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Differences and relationships between reading achievement and certain aptitudes of upper elementary pupils

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CHAPTER I
INTRODUCTION

Rationale - Success in special abilities and physical factors affects personality indirectly through the way they are appreciated by the social group. Society has developed a keener appreciation of the importance of intelligent reading. A person who would become a good reader must develop basic reading skills and techniques and must be versatile in using them. The ability to read effectively helps pupils to succeed in school; hence, they need to become facile readers in order to become successful learners.

Reading constitutes an important objective of the elementary school. Since the act of reading makes up a large part of the school life, a person should have good skills in listening and observing. Auditory, visual, motor, and language aptitude tests should be given to determine skills and levels of each pupil.

Successful reading at any level depends upon readiness for the type of reading to be done. Readiness applies to the primary and upper grades. It is a factor to be considered throughout the elementary and secondary school life of the pupil. Readiness consists of more than the mere ability to pronounce words important as that may be. Unless the child has the proper background and vocabulary necessary for understanding what he is to read, he cannot succeed.

Studies have been made on the relationship between reading achievement, general achievement, intelligence, and aptitude. Surveys, tests, and experiments have indicated that the inability to cope with reading
results in inferiority complexes of social and emotional factors of the children's performances.

Strong appeal should be made to visual imagery in presenting a word. Some actual evidence and considerable authoritative opinions show that people differ according to the relative effectiveness of visual, auditory, motor, and language imagery.

The sensory capacities of vision and hearing are important for effective reading. Children with inferior auditory capacities do not inevitably become poor readers. But there should be a detection of this factor and recommendations to adjust this deficiency.

Educators recognize the need of all pupils in all grades for guidance in reading according to needs. A basic developmental program provides instruction on all grade levels in the habits, skills, and abilities necessary to adequate control of reading as means of learning. These skills vary, but essentially are readiness skills, comprehension skills, vocabulary meanings, word analysis skills, organization skills, interpretation skills, and location skills according to Whipple.¹

This study will be concerned with finding what differences and relationships exist between reading achievement and aptitudes performance of fifteen pupils in the fourth grade, fifteen pupils in the fifth grade, fifteen pupils in the sixth grade and how this relationship may affect methods of instruction in reading.

Evolution of Problem.— An alarming number of children fail to make progress in learning to read. There are several factors to take under consideration. Some physical factors that bear an obvious relation to reading are to be found in the function of visual, auditory, motor, and language aptitudes. The important thing is to recognize the deficiencies and then to adjust the reading instruction accordingly.

Adequate teaching of the fundamentals of reading in the fourth, fifth, and sixth grades consists of carrying on certain teaching and learning activities which, from the teacher's point of view, may be called instructional jobs. The most important of the jobs are (1) teaching selections in the reader, (2) providing training in reading for various purposes, (3) establishing independence in identifying strange printed words, (4) improving pupils' reading through skillful teaching of various school subjects, (5) developing independence in coping with meaning difficulties, (6) locating and removing the pupils' reading deficiencies, and (7) measuring pupil achievement.

The writer has been concerned with teaching and guiding pupils in upper elementary grades for several years. The reading program in grades four through six becomes to a large degree an extension of the developmental program begun in the primary years. Beginning with grade four, children move into a period of ever increasing diversification of learning wherein reading is the essential tool. The reading program in these grades depends upon how much progress has been made during the primary grades.

The reading ability of several pupils in the upper elementary grades in our school was considerably low. It seemed as if the problem of reading grew more critical as the grade levels advanced. The teachers were disturbed about the reading achievement of these pupils. Our In-Service-Training meetings for years were to find ways to improve the pupils' reading abilities and try to find remedies for their difficulties.

Inventories of reading materials and teaching aids were taken; more materials and aids were secured. All pupils were tested for their actual learning levels at the beginning of the school term. Workshops in reading were organized with the help of reading resource consultants for the teachers.

The pupils were taught on their levels of learning instead of their grade levels. Each child had the same opportunity to make progress in reading to his ability. There was only one pupil in the upper grades with a severe deficiency of visual; this pupil was tested for his deficiency and was given textbooks with larger printed words. He was also supervised by a partial seeing resource consultant. There were some children tested for mental retardation by the recommendation of their teachers. We were not able to get a special education class for them but hoping we will have one the following term.

Near the closing of the school term all of the pupils were tested. Some of the children with low reading levels showed some improvements; still others made no degree of progress on their learning levels. The writer hoped that the study would be of some value for successful achievement in reading.
Statement of Problem.— The problem involved in this study was to ascertain differences and relationships between reading achievement and visual, auditory, motor, and language aptitudes of upper elementary pupils.

Purpose of the Study.— The purpose of this study was to answer the following questions concerning the pupils' performances:

1. What were their specific and average performances on the test of achievement in reading?
2. What were their levels of visual aptitude?
3. What were their levels of auditory aptitude?
4. What were their levels of motor aptitude?
5. What were their levels of language aptitude?
6. How did the grades compare in these respective areas?
7. What were the differences and relationships between reading achievement and
   a. visual aptitude
      1. letter memory
      2. form memory
   b. auditory aptitude
      1. letter memory
      2. discrimination and orientation
   c. motor aptitude
      1. copying text
      2. crossing out letters
   d. language aptitude
      1. vocabulary
8. What implication do these findings provide for work with these pupils in reading achievement?
Method of Research.—The Descriptive Survey Method of research employing standardized tests and statistical analysis was used in conducting this study.

Description of Subjects.—The subjects involved in this study were forty-five pupils in the fourth, fifth, and sixth grades who were enrolled at Lanier High School, Lanett, Alabama. The reading levels of the subject ran from a low of grade two to a high of grade nine, as determined by the Reading Achievement Tests of the Monroe—Sherman Group Diagnostic Reading Aptitude and Achievement Tests.

Statistical Measures Used.—The statistical measures which were employed to fulfill the purposes of this study were as follows:

1. An average grade score of each pupil was obtained from the Metropolitan Reading Achievement Test.

2. The general status of reading achievement was determined by finding the range, mean, median, standard deviation, and the standard error of the mean from the Metropolitan Reading Achievement Test: Form T.

3. The levels and patterns of tested achievement were organized into frequency tables and the mean, median, standard deviation, and the standard error of the mean were calculated.

4. The range, mean, median, standard deviation, and the standard error of the mean were obtained from the scores on the Monroe—Sherman Visual, Auditory, Motor, and Language Aptitude Tests and treated in the same manner as the general reading test.

5. The relationships and differences between reading achievement and visual, auditory, motor, and language aptitudes were determined through the use of the Pearson-Product-Moment co-efficient of correlation. The standard error of "r" was used to test the significance of "r", and the "r's" were converted to "z's" in order to test any differences between the resulting correlations.

6. The educational implications as stated in this study were arrived through the findings.
Description of Instruments.— The Monroe-Sherman Group Diagnostic Reading Aptitude and Achievement Test was originally composed by Dr. Marion Monroe and first published and copyrighted by the C. H. Nevins Printing Company, 1939. Later Eva Edith Sherman joined Dr. Monroe at which time slight changes were made in the test. The test according to Wilson Barker is extensively ordered and reordered by grade schools, colleges, and universities throughout the United States, Canada and Christ Church, New Zealand.

The Monroe-Sherman Visual Aptitude Tests include two sections: Letter Memory, which is composed of nonsense words that were to be written by the pupils after observing each word for five seconds; and Form Memory measured the pupils' abilities to remember designs showed to them on a set of cards for ten seconds. The pupils were to observe each card and then draw what they had seen.

The Monroe-Sherman Auditory Aptitude Tests include two sections. In the Letter Memory test the examiner spells out sixteen nonsense words and allows time for pupils to write each word after it is spelled aloud. The Discrimination and Orientation section is a test to see how well the pupils can listen. The examiner says the words which the pupils were to listen for, then pronounces four words. The pupils were to draw a ring around the "x" that represents the listening word.

The Monroe-Sherman Motor Aptitude Tests include two sections. The Copying Text has a little story for the pupils to rewrite quickly and

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plainly in a certain length of time. The Crossing-Out-Letters section requires pupils to cross out the letter "a". In every other word there is a letter "a".

