A luxury is something 1 unnecessary, 2 young, 3 long, 4 heavy.....()
21. A bead is an 1 officer, 2 injury, 3 error, 4 ornament.....()
22. Utmost means the 1 oldest, 2 greatest, 3 triumph, 4 disguise.....()
23. To be positive means to be 1 untrue, 2 certain, 3 careless, 4 great.....()
24. To irrigate is to 1 water artificially, 2 annoy, 3 object, 4 talk.....()
25. An annoyance is a 1 vehicle, 2 proclamation, 3 vexation, 4 mistake.....()
26. A jerk is a sudden 1 pull, 2 terror, 3 curve, 4 noise.....()
27. To pour means to 1 drive, 2 empty, 3 lack, 4 hurt.....()
28. An alderman is an 1 artist, 2 old man, 3 official, 4 element.....()
29. Theft means 1 covering, 2 doctrine, 3 robbery, 4 music.....()
30. An oath is a 1 murder, 2 trial, 3 treaty, 4 pledge.....()
31. Garlic has 1 odor, 2 curiosity, 3 discretion, 4 banners.....()
32. Ignorance means without 1 freedom, 2 vision, 3 knowledge, 4 art.....()
33. To observe means to 1 shoot, 2 follow, 3 destroy, 4 notice.....()
34. To shudder means to 1 shake, 2 burst, 3 deny, 4 neglect.....()
35. To be riotous is to be 1 unconscious, 2 obedient, 3 noisy, 4 lovely.....()
36. A bonbon is a 1 heresy, 2 bonnet, 3 dainty, 4 explosive.....()
37. A maze is a kind of 1 conspiracy, 2 robbery, 3 puzzle, 4 machine.....()
38. A zest is a great 1 snake, 2 relish, 3 arbitrator, 4 disdain.....()
39. A mediator is one who 1 invents, 2 lectures, 3 governs, 4 intercedes.....()
40. Chronicle is a kind of 1 disease, 2 poetry, 3 king, 4 record.....()

Number right.....(Score)

PART II. RATE

IS IT LEAD THAT IS IN YOUR PENCIL?

The "lead" in your pencil is not made of lead. Long ago people had lead in their pencils; that is probably why the pencils we use are called lead pencils. Another mineral called "graphite" is now used. This mineral is taken from mines in the same way as coal or iron ore.

When people began to use graphite for pencils, they took it just as it came from the mines, sawed it into strips, and put it into wooden casings. The lines these pencils made were too black, and the "lead" was so soft that it wore away very fast. Men afterward learned to mix other materials with the graphite to make the mark less black and the "lead" harder and more lasting.

This is the way your pencils are made. The graphite is ground into powder and mixed with the powder of a clay that is found in Central Europe. Very little clay is put in if the lead is to be quite soft, but if it is to be hard, more clay is added. The hardest lead pencils, marked with six H's like this, H H H H H H, have much more clay mixed with the graphite than the soft ones, marked B B B B B B. Sometimes a little lampblack is mixed in to make the lead blacker.

After the graphite, clay, and lampblack are mixed together, they are ground in mills. They are stirred round and round until they look like black dough. The dough is then put into a press which has holes in the bottom. The press squeezes this black dough out through these little holes. This is done over and over again until the mixture is smooth enough.

The dough is finally squeezed through a hole of just the size and shape the lead is to be. If the lead wanted is to be square or round, then the hole is square or round. If the size of the lead is to be large or small, then the hole is large or small. The soft string of lead comes slowly through this hole. It is cut into pieces as long as pencils, and these are put on a tray to dry.

As soon as a tray is filled with pieces, it is sprinkled with a dust called "carbon dust" and put in the oven to bake. The pieces are left in the very hot oven several hours, until they are perfectly dry. When they are dry, they are put into small blocks of wood and made into pencils.

Number of words read first minute ÷ 10 = (Score)

PART III. FACT MATERIAL

DIRECTIONS. Write the answer to each question on the dotted line. Use one word if possible.

The "lead" in your pencil is not made of lead. Long ago people had lead in their pencils; that is probably why the pencils we use are called lead pencils. Another mineral called "graphite" is now used. This mineral is taken from mines in the same way as coal or iron ore.

When people began to use graphite for pencils, they took it just as it came from the mines, sawed it into strips, and put it into wooden casings. The lines these pencils made were too black, and the "lead" was so soft that it wore away very fast. Men afterward learned to mix other materials with the graphite to make the mark less black and the "lead" harder and more lasting.

This is the way your pencils are made. The graphite is ground into powder and mixed with the powder of a clay that is found in Central Europe. Very little clay is put in if the lead is to be quite soft, but if it is to be hard, more clay is added. The hardest lead pencils, marked with six H's like this, H H H H H H, have much more clay mixed with the graphite than the soft ones, marked B B B B B B. Sometimes a little lampblack is mixed in to make the lead blacker.

After the graphite, clay, and lampblack are mixed together, they are ground in mills. They are stirred round and round until they look like black dough. The dough is then put into a press which has holes in the bottom. The press squeezes this black dough out through these little holes. This is done over and over again until the mixture is smooth enough.

The dough is finally squeezed through a hole of just the size and shape the lead is to be. If the lead wanted is to be square or round, then the hole is square or round. If the size of the lead is to be large or small, then the hole is large or small. The soft string of lead comes slowly through this hole. It is cut into pieces as long as pencils, and these are put on a tray to dry.

As soon as a tray is filled with pieces, it is sprinkled with a dust called "carbon dust" and put in the oven to bake. The pieces are left in the very hot oven several hours, until they are perfectly dry. When they are dry, they are put into small blocks of wood and made into pencils.

1. What did people use in their pencils long ago?.....
.....
2. What mineral is used in the pencils now?.....
3. From what is the mineral taken?.....
4. Did people ever use graphite alone in the pencils?.....
.....
5. What is mixed with the graphite in pencils?.....
.....
6. Where is the clay powder found?.....
7. How much clay is mixed with graphite to make a soft lead?.....
8. What does H H H H H H mean on a pencil?.....
.....
9. What is sometimes mixed with graphite to make blacker lead?.....
10. Where are the graphite, clay, and lampblack ground?.....
11. What do the mixed materials look like?.....
.....
12. What is the color of the dough?.....
.....
13. For square lead through what kind of hole is the dough squeezed?.....
14. For large lead through what kind of hole is the dough squeezed?.....
15. How long are the pieces of lead cut?.....
.....
16. Why are the pieces of lead placed on a tray?.....
.....
17. With what are the pieces of lead sprinkled?.....
.....
18. After being sprinkled, where are the pieces of lead placed?.....
19. How long are the pieces of lead left in the oven?.....
.....
20. Into what are the dry pieces of lead put?.....
.....

PART IV. TOTAL MEANING

DIRECTIONS. Read each paragraph, and then draw a line under the one of the four words given beneath the exercise which correctly answers the question asked.

SAMPLE. The sun is warm and bright this morning. The birds are beginning to come back from the South, and the buds are coming out on the trees and bushes.

What season of the year is it? autumn spring summer winter

1. The waves rolled mountain high. They cut and slashed the sides of the ship. The wind howled and hissed like the voice of the angry sun-god himself. The heavy hail beat upon the deck like stones. Lightning struck the doomed ship and tore it into a thousand pieces.

What do these sentences describe? summer storm mountain rain

2. Tall, slender trees and fragrant shrubbery were near it, and bright-colored birds and butterflies flashed about here and there. A clear little stream rippled and gurgled its way through the grounds. Sweet mint and purple violets, poppies, and tulips grew all around in dreamlike stillness.

What word best describes this scene? beautiful great ugly cloudy

3. The servants were busy roasting oxen, sheep, and hogs. Some of them were making all sorts of cakes and pies. The long, brown tables fairly groaned with good things to eat: roasts of beef and mutton, bread and fruit in heaping baskets, and bowl after bowl of yellow honey and sweet wine.

What is about to take place? fight parade feast show

4. Jan had the largest farm, the greenest pastures, the sleekest cattle, and the greatest windmill of all the men in the country of Holland. His barns were full of hay, his granary full of all kinds of grain. His house was the most beautiful and his grounds the most elaborate of any in the neighborhood.

What word best describes Jan? poor unhappy brave rich

5. A yell, a shriek, breaks the awful stillness of night. There is a great clatter of steel and a sounding of drums. The Scots spring to their feet, sword in hand. They hurry from their hiding places, charge down the long hillsides, cutting the greatly surprised Romans to pieces.

What is taking place? battle ball game circus fire

6. My father could see very plainly that I was not doing my work very well. It seemed to cause him more or less trouble. I was not at all surprised when one morning he said to me: "John, what will become of you? Do you want to become a good-for-nothing and some day beg for your bread?"

How did the father feel? hungry happy worried brave

Go right on to the next page.

7. You can imagine my terror as the sailors cried out in loud voice, "The ship has sprung a leak." The water began to pour into the vessel in torrents, we began to sink rapidly. Every one rushed about frantically from place to place and called loudly for help and safety.

What word tells how the people on the ship felt?

excited honest angry lazy

8. We gathered a great many dried grapes. Corn we husked by the hundred bushel. From the twenty-two bushels of wheat sown, two hundred and twenty bushels were gathered. The field of rye yielded many more bushels than we had expected, and the rice crop was very good.

What time of the year is pictured?

spring planting time harvest time winter

9. It was a happy bunch of boys. Will carried the blankets, the tent, a hunter's ax, and a good-sized bag of provisions. Harry carried the fishing tackle and cooking kit. Bob carried everything from bundles of old clothes and swimming suits to musical instruments. Each of the boys had some matches and a knife.

Where were the boys going?

city ball game store camping

10. The sun was slowly fading in the west, and one by one the stars could be seen gleaming softly in the heavens. No robins were singing, no swallows flying about in the air. Only the shrill voice of the tree toad, the deep croaking of the frog, and the tiresome buzzing of the locusts could now be heard.

What time of the day is it?

afternoon evening noon morning

11. Not a sound broke the stillness; not even the wind blew enough to cause a stir among the leaves. There seemed to be no man and no animal about. The little house was as silent as a grave; and so was the empty canyon. The boy was all alone in his great store-room prison.