The Monroe-Sherman Language Aptitude Test includes twenty-eight groups of words, some pairs of which made good sense, while others are foolish. The pupils listen while the examiner reads each group aloud. Then, they are to decide which pair of words in the group makes the best sense and draw a line under that pair.

The Metropolitan Reading Achievement Test: Intermediate Grade: Form I was used to determine the general status of the reading achievement of the subject of this study. It is one a series of five tests which provide reliable measures of individual achievement. The purposes of this test are: (1) to determine the achievement level of each pupil in reading (2) to evaluate class, school, and community achievement in reading at each grade level (3) to help the teacher in evaluating her teaching methods objectively; and, (4) to provide an objective and reliable basis for classification and grouping for instructional purposes. The test includes comprehension of sentences and paragraphs. The pupils were instructed to read the sentence or paragraph and select the word that should be in the blank and also write the word in the parentheses at the side of the page.

Procedure.- The study included the following operational steps:

1. Literature pertinent to the study was reviewed, summarized and presented in the thesis copy.

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2. The data necessary for the study were collected through the use of the following instruments;

a. Monroe-Sherman Group Diagnostic Reading Aptitude and Achievement Test
   1. Visual
   2. Auditory
   3. Motor
   4. Language

b. Richard D. Allen, et al., Metropolitan Reading Achievement Test, Elementary Battery; Form T

3. The data derived from the tests were assembled into appropriate figures, tables, and graphs, as determined by the study.

4. The basic data which were presented in the tables were statistically treated through the computation of the mean, median, standard deviation, standard error of the means, Pearson's Product-Moment co-efficient of correlation, the standard error of this co-efficient and Fisher's "z".

5. The findings, conclusions, implications, and recommendations as derived from the data were written and constitute the content of the third chapter of this study.

**Limitations of the Study.**—The limitations of the study are indicated below:

1. The findings of this study were limited to the incidental sample studied and cannot be generalized to a larger population.

2. The following tests used were limitations as the authors do not claim that the tests measure all desirable aspects of the areas under consideration. They include:

   a. The Monroe-Sherman Group Diagnostic Reading Aptitude and Achievement Tests

   b. The Metropolitan Reading Achievement, Elementary Battery; Form T

3. The pupils tested had limited experiences with standardized tests.
Survey of Related Literature.— The survey of literature concerns itself with the differences and relationships that exist between reading achievement and visual, auditory, motor, and language performances.

Broome states that a marked correspondence exists between academic intelligence, the ability to learn, reading achievement and comprehension of printed materials. Consideration must be given to vocabulary burden in relation to children's abilities in the selection of reading material for their uses.

Proficient reading depends upon the acquisition and versatile application of several intricately co-ordinated skills. Because the reading process is so complex, there are many opportunities for unfortunate complication to impede its growth. Various factors, operating singly or more often together, may hold up further progress in reading. The search for a single factor or cause of disability has rarely proved to be sufficient. Ordinarily several factors are involved; each contributing to the difficulty as part of a pattern, according to Bond and Tinker.

Writers maintain that readiness for reading can be greatly facilitated through specific program of guidance and correction. Experiments show that such function as observation, visual discrimination, range of ideas, extent of vocabulary, facility in association of ideas in problem


solving, and the desire to learn to read, develop rapidly under appropriate guidance, according to Gray.

Investigation by Durrell, Sullivan, and Murphy led them to conclude that lack of auditory discrimination is an important factor producing failure in beginning reading.

Bond and Wagner state that visual and auditory appraisals of all children should be made. In order to teach reading effectively at any level it is necessary for the teacher to know which children are handicapped by visual or auditory deficiencies to make adjustments for them. These appraisals should do more than give an estimate of which children are to have trouble with reading and which ones are not. The appraisal should be both diagnostic and predictive in nature. They should help the teacher to gain insight into the instructional readiness to be built.

Thompson made a study to determine the relationship between word discrimination abilities and reading comprehension. The writer concluded that there was a significant relationship between reading comprehension and word discrimination; between vowel aspects of word discrimination, between reading comprehension and consonant aspects of word discrimination. There was no relationship between reading comprehension and the addition, and omissions aspects of word discrimination.

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There may be a wide range of reading achievements among the individuals of one class; there is usually a positive correlation among the developmental factors for any one child. McCarthy\(^1\) points out that language development is closely allied to general maturity. The teacher can expect mature reading only from children who have had a wide background of experience and desirable social and emotional maturity for their particular level. In general there is a positive relationship between reading achievement and general physical, mental and social development and among the various reading achievements themselves.

Research studies dealing with the function of vision in reading have been of two general types: (1) studies of behavior of the eyes during the process of reading and (2) studies of visual defects associated with reading difficulty. Some writers maintain that visual disturbances are largely responsible for reading disabilities, while others take the opposite view and maintain that there is no relation between the two. Another group believes that visual disturbances are one of many factors which may be operative in any case of reading disability. A few writers have implied that visual disturbances and poor reading have a common cause, while it is inferred by others that certain types of visual anomalies may be produced by a successful reading adaptation reported Robinson.\(^2\)

A study by Steinbaum and Kurk who gave the Keiptone Visual Skill Test to 100 fifth and sixth grade pupils found that the average readers

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tended to surpass poorer readers in visual performance. Pupils with high I. Q. tend to surpass, low I. Q. in visual performance and that far point fusion is associated positively with above average readers with high I. Q., summarized by Gray. ¹

All the writers agreed that vision should be considered in the individual diagnosis of poor readers. The real issue seems to be a matter of emphasis on the etiology of reading disability.

Auditory memory span is a significant factor in learning to read. ² Monroe states that children who are taught to read from sentences and stories as units must be able to retain the stories in order to associate them accurately with the words of the text. A study of the literature shows that valid and reliable measures of auditory memory span should be established and that application of these devices might be of value in a study of seriously retarded readers.

Robinson ³ states that some children are unable to hear sounds, other children hear very well but are unable to discriminate between sounds which are similar; still others hear and discriminate but fail to remember the sounds, and these are said to have "short auditory memory spans" for sounds.


³Helen Robinson, op. cit., p. 50.
In studying reading readiness, Gates and Bond\(^1\) found a low correlation between hearing loss and final reading achievement, but the pupils in the near failing group showed a greater amount of hearing loss than the whole group. Auditory discrimination was considered in relation to reading failure by only a few investigators, although a positive relationship was found in these instances. No valid measure of auditory memory span has been established. The possibility of a relationship between auditory memory span and reading should be considered.

There probably is some degree of relationship between motor control and readiness for reading. In fact, oculomotor control, motor speed and steadiness are included in the Monroe Reading Aptitude Test. Reading activities usually require precise oculomotor control for making rapid and accurate fixations, fairly accurate eye-hand control for pencil and paper activities and some general motor control for turning pages and the careful handling of books. Defects in motor control range all the way from minor motor inco-ordinations to paralysis. Extreme deficiencies in motor control should be analyzed by a neurologist and a clinical psychologist, for a damaged nervous system may contribute to language difficulties, according to Betts.\(^2\)

Burton\(^3\) states that research and considerable experimental work have been done in an attempt to establish the relationship between laterality

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\(^1\)Arthur I. Gates & Guy Bond, "Reading Readiness," Teachers College Record, May, 1945; Vol. 37; No. 8, pp. 679-685.


and the ability to speak, read, and write. As might be expected, large numbers of the available studies deal with pupils at intermediate or upper grade levels and comparatively few with younger children. Research is still progressing and it is hoped that the whole matter of importance of laterality at reading levels will be clarified relatively soon.

Walthall's study concluded that the lowest performances of the pupils were visual letter memory and language vocabulary. The reading aptitude and achievement tests were interpreted in percentile ranks and the aptitudes mentioned fell in the 10th percentile rank, and the highest performances were the motor cross out letters. The pupils weakness in reading revealed that experimental background, certain educational limitations and language deficiencies were the main causal factors.¹

Much has been written concerning the importance of the factors that can contribute to reading achievement. Recent studies lead to the conclusion that readiness is a developmental condition that many factors have an effect and that they may function in different combinations.

Summary of Related Literature.— The review of literature pertinent to the study from the standpoint of reading achievement and visual, auditory, motor, and language aptitudes of children in the fourth, fifth and sixth grades appeared to emphasize such principles as indicated below:

1. A marked correspondence exists between academic intelligence, the ability to learn, reading achievement and comprehension of printed materials.

2. Readiness for reading can be greatly facilitated through specific program of guidance and correction.

3. Lack of auditory discrimination is an important factor in producing failure in beginning reading.

4. Children need visual and auditory appraisals in order to teach reading effectively at any level.

5. Reading achievements among the individuals of one class may have a wide range.

6. Visual aptitudes should be considered in the individual diagnosis of poor readers.

7. Valid and reliable measures of auditory span should be established and applications of these devices might be of great value in a study of seriously retarded readers.

8. Extreme deficiencies in motor control may contribute to language difficulties.

Place of the Present Study to the Review of Related Literature.-

The review of related literature made two distinct contributions to the present study. First, it furnished the conceptual background for it, thereby influencing selection of instruments and basic implications drawn from the findings. Secondly, it identified certain points at which the present study might depart from previous designs and make some contributions. Specifically, the present study has emphasis upon the various aspects of reading achievement and its relations to visual, auditory, motor, and language aptitudes.

The following chapter reports the specific findings of the study.
CHAPTER II

PRESENTATION AND INTERPRETATION OF DATA

Introductory Statement.—The problem involved in this study was to ascertain the differences and relationships between reading achievement and certain aptitudes in the upper elementary grades. This chapter presents and interprets data required by the purpose of the study. Subsequent sections answer each question raised in Chapter I.

Results of Performance of Fourth Grade Pupils on Test of Reading Achievement.—The results of the performance of the subjects of this study on the Metropolitan Reading Achievement Test are presented in Table 1 and Figure 1. The scores ranged from 21 to 58, with the highest possible score being 74. The median score was 35.50; the mean, 37.50; the standard error of the mean, 4.06; and the standard deviation, 15.20. Six cases were above the mean; eight cases below the mean; and, one case within the class interval containing the mean. These data showed that in distribution of reading achievement the group approximated normality, and they indicated further that approximately 68.26 per cent of cases fell between the limits of 22.30 and 52.70. A comparison of these data with the test norms indicated that these pupils had an average grade placement in reading achievement of 4.3. The lowest grade equivalent within the group was 3.5; the highest grade equivalent within the group was 5.9. The comparison showed furthermore, that this group of pupils averaged about six months below the standardized level of expectancy for their grade.
TABLE 1

SUMMARY OF THE DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE FOURTH GRADE ON THE METROPOLITAN READING ACHIEVEMENT TEST

<table>
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<th>Scores</th>
<th>Frequency</th>
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<td>52-55</td>
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</tr>
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<td>0.00</td>
</tr>
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<td>6.67</td>
</tr>
<tr>
<td>20-23</td>
<td>2</td>
<td>13.33</td>
</tr>
</tbody>
</table>

Total 15

Range 37
Mean 37.50
Median 35.50
Sigma 15.20
S.E.M. 4.06
Figure 1.—Frequency Polygon of the scores made by the fifteen subjects in the fourth grade on the Metropolitan Reading Achievement Test.
Results of the Performance of the Fifth Grade Pupils on Test of Reading Achievement.— The results of the performance of the subjects of this study on the Metropolitan Reading Achievement Test are presented in Table 2 and Figure 2. The scores ranged from 33 to 62, with the highest possible score being 74. The median score was 52.50; the mean, 50.80; the standard error of the mean, 2.30; and the standard deviation, 8.61. Seven cases were below the mean; seven cases were above the mean; and, one case within class interval containing the mean. The data showed that in distribution of reading achievement the group's performance was approximately normal; and indicated that approximately 68.26 per cent of the cases fell between the limits of 42.19 to 59.41. When these data were compared with the norms of the test it was found that the average grade level of achievement for the group was 5.2. The lowest grade equivalent within the group was 4.0; the highest grade equivalent within the group was 6.5. A further study showed that the group's average level of achievement was about seven months below the standardized level of expectancy for their grade.

Results of the Performance of Sixth Grade Pupils on Test of Reading Achievement.— The results of the subjects of this study on the Metropolitan Reading Achievement Test are presented in Table 3 and Figure 3. The scores ranged from 16 to 65, with the highest possible score being 74. The median score was 56.50; the mean, 53.17; the standard error of the mean, 3.95; and the standard deviation, 14.77. Five cases were below the mean; nine cases were above the mean; and one case was within the class
### TABLE 2

**SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECTS IN THE FIFTH GRADE ON THE METROPOLITAN READING ACHIEVEMENT TEST**

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<td>57-59</td>
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<td>6.67</td>
</tr>
<tr>
<td>48-50</td>
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</tr>
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<td>1</td>
<td>6.67</td>
</tr>
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<td>0.00</td>
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<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>27</td>
</tr>
<tr>
<td>Mean</td>
<td>50.80</td>
</tr>
<tr>
<td>Median</td>
<td>52.50</td>
</tr>
<tr>
<td>Sigma</td>
<td>8.81</td>
</tr>
<tr>
<td>S. E. M.</td>
<td>2.30</td>
</tr>
</tbody>
</table>
Figure 2.—Frequency Polygon of the scores made by the fifteen subjects in the fifth grade on the Metropolitan Reading Achievement Test.
interval containing the mean. The data showed that in distribution of
reading achievement the group's performance was approximately normal; and
indicated that approximately 68.26 per cent of the cases fell between the
limits of 38.30 to 67.94. When these data were compared with the norms
of the test it was found that the average grade level of achievement for
the group was 5.9. The lowest 3.0; the highest grade equivalent within
the group was 71. Thus the group's average level of performance was
averaged about 1 year and 7 months below the standardized level of expect-
ancy for their grade.

Results of Performance of Pupils on Tests of Visual Aptitude.— Tables
4, 5, and 6; and, Figures 4, 5, 6, 7, 8, and 9 present the data concerning
the pupils' performance on the Monroe-Sherman Visual Aptitude Test 1 and
2. The range of scores obtained by the fourth grade on section of letter
memory was from 5 to 14; the median was 10.13; the mean, 10.67; the stan-
dard error of the mean, .44; and the standard deviation, 1.66. There were
nine cases below the mean; six cases above the mean. There was not a case
within the class interval containing the mean. According to these data the
distribution of the group's performance was approximately normal; and they
further indicated that about 68.26 per cent of the cases fell within the
limits of 9.01 and 12.33. A comparison of these data with the norms of
the test showed that these pupils' mean level of visual aptitude for let-
ter memory was at the 70th percentile. The comparison indicated that the
group's average level of visual aptitude for letter memory was a high
level of expectancy for fourth grade pupils.
### TABLE 3

**SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECTS IN THE SIXTH GRADE ON THE METROPOLITAN READING ACHIEVEMENT TEST**

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</tr>
<tr>
<td>60-64</td>
<td>3</td>
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<td>0.00</td>
</tr>
<tr>
<td>40-44</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>35-39</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>30-34</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>25-29</td>
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<td>20-24</td>
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</tr>
<tr>
<td>15-19</td>
<td>1</td>
<td>6.67</td>
</tr>
</tbody>
</table>

| Total  | 15        |
| Range  | 49        |
| Mean   | 53.17     |
| Median | 56.50     |
| Sigma  | 14.77     |
| S. E. M. | 3.95   |
Figure 3.—Frequency Polygon of the scores made by the fifteen subjects in the sixth grade on the Metropolitan Reading Achievement Test.
The data relative to the fourth grade pupils' performance on the form memory section of the visual test are shown in Table 4 and Figure 5. The range of scores was from 5 to 14; the median, 10.75, the mean, 10.53; the standard error of the mean, 0.88; and the standard deviation, 3.30. Seven cases were below the mean; six cases above the mean and two cases were within the class interval containing the mean. These data showed that in distribution of visual aptitude for form memory these pupil approximated normality; and indicated, further, that approximately 68.26 per cent of the cases fell between the limits of 7.23 to 13.83. The data showed that in distribution of visual aptitude for form memory the average performance of the pupils was at the 90th percentile. Comparison show that the mean level of performance for this group of pupils was a high average according to the standardized level of expectancy for their grade level.