What word best describes this scene?

excited merry sad quiet

12. For days and days he kept waiting and listening for some one to come. Every bit of rock that fell, every rustle of the breeze, every snap of a falling twig made him look for a coming footstep. But it seemed that the boy was doomed. All that came were evening and morning.

How must the boy have felt?

lonely idle good pleasant

Number right. (Score)

PART V. CENTRAL THOUGHT

DIRECTIONS. Draw a circle around the letter before the statement that best tells the important thought of the paragraph.

1. Cod fishing is dangerous business. Thick clouds of fog often settle over the sea more quietly and quickly than showers of rain come down on us. In the thick fog, where one cannot see fifty feet, the men in the dories sometimes lose their way. Sometimes great storms come up and upset their little boats.

- a. Cod fishing is very dangerous business.
- b. Heavy fogs often settle over the sea.
- c. Men cannot see fifty feet in the heavy fog.
- d. Storms often upset the little boats.

2. There is not room enough in France for every one to have a large farm. The whole of France is in size about equal to Missouri, Kansas, and Nebraska; but it has seven times as many people as these three states. Each farm in France must be small, and its owner must cultivate it well to make it provide a living for the family.

- a. France is about the size of Missouri.
- b. Farmers in France raise many grapes.
- c. Every one has a large farm in France.
- d. In France the farms are very small.

3. California is a wonderland to people who have lived all their lives in the east-ern part of our country. There one may look up from the orange orchards, yellow with fruit and sweet with blossoms, and see snow-covered mountains shining in the sun. There, too, we may see the largest trees in America and the highest waterfalls.

- a. There are many orange orchards in California.
- b. California is a wonderland to people living in the East.
- c. We may see snow-covered mountains in California.
- d. America's largest trees may be found in California.

4. Many changes that were not all for the best were brought about because of the great migration of peoples from over the sea to our country. Some of the men who came had lived as sea wolves and pirates, knowing no law; some of them had been fighting nearly all their lives against such people as the Britons, Scots, or Danes. They were in many cases restless, lawless men. It was no easy matter for such men to settle down to the quiet work of a peaceful country.

- a. The great migration brought over many rather undesirable men.
- b. Some men who came to this country were sea wolves.
- c. Some men who came here had been fighting the Danes.
- d. Pirates have no regard for the law.

5. It was a poor kind of housekeeping they had in that shiftless home on Little Pigeon Creek after the mother of Lincoln had been taken away. Sarah, the eldest child, was only twelve; Abraham was but ten; and little Dennis Hanks was eight. Sarah tried to keep the house, and her father, in his careless way, tried to help her. But about all they could do was to keep from going hungry.

- a. Sarah Lincoln was the oldest child in the family.
- b. Abraham Lincoln's father was very careless.
- c. The housekeeping in Lincoln's boyhood home was of a very poor kind.
- d. Abraham Lincoln sometimes went hungry.

Go right on to the next page.

6. The climate of the North Central states is healthful; it makes people feel like doing things. Everywhere the summers are warm or hot, with enough rain to make good crops grow. The winters are cold, with many clear, crisp days. Few parts of the world have so good a climate as has the group of North Central states.

- a. People do things in the North Central states.
- b. The winters are cold, clear, and crisp in the North Central states.
- c. There is plenty of rain in the North Central states.
- d. The North Central states have a very fine and favorable climate.

7. What we have a right to expect of the American boy is that he shall turn out to be a good American man. Now the chances are strong that he won't be much of a man unless he is a good deal of a boy. He must not be a coward or a weakling, a bully, a shirk, or a prig. He must work hard and play hard. He must be clean-minded and clean-lived, and able to hold his own against all comers.

- a. A boy must never be a bully.
- b. The best way to become a good man is to be a real good boy.
- c. All boys must work hard and play hard.
- d. We want all our boys to be brave.

8. Charles the First believed that God had given him the right to rule and that, therefore, he could do as he pleased. He soon made it known to the Parliament and to the people of England that he intended to rule as he saw fit. He declared that neither the people nor Parliament should question his doing so. At times he would say: "Am I not the king? Are not the English people my property to do with as I please? Do not the people exist only for my pleasure?"

- a. Charles the First was a selfish and despotic king.
- b. The king said that God made him a wonderful man.
- c. The English people were very fond of their king.
- d. Charles the First was a very kind and unselfish king.

9. No matter what people may say, many good times may be had on the farm in winter. The mailman delivers the mail to our door every day. When our school work is over, we have time to read a great many magazines and farm papers. Of course, we have many splendid chances for coasting and skating parties. Nearly every week there is an entertainment at the church or the school. Sometimes we have moving pictures, too. Usually on Saturdays we can go hunting for rabbits and quail.

- a. Once a month we have moving pictures.
- b. We have coasting and skating parties in the country.
- c. Many good times may be had on the farm in the winter.
- d. The mail is delivered right to the door on the farm.

10. The governments of white men do many things to help everybody. The people elect men to work for the government. The elected men attend to the building of roads and manage the post offices, the schools, and the courts. In this way many helpful things can be done that a single family cannot do for itself.

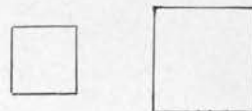
- a. The people elect men to work for the government.
- b. The elected men manage the schools.
- c. The family cannot do many things for itself.
- d. The governments of white men are very helpful to everybody.

Number right.....(Score)

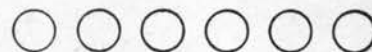
PART VI. FOLLOWING DIRECTIONS

DIRECTIONS. Do what each paragraph tells you to do.

1. At the right are two squares of different sizes. The larger square is a playground for children, and the smaller one is a garden into which children must not go. There should be a fence between the playground and the garden. Make this fence by drawing a line to separate the squares.



2. At the right are six circles. They stand for one-half dozen eggs. The second egg in the row is not a good one and cannot be used for cooking. In order that Mother will not make a mistake and use it, you must take your pencil and mark it with a cross.



3. The flag of our country is made up of stars and stripes. The stars stand for the states, and the stripes stand for the thirteen colonies. At the right is written the word which stands for the colonies. There is a blank space left on which you must tell what part of the flag stands for the states.

_____ *stripes*

4. There are several numbers written at the right. These numbers tell how many years old children usually are when they begin the different grades in school. Children are usually nine years old when they begin the fourth grade. Draw a line around the number that tells how old children are when they begin the fourth grade.

6 7 4 9 11

5. At the right is a square. John lives at A and James lives at B. But, when John and James go to visit each other, they never go all the way around the block. They go straight across the back way. Draw a straight line from A to B to show the path the boys take whenever they go to visit each other.



6. Jack and Ben were playing marbles in their back yard. The boys played all the afternoon. It began to grow dark and they could not see very well. They both lost some of their marbles. Jack lost two of his, and Ben lost many more. Draw circles at the right to show how many marbles Jack lost.

7. James had two balls. One was an old rubber ball; the other was a new baseball that he received from his uncle on his birthday. The other day, when James and his friend were playing ball, the new ball was lost in a field of tall grass. Draw a line around the word at the right that tells which ball was lost.

new old

8. Yesterday Grace bought three sticks of candy. On her way home from the store she met her little friends, Mary and Jane. She gave each of them a stick of candy and had one left for herself. Put a figure in the circle at the right to tell how many sticks of candy Grace had left for herself.



9. We children go to school almost every day of the week. Even on Sunday we usually go to Sunday school. But on Saturday there is no school, and we just play and help around home. Draw a line under the name of the day on which there is no school.

Sunday Tuesday
Monday Saturday

10. It was almost Easter time. Jennie had been coloring Easter eggs all day long. She made them many pretty colors. One of the eggs she colored so that one half was blue and the other half was yellow. At the right is the egg. Draw a line from the top to the bottom of the egg to separate the blue from the yellow.



Number right.....(Score)

PART VII. ORGANIZATION

DIRECTIONS. Read the paragraphs and follow the directions as indicated from time to time.

1. BOBBY'S DREAM

One morning Bobby had hauled so many stones in his little wagon that he was all worn out; so he sat down under a tree to rest. A woodpecker was moving up and down the tree, sounding out the trunk with his sturdy bill, and a blue jay was scolding noisily from a branch overhead. Before long Bobby's head began to nod, and in a little while he heard a queer voice saying, "I am a keewhack, I am a keewhack. If you want to see where the keewhacks live and where the sleepy-headed people stay, just pick up the key lying at your feet and unlock the door in the big tree near by." Bobby did not see the keewhack, but he did see the key and the door. He picked up the big, rusty key, but when he tried to fit it into the keyhole, the keyhole moved up out of his reach. He piled some stones on the ground and stood on them. Again the keyhole moved higher just as he seemed about to

touch it with the key. Bobby sat down on the stones to rest. As he did so, he noticed that the keyhole had moved back to a spot he could reach. He made a quick jump to catch it, but dropped his key. When he picked it up, he found that the key was no longer rusty but shone like gold. He hastened to see what he could do with this new key. Now the astonished child saw the keyhole move down instead of up. He tried in various ways to trick it, but succeeded only in chasing it lower and lower until at last it was below the stones he had piled against the door. Just then the keewhack called to him in a very loud voice. Something pushed against his hand and made him drop the key. Bobby opened his eyes. His dog was pushing a cold nose against his hand, and the blue jay was screaming lustily as he flew away into the sunshine.

Now turn the page end for end.

Now turn over this page.

ment as they slowly made their way back to the quay. laughing all the while, and Rob was breathless with excitement at every point with shining herring. Old Sandy was ing but joyous labor, for the brown meshes were started-after yard of dripping net they hauled in with back-break-gray dawn Sandy insisted they should try the nets. Yard Rob was too excited to sleep and kept watch until in the their supper. After a while the brothers fell asleep, but they lighted the little stove, boiled some tea, and had gently, and then because they would have a long wait seemingly interminable drift net as they pulled along let the nets go deep, deep, deep. "The boys let out the "Put stones with the sinkers, Rob," he whispered, "and quantity of air bubbles rising to the surface of the sea.