The results of the fifth grade pupils' performance on the letter memory section of the visual aptitude test are shown in Table 5 and Figure 6. The scores ranged from 5 to 15; the median, 11.75; the mean, 11.40; standard error of the mean, 0.83; and the standard deviation, 3.12. There were eight cases above the mean; five cases below the mean; and, two cases within the class interval containing the mean. The data indicated that in distribution of visual aptitude for letter memory the pupils approximated normality; and about 68.26 per cent of the cases fell between the limits of 8.28 and 14.52. A comparison of these data with the norms of the test showed that these pupils' mean level of visual aptitude for letter memory was at the 40th percentile. Further comparison showed that
TABLE 4

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE FOURTH GRADE ON THE MONROE-SHERMAN VISUAL APTITUDE TEST 1 AND TEST 2

<table>
<thead>
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<th>Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
<th>Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
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<td>14.5-15.5</td>
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<td>6.67</td>
<td>14.5-15.5</td>
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<td>13.33</td>
</tr>
<tr>
<td>13.5-14.5</td>
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<td>6.67</td>
<td>13.5-14.5</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>12.5-13.5</td>
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<td>6.67</td>
<td>12.5-13.5</td>
<td>1</td>
<td>6.67</td>
</tr>
<tr>
<td>11.5-12.5</td>
<td>3</td>
<td>20.00</td>
<td>11.5-12.5</td>
<td>3</td>
<td>20.00</td>
</tr>
<tr>
<td>10.5-11.5</td>
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<td>0.00</td>
<td>10.5-11.5</td>
<td>2</td>
<td>13.33</td>
</tr>
<tr>
<td>9.5-10.5</td>
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<td>6.67</td>
</tr>
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<td>7.5-8.5</td>
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<td>6.67</td>
<td>5.5-6.5</td>
<td>1</td>
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</tr>
</tbody>
</table>

Total 15
Range 9
Mean 10.67
Median 10.13
Sigma 1.66
S. E. M. .44

Total 15
Range 9
Mean 10.53
Median 10.75
Sigma 3.30
S. E. M. .88
Figure 4.—Frequency Polygon of the scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Visual Aptitude Test 1.
Figure 5.—Frequency Polygon of the scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Visual Aptitude Test 2.
the mean level of performance for this group of pupils was an average performance according to the standardized level of expectancy of their grade level.

The results of the fifth grade pupils' performance on the form memory section of the visual aptitude test are shown in Table 5 and Figure 7. The range of scores was from 4 to 15. The median, 13.75; the mean, 12.60; the standard error of the mean, 1.03; and standard deviation, 3.86. There were eight cases above the mean; seven cases below the mean and not any cases within the class interval containing the mean. These data showed that in distribution of visual aptitude for form memory the group approximated normality, and they indicated further that approximately 68.26 per cent of the cases fell between the limits of 8.74 and 16.46. A comparison of these data with the norms of test showed that the pupils mean level of visual aptitude for form memory was at the 90th percentile. Further comparison showed that the mean level of performance for this group was a high average performance according to the standardized level of expectancy of their grade level.

The results of the sixth grade pupils' performance on the letter memory section of the visual aptitude test are shown in Table 6 and Figure 8. The range of scores was from 4 to 14; the median, 12.25; the mean, 11.73; the standard error of the mean, .87; and standard deviation, 3.34. There were seven cases above the mean; six cases below the mean and two cases within the class interval containing the mean. These data indicated that approximately 68.26 per cent of the scores fell between the limits of
### Table 5

**Summary of Data Derived from the Results of the Performance of the Fifteen Subjects in the Fifth Grade on the Monroe-Sherman Visual Aptitude Test 1 and Test 2**

<table>
<thead>
<tr>
<th>Scores</th>
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<th>Per Cent</th>
<th>Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
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<td></td>
<td><strong>Total</strong></td>
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<td></td>
<td><strong>Range</strong></td>
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<td></td>
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<tr>
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<td></td>
<td><strong>Mean</strong></td>
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<td><strong>Median</strong></td>
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<td><strong>Median</strong></td>
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</tr>
<tr>
<td><strong>Sigma</strong></td>
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<td><strong>Sigma</strong></td>
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</tr>
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<td><strong>S.E.M.</strong></td>
<td><strong>1.03</strong></td>
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Figure 6.--Frequency Polygon of the scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Visual Aptitude Test 1.
Figure 7.—Frequency Polygon of the scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Visual Aptitude Test 2.
8.39 to 15.07. When compared with the test norms, these data indicated that the group's level of achievement in the letter memory section of the visual aptitude test was at the 30th percentile. Further study of the test norm revealed that the average level of expectancy was low average for their grade.

Table 6 and Figure 9 present the results of the sixth grade pupils' performance on the form memory section of the visual aptitude test. The scores ranged from 7 to 15; the median was 12.75; the mean, 12.27; standard error of the mean, .94; and standard deviation, 3.51. There were six cases above the mean; seven cases below the mean and two cases within the class interval containing the mean. These data showed that approximately 68.26 per cent of the cases fell between the limits of 8.76 and 15.78. According to these data, when compared with test norms, they showed that the group's average level of achievement in the form memory section was at the 90th percentile. Further comparison showed that the mean level of performance for this group was high average performance to the standardized level of expectancy of their grade level.

Results of the Performance of the Pupils on Tests of Auditory Aptitude.- Tables 7, 8, and 9; and, Figures 10, 11, 12, 13, 14, and 15 present the data concerning the pupils' performance on the Monroe-Sherman Auditory Aptitude Test 1 and Test 2. The range of scores obtained by the fourth grade on section of letter memory was from 5 to 10; the median was 9.92; the mean, 9.60; the standard error of the mean, .32; and standard deviation, 1.21. Four cases were above the mean; five cases were below
TABLE 6

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE SIXTH GRADE ON THE MONROE-SHERMAN VISUAL APPTITUDE TEST 1 AND TEST 2

<table>
<thead>
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<th></th>
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</thead>
<tbody>
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<td>Scores Frequency Per Cent</td>
<td>Scores Frequency Per Cent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.5-15.5</td>
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<td>15.5-16.5</td>
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<td>6.67</td>
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Total 15 | Total 15 |
Range 10 | Range 8 |
Mean 11.73 | Mean 12.27 |
Median 12.25 | Median 12.75 |
Sigma 3.34 | Sigma 3.51 |
S. E. M. .87 | S. E. M. .94 |
Figure 8. -- Frequency Polygon of the scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Visual Aptitude Test 1.
Figure 9.—Frequency Polygon of the scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Visual Aptitude Test 2.
the mean and six cases were within the class interval containing the mean.
The results of this data are shown in Table 7 and Figure 10. These data indicated that in distribution of auditory aptitude for letter memory the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 8.39 and 10.81. A comparison of these data with the test norms showed that the mean level of performance by the group on this test was at the 80th percentile. Thus, the comparison showed that the group's average level of auditory aptitude for letter memory was accepted as high average according to the standardized level of expectancy for their grade.