Rob's arm in much excitement and pointed to a great might had settled down, Old Sandy suddenly grasped water, but saw no signs of herring anywhere. Long after the sky. They stared watchfully at the surface of the and were far out from the village as the light faded from just as they were pushing off. The boys rowed steadily village half-wit, and allowed him to climb into the boat because he had yielded to the pleas of Daft Sandy, the and felt condemned in the eyes of the watching fishermen and took his seat at the oars, but he was secretly ashamed them luck. Rob was a proud lad as he stepped on board men of the village were out to see them start and to wish were to make their first trip after herring. All the fisher- At last came the afternoon when Rob and his brothers

2. THE FIRST FISHING TRIP

Now read the next paragraph.

.....The dog pushed his cold nose against Bobby's hand.

.....Bobby sat down under a tree to rest.

.....Bobby tried to place the shining key in the keyhole.

.....Bobby heard a queer voice saying, "I am a keewhack."

again at the paragraph.

DIRECTIONS. In the paragraph which you have just read, several things took place at different times. Indicate on the blank line before each of the following four statements the order in which they happened, by placing a "1" before the event happening first, a "2" before the event happening next, etc. Do not look

BOBBY'S DREAM

THE ESCAPE OF THE LUGGER

DIRECTIONS. Indicate the order of these four events as before. *Do not look again at the paragraphs.*

.....The colonel ordered young Ladd to take his position in the government house.

.....The American fired a rocket high into the air.

.....The *Mogul* flashed the signal of her number and maneuvers.

.....The *Amante* began gliding imperceptibly toward the outer part of the port.

Now turn the page end for end.

quickly prepared to trick the *Mogul* by lighting one of the rockets he had in the boat. The rocket hissed up into the air high enough to be seen clearly by the crews both of the *Mogul* and of the *Amante*. Young Ladd saw this signal with wonder, while the captain of the *Mogul* was greatly surprised and did not know how to interpret it. On board the *Amante* the rocket stimulated instant action, and within a few minutes the vessel was gliding imperceptibly toward the outer part of the port. So light was her motion that even the sentinels on the shore failed to detect the slight sound of her flapping canvas. The American touched off a second rocket, which so deceived the *Mogul* that she flashed the signals of her number and maneuvers and thus completely enabled the escaping lugger to keep out of her way. At daybreak the *Amante* lay fully a league beyond the promontory and far out of the danger of missiles from the land, while the lookouts on the *Mogul* reluctantly admitted that the enemy craft had a second time escaped their vigilance.

The two British officers were convinced that the boat in the harbor was the hated and much-dreaded American lugger *Amante*. They were now willing to follow the orders of their colonel in his attempt to prevent the escape of the little vessel with its daring crew. The colonel immediately ordered young Ladd to take up his station in the government house, from which signals could easily be seen from the sea. Ladd was told to flash certain blue lights when the British ship *Mogul* was sighted entering the bay. Meanwhile the American, who was interested in helping the lugger to escape from the bay, entered the light boat and pulled off with muffled oars toward a position at sea from which the window of the government house was visible. About two o'clock his vigil was rewarded by the flashing of blue lights from the window of the government house, and as he quickly turned he saw another light apparently descend from the sky and drop into the sea. This was in reality a signal from the *Mogul*, answering the blue flash from young Ladd's window. The American

3. THE ESCAPE OF THE LUGGER

Now read the next paragraphs.

.....Rob proudly took his seat at the oars.

.....The boys lighted the stove and had their supper.

.....The boys hauled in their drift net full of shining herring.

.....Old Sandy pointed at the great quantity of rising air bubbles.

DIRECTIONS. Indicate the order of these four events as before. *Do not look again at the paragraph.*

THE FIRST FISHING TRIP

Sum of differences..... Subtract from 12
 $\div 2 =$
 Score

SANGREN-WOODY READING TEST

40

By PAUL V. SANGREN, Ph.D.

Director of Bureau of Educational Measurement and Research
Western State Teachers College, Kalamazoo, Michigan

and CLIFFORD WOODY, Ph.D.

Director of Educational Reference and Research
University of Michigan

TEST: FORM B

For Grades 4 to 8

Name Grade

Age Date 19...
Years Months

Name of school Examiner

City

| PART | SCORE |
|--------------------------|-------|
| I. Word Meaning | |
| II. Rate | |
| III. Fact Material | |
| IV. Total Meaning | |
| V. Central Thought | |
| VI. Following Directions | |
| VII. Organization | |
| Total score | |

NOTE. *This first sheet may be torn off and filed as a record.*

PART I. WORD MEANING

DIRECTIONS. On page 3 are such exercises as:

A book is something to 1 wear, 2 read, 3 eat, 4 sail.....(2)

Here the word that completes the meaning of the sentence or makes it true is "read"; so a line is drawn under "read." The sentence now reads, "A book is something to read." As the word "read" is No. 2, a figure 2 is placed in the parentheses at the end of the sentence. In each exercise on page 3 there is a choice of four words or groups of words, but only one completes the meaning of the sentence or makes

it true. Draw a line under that word which makes the sentence true, as shown in the sample above. Then put the number of the right word in the parentheses at the end of the line.

Work as rapidly as you can, being sure that all your marks are correct. Do not start until you are told, and when you are told to stop you must stop at once.

READING PROFILE CHART

SHOWING THE READING STATUS OF THE PUPIL IN SILENT READING

| GRADE EQUIVALENT | PART I WORD MEANING | PART II RATE | PART III FACT MATERIAL | PART IV TOTAL MEANING | PART V CENTRAL THOUGHT | PART VI FOLLOWING DIRECTIONS | PART VII ORGANIZA- TION | TOTAL | GRADE EQUIVALENT |
|------------------|---------------------------|-----------------|------------------------------|-----------------------------|------------------------------|------------------------------------|-------------------------------|-------|------------------|
| 10 ¹⁰ | 33 | 27 | 15 | 11 | 9 | 10 | 12 | 115 | 10 ¹⁰ |
| 10 ⁵ | 32 | 26 | 14 | 10 | 8 | 10 | 12 | 110 | 10 ⁵ |
| 9 ¹⁰ | 30 | 25 | 13 | 9 | 7 | 9 | 11 | 105 | 9 ¹⁰ |
| 9 ⁵ | 28 | 24 | 12 | 8 | 6 | 8 | 10 | 100 | 9 ⁵ |
| 8 ¹⁰ | 27 | 23 | 11 | 7 | 5 | 7 | 11 | 95 | 8 ¹⁰ |
| 8 ⁵ | 25 | 22 | 10 | 6 | 4 | 6 | 10 | 90 | 8 ⁵ |
| 7 ¹⁰ | 23 | 21 | 9 | 5 | 3 | 5 | 9 | 85 | 7 ¹⁰ |
| 7 ⁵ | 22 | 20 | 8 | 4 | 2 | 4 | 8 | 80 | 7 ⁵ |
| 6 ¹⁰ | 20 | 19 | 7 | 3 | 1 | 3 | 7 | 75 | 6 ¹⁰ |
| 6 ⁵ | 19 | 18 | 6 | 2 | 1 | 2 | 6 | 70 | 6 ⁵ |
| 5 ¹⁰ | 17 | 17 | 5 | 1 | 1 | 1 | 5 | 65 | 5 ¹⁰ |
| 5 ⁵ | 16 | 16 | 4 | 1 | 1 | 1 | 4 | 60 | 5 ⁵ |
| 4 ¹⁰ | 14 | 15 | 3 | 1 | 1 | 1 | 3 | 55 | 4 ¹⁰ |
| 4 ⁵ | 13 | 14 | 2 | 1 | 1 | 1 | 2 | 50 | 4 ⁵ |
| 3 ¹⁰ | 11 | 13 | 1 | 1 | 1 | 1 | 1 | 45 | 3 ¹⁰ |
| 3 ⁵ | 9 | 12 | 1 | 1 | 1 | 1 | 1 | 40 | 3 ⁵ |
| 2 ¹⁰ | 8 | 11 | 1 | 1 | 1 | 1 | 1 | 35 | 2 ¹⁰ |
| 2 ⁵ | 6 | 10 | 1 | 1 | 1 | 1 | 1 | 30 | 2 ⁵ |
| | 5 | | | 2 | | | | 25 | |
| | | | | | | | | 20 | |
| | | | | | | | | 15 | |

DIRECTIONS. Draw a small circle around the number in each column representing the score of the pupil in that part; then join the circles with lines to form the profile. The abilities in which the pupil is strong or weak then stand out clearly.

PART I. WORD MEANING

DIRECTIONS. Underline the word that makes the sentence true. Then write the number of that word in the parentheses.

SAMPLE. A book is something to 1 wear, 2 read, 3 eat, 4 sail.....(2)

Begin here.

1. A dog is a 1 fish, 2 day 3 wood 4 animal.....()
2. The truth is 1 young, 2 wrong, 3 right, 4 bad.....()
3. A potato is a 1 vegetable, 2 berry, 3 fruit, 4 flower.....()
4. Gold is used for 1 watches, 2 clothes, 3 paper, 4 pennies.....()
5. What is wrong is 1 good, 2 unfair, 3 best, 4 small.....()
6. To steal means to 1 break, 2 rob, 3 drink, 4 trace.....()
7. To go across is to go to the 1 floor, 2 other side, 3 corner, 4 store.....()
8. A wife is one who is 1 large, 2 married, 3 old, 4 sick.....()
9. A scream is a 1 wonder, 2 surprise, 3 sharp cry, 4 desert.....()
10. A dragon is a 1 tribe, 2 fierce beast, 3 danger, 4 message.....()
11. Almost means very 1 long, 2 high, 3 nearly, 4 pretty.....()
12. To settle is to 1 buy, 2 please, 3 enjoy, 4 stop.....()
13. To treat is to 1 run, 2 hurt, 3 play, 4 entertain.....()
14. The breast of an animal is the 1 back, 2 head, 3 foot, 4 front.....()
15. To wreck is to 1 ruin, 2 occur, 3 trust, 4 refuse.....()
16. A design is a 1 game, 2 sailor, 3 story, 4 plan.....()
17. A picture is a 1 drawing, 2 dish, 3 cap, 4 paper.....()
18. An article is an 1 object, 2 animal, 3 error, 4 injury.....()
19. To connect is to 1 uphold, 2 join, 3 support, 4 infer.....()
20. A durable article is 1 beautiful, 2 lasting, 3 heavy, 4 delicate.....()
21. The pulse is the 1 labor, 2 manner, 3 beat, 4 sight.....()
22. Headlong means 1 strange, 2 rash, 3 slow, 4 violent.....()
23. A conqueror is 1 marvelous, 2 handsome, 3 gracious, 4 victorious.....()
24. He forbade means that he 1 came, 2 accepted, 3 prohibited, 4 fell.....()
25. A suburban place is 1 large, 2 great, 3 outlying, 4 bright.....()
26. A hurricane is a 1 storm, 2 madman, 3 mountain, 4 river.....()
27. A deceiver is one who 1 observes, 2 decides, 3 suffers, 4 misleads.....()
28. Marine has to do with the 1 sea, 2 sun, 3 earth, 4 temperature.....()
29. A settee is a 1 serpent, 2 mirror, 3 seat, 4 milksop.....()
30. To consider is to 1 weep, 2 obey, 3 think about, 4 satisfy.....()
31. To encompass means to 1 surround, 2 select, 3 retreat, 4 leave.....()
32. To be appreciative is to 1 understand, 2 flaunt, 3 despise, 4 trim.....()
33. A tumult is a 1 disease, 2 famine, 3 reason, 4 confusion.....()
34. The extreme is the 1 common, 2 wrong, 3 unusual, 4 strong.....()
35. A profile is an 1 error, 2 animal, 3 injury, 4 outline.....()
36. What is accessory is 1 final, 2 adjacent, 3 extra, 4 absurd.....()
37. Shadowy means 1 positive, 2 alive, 3 silent, 4 unreal.....()
38. To repel means to 1 refer, 2 allure, 3 declare, 4 resist.....()
39. To appease means to 1 accomplish, 2 pacify, 3 mention, 4 affect.....()
40. One who is mortal will 1 help, 2 weep, 3 succeed, 4 die.....()

Number right.....(Score)

PART II. RATE

HOW DID THE INDIANS SEND MESSAGES?

| | |
|--------------------------------------------------------------------------------|-----|
| The Indians used signals to send messages back and forth. If a scout | 19 |
| wanted to let his tribe know that he had found a buffalo, that an enemy was | 35 |
| near, or that a battle had been won, he often used smoke to make signals. | 50 |
| He first built a fire, and after it was well started he put on damp grass, | 66 |
| green weeds, or tops of cedar trees so that it would smoke. When he was sure | 82 |
| that his tribe had seen the smoke, he threw a blanket over the fire and held | 98 |
| down the smoke. | 101 |
| Then he raised the blanket for a moment and let a puff of smoke go up. He | 118 |
| kept sending up puffs of smoke until he had told what he wanted to tell. | 133 |
| Those at the camp knew what he wanted to say by the number of puffs of | 149 |
| smoke. At night smoke could not be seen, so fire signals were used. An | 163 |
| Indian could not tell much that was happening with a fire signal, but it would | 178 |
| waken the camp. Burning arrows shot into a camp told that war was to be | 193 |
| made on them. | 196 |
| Motion signals were made with a blanket. An Indian nearly always carried | 208 |
| a blanket with him. To tell his tribe that he had seen a buffalo, a scout on a | 226 |
| horse rode in a circle until he knew that he was seen. Then he waved the | 242 |
| blanket above his head several times. If there was no danger, he moved the | 256 |
| blanket slowly from side to side in front of him. | 266 |
| A scout with no horse or blanket signaled by throwing handfuls of dust in | 280 |
| the air. The clouds of dust were used the same as puffs of smoke. This made | 296 |
| it possible for the Indian to send messages to his people under almost any | 310 |
| conditions. | 311 |
| Although all Indians did not speak the same language, they could speak to | 324 |
| each other in sign language. They learned these signs from each other when | 337 |
| they met while hunting. When an Indian wanted to tell a stranger that | 350 |
| another Indian was near, he rubbed the palm of his right hand over his left | 365 |
| cheek. This meant that the other person was of his own color. If he wanted | 380 |
| to tell that a white man was near, he drew his forefinger across his forehead. | 395 |
| This meant that the man wore a hat, which only white men did. | 408 |

Number of words read first minute ÷ 10 = (Score)

PART III. FACT MATERIAL

DIRECTIONS. Write the answer to each question on the dotted line. Use one word if possible.

The Indians used signals to send messages back and forth. If a scout wanted to let his tribe know that he had found a buffalo, that an enemy was near, or that a battle had been won, he often used smoke to make signals.

1. By what means did Indians send messages back and forth?

2. Give one reason why a scout sent messages to his tribe.

3. What kind of signal did the scout often use?

He first built a fire, and after it was well started he put on damp grass, green weeds, or tops of cedar trees so that it would smoke. When he was sure that his tribe had seen the smoke, he threw a blanket over the fire and held down the smoke.

4. What was the first thing a scout did in sending a smoke signal?

5. Name one thing which a scout put on a fire to make it smoke.

6. What did he use to hold down the smoke?

Then he raised the blanket for a moment and let a puff of smoke go up. He kept sending up puffs of smoke until he had told what he wanted to tell. Those at the camp knew what he wanted to say by the number of puffs of smoke. At night smoke could not be seen, so fire signals were used. An Indian could not tell much that was happening with a fire signal, but it would waken the camp. Burning arrows shot into a camp told that war was to be made on them.

7. How could a scout let a puff of smoke go up?

8. How could Indians tell what the smoke signals meant?

9. When were the fire signals used?

10. What was the meaning of a burning arrow shot into a camp?

Motion signals were made with a blanket. An Indian nearly always carried a blanket with him. To tell his tribe that he had seen a buffalo, a scout on a horse rode in a circle until he knew that he was seen. Then he waved the blanket above his head several times. If there was no danger, he moved the blanket slowly from side to side in front of him.

11. With what were the motion signals made?

12. What did the Indian usually carry with him?

13. When a scout had seen a buffalo, how did he ride?

14. Where did the scout wave his blanket if he had seen a buffalo?

A scout with no horse or blanket signaled by throwing handfuls of dust in the air. The clouds of dust were used the same as puffs of smoke. This made it possible for the Indian to send messages to his people under almost any conditions.

15. With what did the scout signal when he had no horse or blanket?

16. What did the clouds of dust look like?

Although all Indians did not speak the same language, they could speak to each other in sign language. They learned these signs from each other when they met while hunting. When an Indian wanted to tell a stranger that another Indian was near, he rubbed the palm of his right hand over his left cheek. This meant that the other person was of his own color. If he wanted to tell that a white man was near, he drew his forefinger across his forehead. This meant that the man wore a hat, which only white men did.

17. What language did strange Indians use in speaking to each other?

18. When did the Indians learn the different signs?

19. What did rubbing the right hand on the left cheek mean?

20. What did drawing the forefinger across the forehead mean?

PART IV. TOTAL MEANING

DIRECTIONS. Read each paragraph, and then draw a line under the one of the four words given beneath the exercise which correctly answers the question asked.

SAMPLE. The sun is warm and bright this morning. The birds are beginning to come back from the South, and the buds are coming out on the trees and bushes.

What season of the year is it? autumn spring summer winter

1. The blacksmith was an unusually strong man, with large and powerful hands, a full chest, a straight back, and muscular legs and arms. All day long he would wield the heavy hammer over the anvil and lift the heavy pieces of steel and iron with which he was working.

What word best describes the blacksmith?

strong handsome idle cross

2. The storm beat upon the windows; the howling wind blew the water through the cracks in the sides of the building and under the door. People were going by with heads bent forward and partly turned back as they faced the unpleasant, soaking down-pour.

What seems to be happening outdoors?

hailing raining freezing snowing

3. Painted Indians with tomahawks in their hands, which they were waving wildly in the air, ran into the canyon. They uttered their whoops, did some of their dances, and began to climb the stairs. They rushed from place to place, looking for treasures. They had come to rob the cliff dwellers.

How must the cliff dwellers have felt?

frightened happy lazy tired

4. At last, one day in midwinter, there came a dreadful snowstorm. The terrible wind and the driving snow kept most people indoors. There was almost no traffic on the roads. The storm was so severe and sudden that many people lost their lives and thousands of cattle were frozen to death.

What kind of weather did they have?

cold pleasant warm sunshiny

5. I shell corn for the chickens, drive the cows from the pasture, put hay in the mangers for the horses, and see that the tanks are kept full of water for the cattle and hogs. Sometimes I plow the ground and hoe the potatoes for my father. I am very fond of picking berries.

Where do I live? New York farm China city

6. All the trees of the woods were white, and the hillsides were whiter still. The voice of the stream was silent. The waters sang no longer, for they were as glass, cold and still. Here and there on the hills could be seen the children, well wrapped up but happy as they came down on their sleds.

What season of the year is described?

winter summer spring autumn

Go right on to the next page.

7. Thousands of my fellows stood straight and beautiful in the great wood to which I belonged. Lumberjacks came in with saws and axes and cut us into logs. We were then floated downstream to certain mills along the stream, where we were cut and sawed into lumber for the houses.

What were cut down with saws? flowers posts ice trees

8. Mother's spinning wheel scarcely stopped while she gave orders. It was Saturday forenoon, and all the girls had work to do. Mary was scrubbing the front porch, Jane was polishing the parlor furniture, and Esther was baking some lovely cakes. All these things had to be done before company came.

What word describes this scene? idle busy lazy happy

9. Suddenly a low, mournful sound reached his ears. As he looked, he saw that a large company of people was marching out of the walled town. There came a number of old women, weeping and wailing and wringing their hands. There came also many small children, poorly clad and crying pitifully and whining after their mothers.

What kind of scene is this? joyful beautiful pitiful selfish

10. Her nose was long and crooked; her chin turned up like a horn; between was an opening in the place of a mouth, with not a sign of a tooth in it; her eyes were little and red; her hair was uncombed and greasy; the clothes which she wore were not fit for the poorest tramp of the city.

How does this woman look? gracious pretty kind ugly

11. This young man was very tall, slender, and graceful. He came attired in a flowing robe of green velvet trimmed with a rich cream silk. He was crowned with a wreath of silver water lilies, and he carried a scepter of green reeds. As he came among them, they were as impressed as though the king had come.