The data relative to the fourth grade pupils' performance on the discrimination and orientation section of the auditory test are shown in Table 7 and Figure 11. The scores ranged from 12 to 20; the median 18.25; the mean, 17.67; the standard error of the mean, .89; and standard deviation 3.31. Seven cases were above the mean; six cases were below the mean and two cases were within the class interval containing the mean. These data indicated that in distribution of auditory aptitude for discrimination and orientation the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 14.36 and 20.98. A comparison of these data showed that the mean level of performance by the group on this test was at the 40th percentile. The comparison showed that the group's average level of auditory aptitude for discrimination and orientation was low average according to the standardized level of expectancy for their grade.
TABLE 7

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECTS IN THE FOURTH GRADE ON THE MONROE-SHERMAN AUDITORY APTITUDE TEST 1 AND TEST 2

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</tr>
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<td></td>
</tr>
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</tr>
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</table>

<table>
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<th>Frequency</th>
<th>Per Cent</th>
</tr>
</thead>
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<td></td>
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<td>6.67</td>
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<tr>
<td>11.5-12.5</td>
<td>1</td>
<td>6.67</td>
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</tbody>
</table>

Total: 15
Range: 6
Mean: 9.60
Median: 9.32
Sigma: 1.21
S. E. M.: 0.32

Total: 15
Range: 9
Mean: 17.67
Median: 18.25
Sigma: 3.81
S. E. M.: 0.39
Figure 10. — Frequency of scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Auditory Aptitude Test 1.
Figure 11.—Frequency Polygon of scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Auditory Aptitude Test 2.
The results of the fifth grade pupils' performance on the letter form section of the auditory aptitude test are shown in Table 8 and Figure 12. The scores ranged from 6 to 12; the median was 10.63; the mean, 10.47; standard error of the mean, .66; and standard deviation, 2.45. Four cases were above the mean; seven cases were below the mean and four cases were within the class interval containing the mean. These data indicated that in distribution of auditory aptitude for letter memory the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 8.02 and 12.92. A comparison of these data with the tests norms showed that the mean level of performance by the group on this test was at the 80th percentile. The comparison showed that the group's average level of auditory aptitude for letter memory was high average according to the standardized level of expectancy for their grade.

Table 8 and Figure 13 present the results of the fifth grade pupils' performance on the discrimination and orientation of the auditory aptitude test. The scores ranged from 5 to 23; the median, 16.00; the mean, 15.90; standard error of the mean, 1.03; and standard deviation, 3.85. Six cases were below the mean; six cases were above the mean and three cases were within the class interval containing the mean. These data showed that in distribution of auditory aptitude for discrimination and orientation the group approximated normality; and they further indicated that about 68.26 per cent of the cases fell between the limits of 12.05 and 19.75. When a comparison of these data were made with the norms of the test, it was found that the group's performance of this area was at the 20th percentile.
TABLE 8

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE FIFTH GRADE ON THE MONROE-SHERMAN AUDITORY TEST 1 AND TEST 2.

<table>
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<tr>
<th>Letter Memory</th>
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<th>Frequency</th>
<th>Per.Cent</th>
<th>Discrimination and Orientation</th>
<th>Scores</th>
<th>Frequency</th>
<th>Per.Cent</th>
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<td>21-22</td>
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<tr>
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<td>19-20</td>
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<td>0.00</td>
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<tr>
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<td>17-18</td>
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<td>13.33</td>
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</tr>
<tr>
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<td>8.5-9.5</td>
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<td>26.67</td>
<td>15-16</td>
<td>3</td>
<td>20.00</td>
<td></td>
</tr>
<tr>
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<td>0.00</td>
<td>13-14</td>
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<td></td>
<td>5-6</td>
<td>1</td>
<td>6.67</td>
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</tr>
</tbody>
</table>

|               | Total | 15 |       | Total | 15 |       |
|               | Range | 6 |       | Range | 18 |       |
|               | Mean  | 10.47 |     | Mean  | 15.90 |     |
|               | Median| 10.63 |     | Median| 16.00 |     |
|               | Sigma | 2.45 |     | Sigma | 3.85 |     |
|               | S. E. M. | 0.66 |     | S. E. M. | 1.03 |     |
Figure 12.—Frequency Polygon of scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Auditory Test 1.
Figure 13.—Frequency Polygon of scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Auditory Test 2.
The comparison showed that this group of pupils' performance was low average according to the standardized level of expectancy for their grade.

The data relative to the results of the sixth grade pupils' performance on the letter memory section of the auditory aptitude test are shown in Table 9 and Figure 14. The range of scores was from 6 to 13; the median, 10.75; the mean, 10.53; the standard error of the mean, .58; and standard deviation, 2.16. Three cases were above the mean; six cases were below the mean; and six cases were within the class interval containing the mean. These data showed that in distribution of auditory aptitude for letter memory the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 8.37 and 12.69. A comparison of these data with the norms of the test showed that the mean level of performance by the group on this test was at the 85th percentile. The comparison showed that the group's average level of auditory aptitude for letter memory was high average according to the standardized level of expectancy for their grade.

The results of the sixth grade pupils' performance on the discrimination and orientation section of the auditory aptitude test are shown in Table 9 and Figure 15. The range of scores was from 11 to 20; the median, 18.75; the mean, 17.76; the standard error of the mean, 1.20; and standard deviation, 4.61. Eight cases were above the mean; six cases were below the mean and one case was within the class interval containing the mean. These data indicated that in distribution of auditory aptitude for
Table 9

Summary of data derived from the results of the performance of the fifteen subjects in the sixth grade on the Monroe-Sherman Auditory Test 1 and Test 2

<table>
<thead>
<tr>
<th>Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
<th>Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
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<td>20.5-21.5</td>
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<td>13.33</td>
<td>17.5-18.5</td>
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<td></td>
<td>11.5-12.5</td>
<td>1</td>
<td>6.67</td>
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</table>

Total 15
Range 6
Mean 10.53
Median 10.75
Sigma 2.16
S. E. M. .58

Total 15
Range 9
Mean 17.76
Median 18.75
Sigma 4.51
S. E. M. 1.20
Figure 14.---Frequency Polygon of scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Auditory Test 1.
Figure 15.—Frequency Polygon of scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Auditory Test 2.
discrimination and orientation section of the group approximated normality; and they further indicated that about 68.26 per cent of the cases fell between the limits of 13.25 and 22.27. When a comparison of these data were made with the norms of the test, it was found that the group's average level of performance was at the 20th percentile. The comparison showed that the group's average level of auditory aptitude for discrimination and orientation as low average according to the standardized level of expectancy for their grade.

Results of Performance of Pupils on Tests of Motor Aptitude—Tables 10, 11, and 12; and, Figures 18, 17, 18, 19, 20, and 21 present the data concerning the pupils' performance on the Monroe-Sherman Motor Aptitude Test 1 and Test 2. The range of scores obtained by the fourth grade on test of motor aptitude for copying text was from 15 to 28; the median, 23.00; the mean, 23.53; standard error of the mean, 1.21; and standard deviation, 4.53. Five cases were above the mean; eight cases were below the mean and two cases were within the class interval containing the mean. These data indicated that in distribution of motor aptitude for copying text the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 19.00 and 23.06. A comparison of these data with the test norms showed that the mean level of performance by the group on this test was at the 70th percentile. Thus, the comparison showed that the group average level of motor aptitude for copying text was average according to the standardized level of expectancy for their grade.
The data relative to the fourth grade pupils' performance on test of motor aptitude for cross out letters are shown in Table 10 and Figure 17. The scores ranged from 20 to 43; the median, 30.50; the mean, 30.63; standard error of the mean, 1.98; and standard deviation, 7.42. Six cases were below the mean; seven cases were above the mean and two cases were within the class interval containing the mean. The data showed that in distribution of motor aptitude for cross out letters the group approximated normality; and indicated that approximately 68.26 per cent of the cases fell between the limits of 23.21 and 38.05. When these data were compared with the norms of the test it was found that the group's average level of performance was at the 80th percentile. The comparison showed that the group's average level of motor aptitude for cross-out letters was high average according to the standardized level of expectancy for their grade.