What word tells how this young man looked?
 lazy active handsome playful

12. The man took off his leggins and moccasins and made the boy put them on. He also took off his long leather shirt and forced the boy to take it. Only the feathers he kept for himself. Before he left the spot, he told the boy the whole story of the beautiful Pocahontas.

What kind of man was he? French Eskimo Jew Indian

Number right.....(Score)

PART V. CENTRAL THOUGHT

DIRECTIONS. Draw a circle around the letter before the statement that best tells the important thought of the paragraph.

1. No other people use so many potatoes as the Germans. Potato flour is used, together with wheat and rye, to make bread. Dry potatoes are fed to pigs and cows. Alcohol that is made from potatoes is sometimes used to run automobiles.

- a. Potatoes are fed to pigs and cows in Germany.
- b. No other people use so many potatoes as the Germans.
- c. Alcohol is made from potatoes in Germany.
- d. German people themselves never eat potatoes.

2. Franklin was greatly interested in the study of science. He "snatched lightning from the skies" by the use of a key and a kite. This experiment led to the invention of the lightning rod, which was soon placed upon many buildings. He invented the "Franklin stove," an open stove made in such a way as to economize heat and save fuel. He also invented a street lamp which was used in Philadelphia.

- a. Franklin studied science and made a number of inventions.
- b. Franklin snatched lightning from the skies.
- c. Franklin's stove was called the "Franklin stove."
- d. Franklin invented the lightning rod.

3. American colonists justly felt that England had not always treated them with fairness. England had passed many laws which the colonists did not wish. She had forced a law forbidding the colonists to trade with any country but Great Britain. She had even passed a law refusing to allow the colonists to make articles of iron for their own use. She interfered with American industries in many ways.

- a. England interfered with American industries.
- b. The colonists could trade only with Great Britain.
- c. There were many reasons why the colonists felt that they were not treated fairly.
- d. The colonists made things out of their own iron.

4. Abraham Lincoln kept on reading and studying at home. His stepmother said of him: "He read everything he could lay his hands on. When he came to a passage that pleased him, he would write it down on the wooden shovel or boards, if he had no paper. Then he would copy it, commit it to memory, and repeat it again and again."

- a. Abraham Lincoln had a stepmother.
- b. Abraham Lincoln would write on the shovel or on boards.
- c. Abraham Lincoln enjoyed many passages which he read.
- d. Abraham Lincoln read much and studied hard.

5. In New York so many people crowded the street cars that elevated railways as high as the third-story windows of houses have been built. Even these cannot carry all the people who need to ride. Thousands of men are busy every day loading and unloading ships, driving trucks and wagons about the streets, running barges in the harbor from ship to ship and from ship to wharf. New York is a big and busy city.

- a. An elevated railway is built in New York.
- b. New York is a very big and busy city.
- c. Thousands of men unload ships in New York.
- d. All the people in New York cannot ride on the railways.

Go right on to the next page.

6. It is interesting to know that Grant was a real leader in all the games and sports that boys of his time loved. No boys in his neighborhood could outrun or outjump him. He had great fun in fishing and hunting. He was an excellent swimmer. Nearly every day, when his farm work was done, he and the other boys would go to the river for a swim. This great amount of time spent in games and sports kept him in good health.

- a. Grant enjoyed and led in all kinds of games and sports.
- b. Grant liked to hunt a great deal.
- c. Grant could outjump any boy in school.
- d. Grant used to go swimming in the river every evening.

7. The mother of George the Third was very anxious for him to be a real king. She was constantly saying to him, "George, be a king." This constant reminder filled George with lofty notions of the power and rights of the king. These lofty notions caused him to determine to become the king in earnest. He made up his mind that he would not only be a king in name but that he would be one of England's greatest rulers.

- a. Some kings of England had been poor ones.
- b. George's mother said, "George, be a king."
- c. George the Third was determined to be a real king of England.
- d. George the Third had some very queer notions.

8. An important article in the Pilgrim home was the spinning wheel. Sometimes there were several wheels in the household. Hours and hours were spent by the women at their wheels. All the wool and linen with which their clothes were made had to be spun, woven, dyed, cut, and sewed by them. They never bought ready-made clothes in those days.

- a. The women spent some hours at the spinning wheel.
- b. Sometimes there were several wheels in the house.
- c. The pioneers never bought many ready-made clothes.
- d. A very important article in the Pilgrim home was the spinning wheel.

9. In the old days, before telegraph wires were strung all over the country, it took weeks to carry news to places far away. There were no railroads, and the mails had to travel slowly. A boy on horseback trotted along the road to carry the mail bags to country places. From one large city to another the mails were carried by stage-coaches.

- a. They had no telegraph poles in the old days.
- b. In the old days news and mails traveled very slowly.
- c. Years ago a boy used to carry mail on horseback.
- d. We have many railroads in the country these days.

10. The judge looked at the woman sternly and spoke in a quiet, grave voice. "Your gossip is much like the feathers. It is easy to scatter your stories over the world. But, like the feathers, they cannot be gathered together again. You may say, 'I am sorry, I take them back,' but you cannot. That is an impossible task."

- a. Gossip, like feathers, can be easily scattered, but not gathered again.
- b. The judge looked at the woman sternly and spoke gravely.
- c. The woman had been gossiping with the neighbors.
- d. The woman said, "I am sorry, I take them back."

Number right.....(Score)

PART VI. FOLLOWING DIRECTIONS

DIRECTIONS. Do what each paragraph tells you to do.

1. Mary was sent to the store by her mother to buy a dozen oranges. On her way home she became hungry and ate two of the oranges. Then she had only ten. On the line at the right write the figure that tells how many oranges Mary ate on her way home from the store.

2. When Helen came home from school the other day, she hurried into the house and began hunting for something to eat. There were three apples lying in a row on the table. Helen took the apple in the middle because it was the largest. The apples are shown at the right. Mark with a cross the apple that Helen took.



3. The clock struck nine times, and it was time for the boys to go to bed. One of the boys tried to draw a short line for each time the clock struck. The lines are shown at the right, but there are only seven. Draw enough more lines to the right of those drawn to show how many the boy should have drawn.



4. Jack and Harry were playing ball late one afternoon. Finally, when Jack threw the ball, it slipped from his hand in some way and crashed through the window of the schoolhouse. The window is shown at the right. Draw a small circle in the upper right-hand corner of the window to show where the ball went through.



5. This noon Helen's mother told her to be very careful not to spill anything on the clean tablecloth. Helen tried to be very careful, but she soon forgot and laid her spoon, all covered with strawberry juice, down on the cloth. When she picked up the spoon, a bad spot was left. Place a black dot on one corner of the tablecloth at the right to show where the spot is.



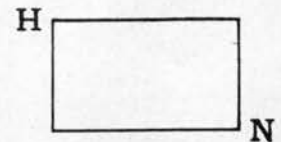
6. At the right you see a circle and a cross. The circle stands for a pig pen, and the cross stands for a pig. We want to have another pig in the pen; so make another cross to show a pig in the pen. We want to have a pen around the pig that is out of the pen; so draw another circle to make a pen around that pig. You will then have two pigs in their pens.



7. James had three nickels that he earned carrying in wood and water for his mother. When he went down to the store, he bought candy with one nickel and a package of gum with another nickel. He then had one nickel left. At the right are the three nickels. Draw a line around the ones he spent, to show that he has but one left.



8. Tonight, after school, Harold is going after nuts. In the figure at the right H is where Harold lives, and N is where the trees are from which he will gather nuts. Harold does not want to go all the way around the road, but wants to go across the field because it is nearer. Draw a line to show how Harold will go across the field after the nuts.



9. William had a birthday yesterday. He was nine years old. His father gave him a new knife for his birthday. The knife had four blades. William was showing the knife to some of the boys, when he dropped it and broke one of the blades. Write on the line at the right the word that tells how many blades were left.

10. Mary said the other day that when she was old enough she was going to be a school teacher. But Mary is only ten years old. She will not be able to teach school for eight years yet. She will then be eighteen years old. Draw a circle around the figure at the right to tell how many years it will be before Mary can teach school.

9 18 8 10 3

Number right.....(Score)

PART VII. ORGANIZATION

DIRECTIONS. Read the paragraphs and follow the directions as indicated from time to time.

1. THE BAPTISM OF JIM

When Jim reached the outskirts of the village, his hunger made him turn in through the gate of a trim little house. A woman came out on the porch, and looked searchingly up and down the street. When she saw Jim, she called out, "Boy, do you know anything about cows? My cow has let herself into the garden and there she's doing more harm every minute than I can mend in a week."

Jim replied that he was sure he could attend to her cow if he were not so weak from lack of breakfast, dinner, and supper. "Oh, so you are hungry?" said the woman. "Well, if you will drive my cow out, I'll see that you have supper."

Jim brought the cow out of the garden and into the shed. Seeing the milking stool and pail all ready, he applied him-

self to the task of milking and soon lifted the well-filled pail and started toward the house. Just then the woman emerged from the kitchen door. Her sudden appearance startled him so that he tripped over a root in the path, sprawled headlong, and soaked himself in the foamy milk. The woman eyed him silently for a moment, then burst into hearty laughter as she said, "You need mopping off in something besides milk. A pail of hot suds and a broom would have been better for you, boy." "I'm very sorry," said Jim; "I'm used to milking and I meant to help you and earn my supper, but I've sure made a sorry mess of helping." "Well," she said, "give me your jacket and I'll dry it by the kitchen fire. I'll give you your supper as I promised."

Now turn the page end for end.

Now turn over this page.

The peddler admired the hospitality of his host, but could not reconcile his conscience to going away without making some recompense. There were honest Simon's two daughters. He opened his packs and asked the girls each to choose a gift. They were for a time completely dazzled, and knew not what to choose; but what caught their eyes most were two looking-glasses, about the size of a dollar, set in gilt tin. They had never seen the like before, having used no other mirror than a pail of water. The peddler presented them these jewels without the least hesitation; nay, he gallantly hung them around their necks by red ribbons. This done, he took his departure, leaving them as much astonished as two princesses in a fairy tale.

As old Simon was one day looking in the canebreaks for his cattle, he came upon the tracks of horses. He followed them up until he came to an unlucky peddler with two or three pack horses, who had been bewildered among the cattle tracks and had wandered among woods and canebreaks, until he was almost famished. Old Simon brought him to his house, and at the end of a week put him in prime condition. The peddler could not sufficiently express his thankfulness, and when about to depart, inquired what he had to pay. Old Simon stepped back with surprise. "Stranger," said he, "you have been welcome under my roof; but if any one offers to pay old Simon for food, he affronts him!" So saying, he walked out in a huff.

2. HOSPITALITY'S REWARD

Now read the next paragraphs.

.....The woman asked Jim if he knew anything about cows.

.....Jim drove the cow out of the woman's garden.

.....The woman told Jim he needed hot suds and a broom.

.....Jim told the woman he hadn't had any breakfast, dinner, or supper.

look again at the paragraphs.

DIRECTIONS. In the paragraphs which you have just read, several things took place at different times. Indicate on the blank line before each of the following four statements the order in which they happened, by placing a "1" before the event happening first, a "2" before the event happening next, etc. Do not

THE BAPTISM OF JIM

THE MYSTIC ISLAND

DIRECTIONS. Indicate the order of these four events as before. *Do not look again at the paragraphs.*

-The stranger reported his finding to the government.
-The stranger's loud insistence attracted the attention of an aged man.
-The stranger hastened to the home of his ancestors.
-The stranger begged to be taken back to the Mystic Island.

Now turn the page end for end.

The stranger became more and more perplexed at the situation in which he found himself. He could recall up to a certain event every detail of his experiences on the Mystic Island. He could remember leaving the banquet hall and embarking in the small boat to be taken back to his own fleet. He could remember feeling very drowsy, and he believed he must have fallen asleep in the little boat. But what had happened from that time until a few hours before was a mystery to him. He plied the people about him with questions, but they could give him no information about himself. He begged them to take him back to the island, where he was certain he would be recognized as ruler; but in vain. When at last the ship anchored in the bay before his native city, he hastened ashore and up to the home of his ancestors. A porter he had never seen before opened the door and informed him that the people for whom he inquired had been dead at least a century. Being now thoroughly mystified by his experiences, he went to the government office, where in all good faith he reported that he had just returned from discovering the Mystic Island and wished to be sent out to it at once as its ruler. He explained the details of a contract he had had with the government. No one at the office seemed to know anything about the expedition or his contract. But he became so loud in his insistence that at last he attracted the attention of an aged man. This aged man explained that years ago he had heard an old man tell something about an expedition which was like the one now being described by the stranger. And he added, "That expedition sailed away from here more than a hundred years ago." The stranger hastened from the office and paced the streets of his native city, making inquiries at old familiar houses with the vain hope of finding some one who would know him and relieve him of his perplexities. Finally he could no longer doubt that he had skipped over a whole century during his night on the Mystic Island.

3. THE MYSTIC ISLAND

Now read the next paragraphs.

-The peddler offered to pay for his food and keep.
-Old Simon found the peddler in the canebrakes.
-The peddler presented looking-glasses to old Simon's daughters.
-Old Simon left the house in a huff.

DIRECTIONS. Indicate the order of these four events as before. *Do not look again at the paragraphs.*

HOSPITALITY'S REWARD

Subtract from 12
Sum of differences $\div 2 =$
Score

DIAGNOSTIC READING TEST RAW SCORES, FORM A, O-GROUP,
GRADE 5, 1939

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Buddy A. - - - - - | 24 | 22 | 6 | 6 | 7 | 8 | 9 |
| Virginia B. - - - - - | 21 | 16 | 6 | 7 | 6 | 7 | 8 |
| Richard B. - - - - - | 19 | 9 | 6 | 3 | 3 | 2 | 8 |
| Edna B. - - - - - | 23 | 22 | 7 | 7 | 5 | 8 | 8 |
| Betty C. - - - - - | 22 | 16 | 4 | 7 | 6 | 5 | 8 |
| Billy G. - - - - - | 13 | 9 | 4 | 4 | 2 | 5 | 5 |
| Walter H. - - - - - | 21 | 16 | 8 | 6 | 3 | 4 | 11 |
| Bernard L. - - - - - | 19 | 20 | 5 | 5 | 7 | 6 | 10 |
| Evelyn N. - - - - - | 19 | 12 | 6 | 6 | 5 | 5 | 8 |
| Betty O. - - - - - | 19 | 17 | 6 | 5 | 6 | 5 | 8 |
| Henrietta R. - - - - - | 24 | 20 | 9 | 7 | 7 | 6 | 10 |
| Ken R. - - - - - | 10 | 9 | 3 | 2 | 3 | 1 | 8 |
| Eugene S. - - - - - | 10 | 19 | 4 | 4 | 2 | 1 | 9 |
| James S. - - - - - | 15 | 12 | 2 | 3 | 2 | 4 | 4 |
| Total - - - - - | 258 | 220 | 76 | 72 | 64 | 67 | 114 |
| Means - - - - - | 18.4 | 15.1 | 5.4 | 5.1 | 4.6 | 4.8 | 8.1 |

DIAGNOSTIC READING TEST RAW SCORES, FORM A, O-GROUP,
GRADE 4, 1939

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Betty A. - - - - - | 10 | 18 | 0 | 1 | 1 | 0 | 6 |
| Cecil A. - - - - - | 18 | 19 | 5 | 4 | 4 | 5 | 5 |
| Ken A. - - - - - | 8 | 22 | 0 | 7 | 4 | 3 | 11 |
| Androschko - - - - - | 14 | 16 | 4 | 5 | 3 | 1 | 7 |
| Betty B. - - - - - | 21 | 18 | 11 | 7 | 4 | 7 | 10 |
| Ernest B. - - - - - | 16 | 13 | 1 | 4 | 3 | 3 | 10 |
| Sylvester B. - - - - - | 14 | 28 | 4 | 5 | 3 | 1 | 10 |
| Delbert C. - - - - - | 12 | 37 | 1 | 5 | 7 | 2 | 2 |
| Junior C. - - - - - | 5 | 13 | 2 | 2 | 3 | 1 | 4 |
| Tim E. - - - - - | 11 | 14 | 3 | 1 | 2 | 0 | 7 |
| Lucy F. - - - - - | 16 | 18 | 3 | 4 | 2 | 6 | 6 |
| Barbara G. - - - - - | 15 | 28 | 2 | 4 | 4 | 2 | 10 |
| Jeanette G. - - - - - | 10 | 14 | 3 | 1 | 3 | 1 | 2 |
| Sidney K. - - - - - | 15 | 14 | 4 | 5 | 3 | 4 | 12 |
| Ken P. - - - - - | 18 | 19 | 3 | 3 | 1 | 4 | 10 |
| Schiefelbein - - - - - | 17 | 25 | 7 | 6 | 2 | 4 | 9 |
| June V. - - - - - | 19 | 16 | 7 | 5 | 4 | 5 | 9 |
| Lawrence W. - - - - - | 13 | 15 | 1 | 2 | 2 | 2 | 4 |
| Total - - - - - | 252 | 347 | 60 | 65 | 55 | 51 | 134 |
| Means - - - - - | 14. | 19.3 | 3.2 | 3.6 | 3.1 | 2.3 | 7.4 |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, O-GROUP,
GRADE 4, 1940

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|----------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Clarence A. - - - - | 2 | 11 | 0 | 0 | 1 | 1 | 1 |
| Charles A. - - - - | 15 | 13 | 3 | 2 | 4 | 2 | 6 |
| Marion A. - - - - | 19 | 21 | 6 | 5 | 6 | 4 | 6 |
| Buckner - - - - | 19 | 7 | 3 | 4 | 4 | 4 | 7 |
| Dorothy C. - - - - | 11 | 7 | 1 | 2 | 3 | 1 | 3 |
| Mary F. - - - - | 7 | 13 | 2 | 4 | 1 | 4 | 6 |
| Leona F. - - - - | 12 | 14 | 1 | 2 | 4 | 4 | 7 |
| Tommy H. - - - - | 8 | 12 | 2 | 2 | 4 | 2 | 4 |
| Billy H. - - - - | 19 | 22 | 7 | 8 | 10 | 5 | 10 |
| Tony I. - - - - | 13 | 19 | 7 | 4 | 4 | 3 | 5 |
| Ed J. - - - - | 20 | 26 | 13 | 7 | 7 | 5 | 10 |
| Virginia K. - - - - | 17 | 17 | 4 | 4 | 2 | 5 | 8 |
| Glenroy M. - - - - | 19 | 16 | 4 | 6 | 2 | 3 | 6 |
| Archer N. - - - - | 13 | 13 | 4 | 3 | 5 | 3 | 6 |
| Shirley O. - - - - | 13 | 19 | 5 | 4 | 2 | 4 | 6 |
| Geraldine R. - - - - | 16 | 25 | 8 | 4 | 4 | 5 | 6 |
| Edna R. - - - - | 18 | 23 | 6 | 4 | 5 | 6 | 10 |
| Frank R. - - - - | 14 | 17 | 7 | 5 | 4 | 5 | 6 |
| Alvin S. - - - - | 13 | 17 | 2 | 6 | 4 | 2 | 0 |
| Freda S. - - - - | 16 | 13 | 6 | 5 | 3 | 3 | 6 |
| Total - - - - | 303 | 325 | 91 | 81 | 79 | 71 | 119 |
| Means - - - - | 15. | 16.2 | 4.5 | 4. | 4. | 3.5 | 6. |