The results of the fifth grade pupils' performance on the motor aptitude test for copying text are shown in Table 11 and Figure 18. The range of scores was from 13 to 34; the median, 24.50; the mean, 24.70; standard error of the mean, 2.11; and standard deviation, 7.90. There were six cases above the mean; eight cases below the mean and one case was within the class interval containing the mean. The data showed that in distribution of motor aptitude for copying text the group approximated normality; and indicated that approximately 68.26 per cent fell between the limits of 16.80 and 32.70. When these data were compared with the norms of the test it was found that the group's average level of
TABLE 10

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECTS IN THE FOURTH GRADE ON MONROE-SHERMAN MOTOR APTITUDE TEST 1 AND TEST 2

<table>
<thead>
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<th>Scores</th>
<th>Frequency</th>
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<td>S. E. M.</td>
<td>1.98</td>
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Figure 16.—Frequency Polygon of scores made by fifteen subjects in the fourth grade on the Monroe-Sherman Motor Aptitude Test 1.
Figure 17.—Frequency Polygon of scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Motor Aptitude Test 2.
performance was at the 50th percentile. The comparison showed that the group's average level of motor aptitude for copying text was low according to the standardized level of expectancy for their grade.

The data relative to the fifth grade pupils' performance on the motor aptitude test for cross out letters are shown in Table 11 and Figure 19. The range of scores was from 26 to 59; the median, 33.13; the mean, 34.20; standard error of the mean, 1.62; and standard deviation, 6.06. There were three cases above the mean; ten cases were below the mean and two cases were within the class interval containing the mean. According to these data the distribution of the group's performance was approximated normal, and they further indicated that about 68.26 per cent of the cases fell between the limits of 28.14 and 40.26. A comparison of these data with the norms of the test showed that these pupils' mean level of motor aptitude for cross out letters was at the 70th percentile. The comparison indicated that the group's average level of motor aptitude for cross out letters was a high level of expectancy for their grade.

The results of the sixth grade pupils' performance on the motor aptitude test for copying text are shown in Table 12 and Figure 20. The scores ranged from 18 to 45; the median, 29.00; the mean, 30.63; the standard error of the mean, 1.10; and standard deviation, 4.12. There were seven cases above the mean; eight cases below the mean and no cases within the class interval containing the mean. These data showed that in distribution of motor aptitude for copying text the group approximated normality; and about 68.26 per cent of the cases fell between the limits
TABLE 11

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECT IN THE FIFTH GRADE ON THE MONROE-SHERMAN MOTOR APTITUDE TEST 1 AND TEST 2

<table>
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<tr>
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<th></th>
<th>Scores</th>
<th>Crossing Out Letters</th>
<th></th>
</tr>
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<tbody>
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<td></td>
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<td>Per Cent</td>
<td>Frequency</td>
<td>Per Cent</td>
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<td>26-28</td>
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</table>

Total 15 | Total 15
Range 10  | Range 33
Mean 24.70 | Mean 34.20
Median 24.50 | Median 33.13
Sigma 7.90 | Sigma 6.06
S. E. M. 2.11 | S. E. M. 1.62
Figure 18.--Frequency Polygon of scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Motor Aptitude Test.
Figure 19.—Frequency Polygon of scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Motor Aptitude Test 2.
of 26.51 and 34.75. When the data were compared with the norms of the test it was found that the mean level of performance by the group on this test was at the 60th percentile. Thus, the comparison showed that the group's average level of motor aptitude for copying text was average according to standardized level of expectancy for their grade.

Table 12 and Figure 21 present the results of the sixth grade pupils' performance on the motor aptitude test for cross out letters. The scores ranged from 24 to 62; the median, 56.25; the mean, 51.00; standard error of the mean, 1.70; and standard deviation, 6.36. There were nine cases above the mean; six cases were below the mean and no cases within the class interval containing the mean. The data showed that approximately 68.26 per cent of the cases fell between the limits of 44.64 and 57.36. A comparison of these data with the norms of the test showed that these pupils' mean level of motor aptitude for cross out letters was at the 90th percentile. The comparison indicated that the group's average level of motor aptitude for cross out letters was a very high average of expectancy for their grade.

Results of the Performance of the Pupils on Tests of Language Aptitude.
Tables 13, 14, and 15; and Figures 22, 23, and 24 present the data concerning the pupils' performance on the Monroe-Sherman Language Aptitude Test, Vocabulary. The range of scores obtained by the fourth grade on test of language aptitude was from 10 to 20; the median, 14.00, the mean, 14.30; standard error of the mean, .94; and standard deviation, 3.50. There were seven cases below the mean; seven cases above the mean and one case was
TABLE 12

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF FIFTEEN SUBJECTS IN THE SIXTH GRADE ON THE MONROE-SHERMAN MOTOR APTITUDE TEST 1 AND TEST 2

<table>
<thead>
<tr>
<th>Copying Text Scores</th>
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<th>Per Cent</th>
<th>Crossing Out Letters Scores</th>
<th>Frequency</th>
<th>Per Cent</th>
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Total 15
Range 24
Mean 30.63
Median 29.00
Sigma 4.12
S. E. M. 1.10

Total 15
Range 36
Mean 51.00
Median 56.25
Sigma 6.36
S. E. M. 1.70
Scale of Scores

Frequency 20.—Frequency Polygon of scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Motor Aptitude Test 1.
Figure 21. Frequency Polygon of scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Motor Aptitude Test 2.
within the class interval containing the mean. These data showed that in distribution of language aptitude the group's performance was approximately normal; and indicated that approximately 68.26 per cent of the cases fell between the limits of 9.80 and 17.80. When these data were compared with the norms of the test it was found that the mean level of language aptitude was at the 20th percentile. The comparison showed, furthermore that the lowest level of expectancy for performance of fourth grade pupils in this area.

The data relative to the fifth grade pupils' performance on the language aptitude test are shown in Table 14 and Figure 23. The range of scores was from 11 to 24; the median, 16.60; the mean, 17.33; the standard error of the mean, .72; and the standard deviation, 2.70. There were three cases above the mean; seven cases were below the mean and five cases were within the class interval containing the mean. These data indicated that in distribution of language aptitude the group approximated normality; and about 68.26 per cent of the cases fell between the limits of 14.63 and 20.03. A comparison of these data showed that the mean level of performance by the group on this test was at the 50th percentile. The comparison showed that the group's average level of language aptitude was average according to the level of expectancy for their grade.

Table 15 and Figure 24 present the results of the sixth grade pupils' performance on the language aptitude test. The scores ranged from 11 to 22; the median, 14.67; the mean, 16.00; the standard error of the mean, .89; and the standard deviation, 3.31. There were four cases above the
TABLE 13

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE FOURTH GRADE ON THE MONROE-SHERMAN LANGUAGE APTITUDE TEST

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</tr>
<tr>
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</tr>
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<td>Sigma</td>
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<td>S. E. M.</td>
<td>.94</td>
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Figure 22.—Frequency Polygon of scores made by the fifteen subjects in the fourth grade on the Monroe-Sherman Language Aptitude Test.
TABLE 14

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE PERFORMANCE OF THE FIFTEEN SUBJECTS IN THE FIFTH GRADE ON THE MONROE-SHERMAN LANGUAGE APTITUDE TEST

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Total 15

Range 12
Mean 17.33
Median 16.60
Sigma 2.70
S. E. M. .72
Figure 23.—Frequency Polygon of scores made by the fifteen subjects in the fifth grade on the Monroe-Sherman Language Aptitude Test.
mean; ten cases below the mean and one case was within the class interval containing the mean. The data showed that approximately 68.26 per cent of the cases fell between the limits of 12.69 and 19.31. A comparison of these data with the norms of the test showed that these pupils' mean level of language aptitude was at the 10th percentile. Thus, the group's average level of performance in this area was below the standardized level of expectancy for their grade.

The Results of Relationship Between Tests of Reading Achievement and Visual Aptitude.— Table 16 present the data relative to the relationship of total group's performances on the Metropolitan Reading Achievement Test and on Monroe Sherman Aptitude Test. The obtained $r$ of .20 between reading achievement and letter memory section of visual aptitude denoted no relationship since the $r$ was less than three times its standard error, .14. The correlation between the scores obtained on the form memory section of the visual aptitude and the reading achievement test gave an obtained $r$ of .23 which denoted that no relationship existed between form memory and reading achievement, since $r$ was not as great as three times its standard error, .14. Thus the conclusion was drawn that there is little or no relationship between reading achievement and such measures of visual aptitude as tested in this study. This indicated that the level of visual aptitude possessed by pupils on their grade level has little or no relationship to their achievement in reading.

The Results of Relationship Between Tests of Reading Achievement and Auditory Aptitude.— According to Table 16 the relationship between scores
TABLE 15

SUMMARY OF DATA DERIVED FROM THE RESULTS OF THE FIFTEEN SUBJECTS IN THE SIXTH GRADE ON THE MONROE-SHERMAN LANGUAGE APTITUDE TEST

<table>
<thead>
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<th>Scores</th>
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<td>6.67</td>
</tr>
<tr>
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<td>1</td>
<td>6.67</td>
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</table>

Total 15
Range 11
Mean 16.00
Median 14.67
Sigma 3.51
S. E. M. .89
Figure 24.—Frequency Polygon of scores made by the fifteen subjects in the sixth grade on the Monroe-Sherman Language Aptitude Test.
obtained on the reading achievement test and on the auditory aptitude test was moderate and substantial. An "r" of .45 for the correlation between reading achievement and letter memory section of the auditory test with a standard error of "r", .12 was obtained; and an "r" of .41, which had a standard error of .13 for the correlation between tests of reading achievement and discrimination and orientation of the auditory aptitude test. Both of the "r's" were further checked in a table of significance with 40 degrees of freedom and .45 and .41 were found to be significant at the .05 level of confidence. Both of the "r's" were more than three times their standard error; therefore they were accepted as being significant. Hence, the conclusion was reached that there is some relationship between reading achievement and such measures of auditory aptitude as tested in this study.

The Results of the Relationship Between Tests of Reading Achievement and Motor Aptitude.- Table 16 presents the data relative to relationship between obtained scores on the reading achievement test and on the motor aptitude test. The obtained "r's" in both sections of motor aptitude test and reading achievement test denoted no relationship. Neither of the "r's" was more than three times its standard error. The "r" obtained from measures of the copying text and reading achievement was .28; standard error of "r", .14. An "r" of .30 which had a standard error, .14 for the correlation of crossing out letters, therefore they were accepted as being insignificant. It was concluded that there was little or no

---

TABLE 16

SUMMARY OF THE RELATIONSHIP OF THE RESULTS OF THE TOTAL GROUP ON THE METROPOLITAN READING ACHIEVEMENT TEST AND MONROE SHERMAN APTITUDE TEST

<table>
<thead>
<tr>
<th>Tests</th>
<th>Coefficient of Correlation &quot;r&quot;</th>
<th>Standard Error of &quot;r&quot;</th>
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<td>.14</td>
</tr>
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<td>Reading Achievement and Form Memory of Visual Aptitude Scores</td>
<td>.23</td>
<td>.14</td>
</tr>
<tr>
<td>Reading Achievement and Letter Memory of Auditory Aptitude Scores</td>
<td>.45</td>
<td>.12</td>
</tr>
<tr>
<td>Reading Achievement and Discrimination and Orientation of Auditory Aptitude Scores</td>
<td>.41</td>
<td>.13</td>
</tr>
<tr>
<td>Reading Achievement and Copying Text of the Motor Aptitude Scores</td>
<td>.28</td>
<td>.14</td>
</tr>
<tr>
<td>Reading Achievement and Cross Out Letters of Motor Aptitude Scores</td>
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<td>.14</td>
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<tr>
<td>Reading Achievement and Language Aptitude Scores</td>
<td>.43</td>
<td>.12</td>
</tr>
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</table>
relationship between reading achievement and such measures of motor aptitude as tested in this study. This indicated that the level of motor aptitude possessed by pupils on their grade level has little or no relationship to their achievement in reading.

The Results of Relationship Between Tests of Reading Achievement and Language Aptitude.—Table 16 presents the data relative to the relationship between obtained scores on the reading achievement test and on the language aptitude test. The obtained "r" of .43 was larger than three times its standard error of .12; also when the obtained was checked in a table of significance with 40 degrees of freedom, .43 was found to be significant at the .05 level of confidence. These findings were accepted as indicative of a significant relationship. Thus, it was concluded that to an appreciative degree pupils who excel in reading achievement do equally well in language; that those who are average in reading achievement tend to average in language; and that those who are poor in one area are usually poor in the other.

Differences Between Relationships of Reading Achievement and Visual Letter Memory and Reading Achievement and Auditory Letter Memory.—Table 17 presents a coefficient of .20 on reading achievement and letter memory section of the visual aptitude tests; and a coefficient of .45 on reading achievement and letter memory section of auditory aptitude tests. Entering the table of conversion, the "z" score equivalent for reading achievement and letter memory of visual aptitude was .20; the "z" score equivalent for reading achievement and auditory letter memory was .48. The standard
-74-

errors were .14 and .13 respectively. The difference between the "z's" was .28 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of 1.27 was regarded as insignificant.

**Differences Between Relationships of Reading Achievement and Visual Form Memory and Reading Achievement and Auditory Discrimination and Orientation.** Table 17 presents a coefficient of .23 on reading achievement and form memory section of visual aptitude tests and a coefficient of .41 on reading achievement and discrimination and orientation section of auditory aptitude tests. Entering the table of conversion, the "z" score equivalent for reading achievement and form memory of visual aptitude was .23; the "z" score equivalent for reading achievement and discrimination and orientation of auditory aptitude was .44; the standard errors were .14 and .12 respectively. The difference between the "z's" was .21 and the standard error of $z_1 - z_2$ was .22. The "t" of .95 was insignificant as indicated in this study.

**Differences Between Relationships of Reading Achievement and Copying Text of Motor Aptitude and Reading Achievement and Language Aptitude.** According to Table 17 an obtained "r" of 28 on the reading achievement test and copying text section of motor aptitude tests; and a coefficient of .43 on the reading achievement and language aptitude tests were indicated. Entering the table of conversion, the "z" score equivalent for reading achievement and copying text of motor aptitude was .29; the "z" score equivalent for reading achievement and language aptitude was .46.
TABLE 17

DIFFERENCES BETWEEN READING ACHIEVEMENT AND VISUAL APTITUDE AND READING ACHIEVEMENT AND
AUDITORY APTITUDE, READING ACHIEVEMENT AND MOTOR APTITUDE AND READING ACHIEVEMENT AND
LANGUAGE APTITUDE

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<tr>
<th>Tests</th>
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<td>.20</td>
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<td>.23</td>
<td>.14</td>
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<td>.22</td>
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<td>Reading and Discrimination and Orientation of Auditory Aptitude</td>
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<td>Reading and Language</td>
<td>.43</td>
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The standard errors were .14 and .12 respectively. The difference between the "z's" was .17 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of .77 was regarded as insignificant.

**Differences Between Relationships of Reading Achievement and Motor Aptitude in Crossing Out Letters.** Table 17 presents a coefficient of .30 on reading achievement and crossing out letters section of the motor aptitude; and on reading achievement and language aptitude test a coefficient of .43. Entering the table of conversion, the "z" score equivalent was .31 for reading achievement and crossing out letters; the "z" score equivalent for reading achievement and language aptitude was .46. The standard errors were .14 and .12 respectively. The difference between the "z's" was .15 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of .68 was regarded as insignificant.
CHAPTER III

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary.— Successful reading at any level depends upon readiness for the type of reading to be done. Readiness applies to the primary and upper grades. It is a factor to be considered throughout the elementary and secondary school life of the pupils. The act of reading makes up a large part of the school life and constitutes an important objective of the elementary school. A person should have good skills in listening and observing. Children with inferior aptitude capacities do not inevitably become poor readers but there should be a detection of this factor and recommendations to adjust this deficiency. The abilities to read effectively help the pupils to succeed in school. The pupils need to become facile readers in order to become successful learners.