DIAGNOSTIC READING TEST RAW SCORES, FORM A, O-GROUP,
GRADE 4, 1941

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|----------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Leon A. - - - - - | 14 | 9 | 2 | 2 | 0 | 2 | 4 |
| Dorothy A. - - - - - | 18 | 19 | 2 | 7 | 0 | 2 | 7 |
| Jack B. - - - - - | 16 | 20 | 3 | 4 | 1 | 2 | 4 |
| Roy B. - - - - - | 8 | 8 | 0 | 3 | 3 | 0 | 4 |
| Bobby B. - - - - - | 19 | 15 | 5 | 4 | 3 | 5 | 7 |
| Gert B. - - - - - | 15 | 19 | 2 | 4 | 0 | 3 | 7 |
| Ronald B. - - - - - | 9 | 12 | 3 | 2 | 2 | 1 | 1 |
| Bernice B. - - - - - | 17 | 14 | 3 | 3 | 1 | 3 | 2 |
| Eileen C. - - - - - | 13 | 11 | 4 | 3 | 2 | 3 | 3 |
| Will F. - - - - - | 16 | 22 | 2 | 6 | 2 | 4 | 8 |
| Bobby F. - - - - - | 15 | 17 | 4 | 5 | 2 | 1 | 6 |
| Peter G. - - - - - | 8 | 8 | 0 | 2 | 3 | 0 | 5 |
| Lloyd G. - - - - - | 11 | 14 | 3 | 3 | 4 | 1 | 0 |
| Quentin L. - - - - - | 6 | 4 | 1 | 0 | 1 | 1 | 4 |
| John N. - - - - - | 4 | 11 | 2 | 2 | 1 | 1 | 3 |
| Eugene R. - - - - - | 12 | 15 | 4 | 5 | 2 | 2 | 2 |
| Oran W. - - - - - | 5 | 8 | 1 | 0 | 1 | 0 | 2 |
| Beverly Y. - - - - - | 10 | 9 | 0 | 2 | 1 | 1 | 4 |
| Carol L. - - - - - | 19 | 22 | 5 | 5 | 7 | 5 | 10 |
| Kenneth W. - - - - - | 11 | 28 | 4 | 5 | 1 | 1 | 7 |
| Total - - - - - | 246 | 285 | 50 | 67 | 37 | 38 | 90 |
| Means - - - - - | 12.3 | 14.2 | 2.5 | 3.3 | 1.8 | 1.9 | 4.5 |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 1-GROUP,
GRADE 6, 1940

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organization |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|--------------|
| Bud A. - - - - - | 24 | 24 | 10 | 7 | 8 | 8 | 11 |
| Virginia B. - - - - - | 21 | 15 | 11 | 7 | 9 | 6 | 9 |
| Richard B. - - - - - | 15 | 15 | 4 | 3 | 4 | 4 | 8 |
| Edna B. - - - - - | 22 | 23 | 11 | 8 | 9 | 9 | 9 |
| Betty C. - - - - - | 24 | 24 | 9 | 8 | 7 | 8 | 10 |
| Billy G. - - - - - | 14 | 12 | 5 | 5 | 8 | 4 | 8 |
| Walter H. - - - - - | 20 | 23 | 3 | 7 | 7 | 6 | 12 |
| Bernard L. - - - - - | 24 | 26 | 10 | 9 | 9 | 8 | 8 |
| Evelyn N. - - - - - | 23 | 23 | 8 | 8 | 9 | 7 | 10 |
| Betty O. - - - - - | 20 | 22 | 7 | 5 | 9 | 8 | 8 |
| Henrietta R. - - - - - | 21 | 24 | 9 | 7 | 10 | 7 | 12 |
| Kenneth R. - - - - - | 12 | 13 | 6 | 2 | 4 | 4 | 2 |
| Joyce R. - - - - - | 19 | 16 | 6 | 3 | 6 | 4 | 7 |
| Eugene S. - - - - - | 16 | 18 | 3 | 5 | 4 | 2 | 3 |
| James S. - - - - - | 15 | 16 | 8 | 6 | 3 | 5 | 9 |
| Total - - - - - | 290 | 295 | 110 | 93 | 107 | 94 | 126 |
| Means - - - - - | 19.3 | 19.6 | 7.4 | 6. | 7.2 | 6. | 8.3 |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 1-GROUP,
GRADE 5, 1942

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|-----------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Leon A. - - - - - | 14 | 17 | 6 | 6 | 2 | 2 | 4 |
| Dorothy A. - - - - - | 18 | 27 | 9 | 8 | 6 | 5 | 8 |
| Jack B. - - - - - | 21 | 23 | 6 | 6 | 8 | 5 | 9 |
| Roy B. - - - - - | 5 | 10 | 7 | 3 | 3 | 1 | 4 |
| Bob B. - - - - - | 19 | 18 | 6 | 5 | 4 | 5 | 9 |
| Gertrude B. - - - - - | 18 | 25 | 10 | 7 | 4 | 7 | 8 |
| Bernice B. - - - - - | 19 | 18 | 8 | 6 | 6 | 6 | 12 |
| Eileen C. - - - - - | 22 | 20 | 4 | 4 | 4 | 4 | 11 |
| William F. - - - - - | 21 | 22 | 8 | 8 | 7 | 6 | 12 |
| Bob F. - - - - - | 19 | 24 | 4 | 11 | 5 | 6 | 8 |
| Peter G. - - - - - | 16 | 15 | 5 | 2 | 5 | 4 | 9 |
| Lloyd G. - - - - - | 19 | 26 | 3 | 7 | 5 | 4 | 5 |
| Quentin L. - - - - - | 14 | 12 | 8 | 3 | 1 | 2 | 8 |
| Nickolai - - - - - | 10 | 18 | 5 | 4 | 3 | 3 | 7 |
| Eugene R. - - - - - | 21 | 22 | 11 | 7 | 4 | 8 | 12 |
| Alvin S. - - - - - | 18 | 22 | 8 | 6 | 9 | 7 | 6 |
| Oran W. - - - - - | 4 | 14 | 1 | 2 | 3 | 0 | 2 |
| Beverly Y. - - - - - | 16 | 16 | 6 | 4 | 5 | 3 | 8 |
| Total - - - - - | 294 | 359 | 115 | 99 | 84 | 78 | 142 |
| Means - - - - - | 16.3 | 19.9 | 6.4 | 4.9 | 4.7 | 3.8 | 7.9 |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 1-GROUP,
GRADE 5, 1940

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Betty A. - - - - - | 13 | 9 | 0 | 2 | 2 | 1 | 9 |
| Cecil A. - - - - - | 16 | 21 | 9 | 4 | 2 | 5 | 9 |
| Kenneth A. - - - - - | 0 | 13 | 1 | 1 | 2 | 2 | 4 |
| Melvin A. - - - - - | 15 | 21 | 4 | 7 | 7 | 3 | 4 |
| Betty B. - - - - - | 21 | 24 | 7 | 7 | 9 | 7 | 10 |
| Ernest B. - - - - - | 19 | 17 | 2 | 4 | 5 | 4 | 9 |
| Sylvester B. - - - - - | 17 | 19 | 2 | 4 | 0 | 4 | 8 |
| Delbert C. - - - - - | 13 | 21 | 3 | 4 | 7 | 3 | 6 |
| Junior C. - - - - - | 14 | 21 | 4 | 4 | 7 | 5 | 3 |
| Tim E. - - - - - | 9 | 9 | 0 | 2 | 1 | 3 | 4 |
| Lucy F. - - - - - | 20 | 16 | 6 | 3 | 6 | 6 | 9 |
| Barbara G. - - - - - | 16 | 26 | 6 | 6 | 8 | 3 | 7 |
| Jeanette G. - - - - - | 13 | 20 | 2 | 2 | 6 | 5 | 9 |
| Alfred H. - - - - - | 20 | 18 | 5 | 5 | 7 | 3 | 9 |
| Sidney K. - - - - - | 12 | 16 | 2 | 7 | 2 | 3 | 4 |
| Kenneth P. - - - - - | 16 | 20 | 5 | 5 | 3 | 3 | 7 |
| Fred S. - - - - - | 20 | 18 | 5 | 4 | 6 | 5 | 12 |
| June V. - - - - - | 28 | 24 | 11 | 5 | 8 | 8 | 9 |
| Lawrence W. - - - - - | 16 | 15 | 2 | 2 | 3 | 2 | 6 |
| Total - - - - - | 308 | 328 | 76 | 78 | 91 | 37 | 134 |
| Means - - - - - | 16.2 | 17. | 4. | 4.1 | 5.1 | 3.7 | 7.1 |

DIAGNOSTIC READING TEST RAW SCORES, FORM A, 1-GROUP,
GRADE 5, 1941

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Clarence A. - - - - - | 1 | 13 | 0 | 1 | 5 | 0 | 4 |
| Charles A. - - - - - | 19 | 14 | 5 | 4 | 3 | 4 | 7 |
| Marion A. - - - - - | 24 | 23 | 11 | 8 | 6 | 7 | 11 |
| Mary B. - - - - - | 21 | 21 | 7 | 6 | 4 | 7 | 9 |
| Dorothy C. - - - - - | 16 | 13 | 3 | 5 | 8 | 5 | 10 |
| Mary F. - - - - - | 17 | 17 | 6 | 4 | 3 | 5 | 7 |
| Leona F. - - - - - | 19 | 14 | 2 | 3 | 2 | 2 | 4 |
| Tom H. - - - - - | 11 | 13 | 0 | 3 | 4 | 1 | 5 |
| William H. - - - - - | 27 | 21 | 8 | 5 | 10 | 7 | 10 |
| Tom I. - - - - - | 21 | 22 | 9 | 5 | 6 | 7 | 10 |
| Edward J. - - - - - | 31 | 27 | 10 | 11 | 7 | 9 | 10 |
| Virginia K. - - - - - | 21 | 19 | 6 | 6 | 7 | 4 | 7 |
| Glen M. - - - - - | 20 | 17 | 10 | 6 | 6 | 5 | 10 |
| Archer N. - - - - - | 19 | 15 | 5 | 5 | 3 | 3 | 10 |
| Shirley O. - - - - - | 19 | 21 | 9 | 5 | 3 | 4 | 11 |
| Geraldine R. - - - - - | 24 | 23 | 4 | 7 | 8 | 7 | 8 |
| Edna R. - - - - - | 22 | 24 | 8 | 6 | 6 | 4 | 10 |
| Frank R. - - - - - | 14 | 19 | 9 | 5 | 7 | 7 | 10 |
| Freda S. - - - - - | 17 | 20 | 5 | 5 | 7 | 3 | 10 |
| Total - - - - - | 363 | 356 | 117 | 100 | 104 | 91 | 163 |
| Means - - - - - | 19.1 | 18.7 | 6.2 | 5.2 | 5.5 | 4.8 | 8.6 |

DIAGNOSTIC READING TEST RAW SCORES, FORM A, 2-GROUP,
GRADE 7, 1941

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Bud A. - - - - - | 35 | 22 | 15 | 8 | 8 | 9 | 10 |
| Virginia B. - - - - - | 36 | 30 | 16 | 12 | 10 | 10 | 9 |
| Richard B. - - - - - | 24 | 16 | 6 | 5 | 5 | 4 | 10 |
| Edna B. - - - - - | 32 | 30 | 13 | 10 | 8 | 10 | 10 |
| Betty C. - - - - - | 30 | 25 | 9 | 11 | 10 | 9 | 8 |
| Billy G. - - - - - | 20 | 14 | 7 | 5 | 7 | 5 | 6 |
| Walter H. - - - - - | 24 | 27 | 11 | 7 | 6 | 6 | 9 |
| Bernard L. - - - - - | 35 | 22 | 11 | 8 | 10 | 9 | 10 |
| Evelyn N. - - - - - | 29 | 21 | 10 | 5 | 8 | 7 | 12 |
| Betty O. - - - - - | 24 | 16 | 10 | 8 | 6 | 9 | 10 |
| Henrietta R. - - - - - | 33 | 26 | 20 | 10 | 10 | 10 | 12 |
| Kenneth R. - - - - - | 15 | 14 | 6 | 4 | 5 | 3 | 3 |
| Joyce R. - - - - - | 27 | 22 | 9 | 8 | 5 | 4 | 7 |
| Eugene S. - - - - - | 22 | 22 | 9 | 12 | 8 | 3 | 8 |
| James S. - - - - - | 24 | 11 | 7 | 4 | 5 | 2 | 6 |
| Total - - - - - | 410 | 319 | 159 | 117 | 111 | 99 | 130 |
| Means - - - - - | 27.3 | 21.2 | 11. | 7.8 | 7.4 | 6.7 | 8.7 |

DIAGNOSTIC READING TEST RAW SCORES, FORM A, 2-GROUP,
GRADE 6, 1941

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Betty A. - - - - - | 14 | 14 | 1 | 1 | 1 | 4 | 6 |
| Cecil A. - - - - - | 22 | 22 | 9 | 7 | 9 | 7 | 10 |
| Kenneth A. - - - - - | 8 | 16 | 2 | 1 | 1 | 0 | 6 |
| Melvin A. - - - - - | 25 | 25 | 9 | 8 | 2 | 6 | 9 |
| Betty B. - - - - - | 32 | 26 | 15 | 10 | 7 | 10 | 10 |
| Ernest B. - - - - - | 26 | 21 | 7 | 6 | 4 | 5 | 5 |
| Sylvester B. - - - - - | 25 | 23 | 6 | 6 | 7 | 6 | 9 |
| Delvert C. - - - - - | 19 | 20 | 7 | 6 | 4 | 3 | 9 |
| Junior C. - - - - - | 19 | 19 | 9 | 6 | 4 | 3 | 10 |
| Tim E. - - - - - | 18 | 17 | 5 | 2 | 3 | 4 | 7 |
| Lucy F. - - - - - | 25 | 21 | 11 | 11 | 9 | 8 | 11 |
| Barbara G. - - - - - | 24 | 25 | 5 | 9 | 7 | 6 | 9 |
| Jean G. - - - - - | 22 | 17 | 10 | 4 | 5 | 7 | 6 |
| Alfred H. - - - - - | 24 | 24 | 6 | 6 | 6 | 4 | 10 |
| Sidney K. - - - - - | 19 | 22 | 7 | 5 | 6 | 5 | 10 |
| Kenneth P. - - - - - | 22 | 20 | 8 | 7 | 4 | 7 | 9 |
| Schiefelbein - - - - - | 25 | 21 | 12 | 11 | 7 | 6 | 11 |
| June V. - - - - - | 27 | 23 | 10 | 9 | 9 | 8 | 9 |
| Lawrence W. - - - - - | 24 | 16 | 3 | 5 | 4 | 5 | 8 |
| Total - - - - - | 420 | 319 | 142 | 120 | 99 | 104 | 153 |
| Means - - - - - | 22.1 | 20.6 | 7.5 | 6.3 | 5.2 | 5.5 | 8. |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 2-GROUP,
GRADE 6, 1942

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Charles A. - - - - - | 21 | 16 | 8 | 6 | 5 | 4 | 7 |
| Marion A. - - - - - | 29 | 29 | 10 | 10 | 9 | 5 | 12 |
| Mary B. - - - - - | 22 | 28 | 8 | 6 | 7 | 7 | 11 |
| Dorothy C. - - - - - | 18 | 20 | 6 | 10 | 9 | 3 | 10 |
| Mary F. - - - - - | 18 | 20 | 8 | 8 | 5 | 3 | 8 |
| Leona F. - - - - - | 18 | 17 | 13 | 6 | 4 | 6 | 3 |
| Tom H. - - - - - | 18 | 20 | 5 | 5 | 7 | 4 | 7 |
| Billy H. - - - - - | 23 | 24 | 10 | 7 | 10 | 8 | 11 |
| Tom I. - - - - - | 23 | 34 | 14 | 8 | 7 | 7 | 8 |
| Edward J. - - - - - | 22 | 33 | 19 | 12 | 10 | 8 | 11 |
| Virginia K. - - - - - | 21 | 20 | 10 | 9 | 8 | 6 | 10 |
| Glen M. - - - - - | 20 | 22 | 9 | 9 | 8 | 8 | 9 |
| Archie N. - - - - - | 21 | 18 | 8 | 7 | 9 | 5 | 12 |
| Shirley O. - - - - - | 16 | 20 | 6 | 7 | 7 | 6 | 8 |
| Geraldine R. - - - - - | 21 | 21 | 10 | 8 | 8 | 5 | 12 |
| Edna R. - - - - - | 27 | 29 | 11 | 10 | 9 | 8 | 10 |
| Frank R. - - - - - | 20 | 27 | 7 | 6 | 7 | 7 | 10 |
| Freda S. - - - - - | 15 | 24 | 8 | 6 | 7 | 5 | 8 |
| Total - - - - - | 373 | 422 | 160 | 140 | 136 | 105 | 167 |
| Means - - - - - | 20.7 | 23.4 | 8.9 | 7.8 | 7.5 | 5.8 | 9.3 |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 3-GROUP,
GRADE 8, 1942

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Bud A. - - - - - | 29 | 31 | 18 | 12 | 10 | 9 | 12 |
| Virginia B. - - - - - | 28 | 27 | 15 | 11 | 10 | 9 | 10 |
| Richard B. - - - - - | 18 | 16 | 6 | 5 | 6 | 5 | 8 |
| Edna B. - - - - - | 32 | 24 | 13 | 12 | 10 | 8 | 11 |
| Betty C. - - - - - | 31 | 26 | 17 | 11 | 9 | 9 | 10 |
| Billy G. - - - - - | 22 | 18 | 10 | 9 | 9 | 6 | 11 |
| Walter H. - - - - - | 26 | 28 | 13 | 11 | 9 | 6 | 12 |
| Bernard L. - - - - - | 34 | 29 | 10 | 11 | 10 | 8 | 12 |
| Evelyn N. - - - - - | 31 | 23 | 9 | 10 | 10 | 8 | 12 |
| Betty O. - - - - - | 23 | 27 | 11 | 10 | 10 | 9 | 8 |
| Henrietta R. - - - - - | 30 | 25 | 19 | 10 | 10 | 10 | 12 |
| Kenneth R. - - - - - | 9 | 18 | 6 | 5 | 5 | 4 | 8 |
| Joyce R. - - - - - | 25 | 20 | 13 | 7 | 10 | 8 | 7 |
| Eugene S. - - - - - | 16 | 20 | 11 | 7 | 8 | 4 | 9 |
| James S. - - - - - | 17 | 17 | 11 | 9 | 6 | 6 | 8 |
| Total - - - - - | 371 | 349 | 182 | 148 | 132 | 109 | 150 |
| Means - - - - - | 24.7 | 23.2 | 12. | 9.9 | 8.8 | 7.3 | 10. |

DIAGNOSTIC READING TEST RAW SCORES, FORM B, 3-GROUP,
GRADE 7, 1942

| Pupils | Word meaning | Rate | Fact material | Total meaning | Central thought | Following directions | Organi- zation |
|------------------------|-----------------|------|------------------|------------------|--------------------|-------------------------|-------------------|
| Betty A. - - - - - | 14 | 16 | 2 | 2 | 1 | 2 | 6 |
| Cecil A. - - - - - | 29 | 34 | 16 | 11 | 6 | 7 | 7 |
| Melvin A. - - - - - | 18 | 27 | 10 | 11 | 9 | 5 | 8 |
| Betty B. - - - - - | 28 | 28 | 15 | 11 | 9 | 10 | 12 |
| Ernest B. - - - - - | 22 | 21 | 8 | 8 | 4 | 5 | 11 |
| Sylvester B. - - - - - | 18 | 34 | 13 | 10 | 8 | 7 | 10 |
| Delbert C. - - - - - | 19 | 23 | 10 | 7 | 7 | 4 | 7 |
| Junior C. - - - - - | 20 | 19 | 10 | 5 | 6 | 5 | 9 |
| Tim E. - - - - - | 17 | 19 | 7 | 6 | 6 | 4 | 5 |
| Lucy F. - - - - - | 25 | 27 | 13 | 10 | 7 | 6 | 11 |
| Barbara G. - - - - - | 25 | 24 | 9 | 9 | 9 | 7 | 10 |
| Jean G. - - - - - | 20 | 25 | 8 | 4 | 6 | 7 | 6 |
| Alfred H. - - - - - | 23 | 24 | 9 | 6 | 8 | 6 | 10 |
| Sidney K. - - - - - | 19 | 21 | 9 | 9 | 8 | 6 | 9 |
| Ken P. - - - - - | 20 | 25 | 8 | 7 | 10 | 5 | 9 |
| Fred S. - - - - - | 25 | 26 | 13 | 11 | 7 | 8 | 12 |
| June V. - - - - - | 33 | 40 | 17 | 11 | 8 | 8 | 10 |
| Lawrence W. - - - - - | 22 | 20 | 6 | 5 | 7 | 6 | 10 |
| Total - - - - - | 377 | 453 | 183 | 143 | 126 | 108 | 162 |
| Means - - - - - | 20.5 | 24.6 | 10.2 | 7.9 | 6.4 | 6. | 9. |

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