The purpose of the study was to answer the following questions concerning the pupils' performance:

1. What were their specific and average performance on test of achievement in reading?
2. What were their levels of visual aptitude?
3. What were their levels of auditory aptitude?
4. What were their levels of language aptitude?
5. What were their levels of motor aptitude?
6. How did the grades compare in these respective areas?
7. What were the differences and relationships between reading achievement and
   a. visual aptitude
      1. letter memory
      2. form memory
b. auditory aptitude
   1. letter memory
   2. discrimination and orientation

c. motor aptitude
   1. copying text
   2. crossing out letters

d. Language
   1. vocabulary

The procedure of this study included the following operational steps:

1. Literature pertinent to the study was reviewed summarized and presented in the thesis copy.

2. The data necessary for the study were collected through the use of the following instruments:

   a. Monroe-Sherman Diagnostic Reading Aptitude and Achievement Test
      1. Visual
      2. Auditory
      3. Motor
      4. Language

   b. Richard D. Allen, et. al., Metropolitan Reading Achievement Test, Elementary Battery: Form T

3. The data derived from the tests were assembled into appropriate figures, tables, and graphs, as determined by the study.

4. The basic data which are presented in the tables were statistically treated through the computation of the mean, median, standard error of the mean, standard deviation, Pearson-Product-Moment coefficient of correlation, the standard error of this coefficient and Fisher's "$z$".

The limitations of the study are indicated below:

1. The findings of this study were limited to the incidental sample studied and cannot be generalized to a larger population.
2. The following tests used were limitations as the authors do not claim that the tests measure all desirable aspects of the area under consideration. They include:

a. The Monroe-Sherman Diagnostic Reading and Achievement Test

b. The Metropolitan Reading Achievement Test, Elementary Battery; Form T.

3. The pupils tested had had limited experiences with standardized tests.

The limited amount of literature was concerned with the differences and relationships that exist between reading achievement and visual, auditory, motor, and language performances. Pertinent findings are summarized as follows:

1. A marked correspondence exists between academic intelligence, the ability to learn, reading achievement and comprehension of printed material.

2. Readiness for reading can be greatly facilitated through specific program of guidance and correction.

3. Lack of auditory discrimination is an important factor in producing failure in beginning readers.

4. Children need visual and auditory appraisals in order to teach reading effectively at any level.

5. Reading achievement among the individuals may have a wide range.

6. Visual aptitude should be considered in the individual diagnosis of poor readers.

7. Valid and reliable measures of auditory span should be established and that applications of these devices might be of great value of seriously retarded readers.

8. Extreme deficiencies in motor control may contribute to language difficulties.

The analysis of the data collected provide the following findings concerning the forty-five subjects of this study:

1. In reading achievement, test results indicated that according to national norms the fourth grade pupils averaged about three
months below the standardized level of expectancy for their grade. The range 37, in reading achievement showed a high score 58 and a low score of 21. The median score was 35.50; the mean, 37.50; standard error of mean; 4.06; and the standard deviation, 15.20. The average grade equivalent was 4.3.

2. Analysis of the fifth grade pupils' performance on the test of reading achievement indicated that according to the test norms the group's average level of achievement was averaged about seven months below the standardized level of expectancy for their grade. The range 27 in reading achievement showed a high of 62 and a low score of 35. The median score was 52.50; the mean, 2.30; and the standard deviation, 8.61. The average grade equivalent was 5.2.

3. Analysis of the sixth grade pupils' performance on the test of reading achievement indicated that according to the test norms the group's average level of achievement was about one year and seven months below standardized level of expectancy for their grade. The range of 49, in reading achievement showed a high score of 65 and a low score of 16. The median score was 56.50; the mean, 53.17; the standard error of the mean, 3.95; and standard deviation, 14.77. The average grade equivalent was 5.2.

4. Analysis of the fourth grade pupils' performance on the letter memory section of the visual aptitude test showed a range of 9 with a high score of 14 and a low score of 5. The median score was 10.13; the mean, 10.67; the standard error of the mean, .44; and the standard deviation, 1.66. The group's average level was at the 70th percentile, which was considered a high level of expectancy for their grade.

5. Analysis of the fourth grade pupils' performance on the form memory section of the visual aptitude test showed a range of 9 with a high score of 14 and a low score of 5. The median score was 10.75; the mean, 10.55; the standard error of the mean, .88; and the standard deviation, 3.30. The group's average level was at the 90th percentile, which was considered a very high level of expectancy for their grade.

6. Analysis of the fifth grade pupils' performance on the letter memory section of the aptitude test showed a range of 10, with a high score of 15 and a low score of 5. The median score was 11.75; the mean, 11.40; the standard error of the mean, .83; and standard deviation, 3.12. The group's average level of performance was at the 40th percentile, which was considered an average level of expectancy for their grade.
7. Analysis of the fifth grade pupils' performance on the form memory section of the visual aptitude test indicated a range of 10, with a high score of 15 and a low score of 4. The median score was 13.75; the mean, 12.60; the standard error of the mean, 1.03; and standard deviation, 3.86. The group's average level of performance was at the 90th percentile, which was considered a very high level of expectancy for their grade.

8. Analysis of the sixth grade pupils' performance on the letter memory section of the visual aptitude test obtained a range of 10, which had a high score of 14 and a low score of 4. The median score was 12.12; the mean, 11.73; the standard error of the mean, 0.87; and standard deviation, 3.34. The group's average level of performance was at the 30th percentile, which was considered a low level of expectancy for their grade.

9. Analysis of the sixth grade pupils' performance on the form memory section of the visual aptitude test indicated a range of 8, with a high score of 15 and a low score of 7. The median score was 12.75; the mean, 12.27; the standard error of the mean, 0.94; and the standard deviation, 3.51. The group's average level of performance was at the 90th percentile, which was considered a very high level of expectancy for their grade.

10. Analysis of the fourth grade pupils' performance on the letter memory section of the auditory aptitude test showed a range of 6, with a high score of 10 and a low score of 5. The median score was 9.92; the mean, 9.60; the standard error of the mean, 0.32; and standard deviation, 1.21. The group's average level of performance was at the 80th percentile, which was considered a high level of expectancy for their grade.

11. Analysis of the fourth grade pupils' performance on the discrimination and orientation section of the auditory test showed a range of 9 with a high score of 20 and a low score of 12. The median score was 18.25; the mean, 17.67; the standard error of the mean, 0.89; and standard deviation, 3.31. The group's average level of performance was at the 40th percentile, which was considered an average level of expectancy for their grade.

12. Analysis of the fifth grade pupils' performance on the letter memory section of the auditory aptitude test indicated a range of 6 with a high score of 12 and a low score of 6. The median score was 10.63; the mean, 10.47; the standard error of the mean, 0.66; and standard deviation, 2.45. The group's average level of performance was at the 80th percentile, which was a high level of expectancy for their grade.
13. Analysis of the fifth grade pupils' performance on the discrimination and orientation section of the auditory aptitude test showed a range of 18 with a high score of 23 and a low score of 5. The median score was 16.00; the mean, 15.90; the standard error of the mean, 1.03; and the standard deviation, 3.85. The group's average level of performance was at the 20th percentile, which was considered a low level of expectancy for their grade.

14. Analysis of the sixth grade pupils' performance on the letter memory section of the auditory aptitude test indicated a range of 6 with a high score of 13 and a low score of 6. The median score was 10.75; the mean, 10.53; the standard error of the mean, .58; and the standard deviation, 2.16. The group's average level of performance was at the 85th percentile, which was considered a high level of expectancy for their grade.

15. Analysis of the sixth grade pupils' performance on the discrimination and orientation section of the auditory test indicated a range of 9 with a high score of 20 and a low score of 11. The median score was 18.75; the mean, 17.76; the standard error of the mean, 1.20; and the standard deviation, 4.51. The group's average level of performance was at the 20th percentile, which was considered a low level of expectancy for their grade.

16. Analysis of the fourth grade pupils' performance on the copying text section of the motor aptitude test showed a range of 12 with a high score of 28 and a low score of 15. The median score was 23.00; the mean, 23.53; standard error of the mean, 1.21; and the standard deviation, 4.53. The group's average level of performance was at the 70th percentile, which was considered a high level of expectancy for their grade.

17. Analysis of the fourth grade pupils' performance on cross out letters section of the motor aptitude test showed a range of 16 with a high score of 43 and a low score of 20. The median score was 30.50; the mean, 30.63; standard error of the mean, 1.98; and standard deviation, 7.42. The group's average level of performance was at the 80th percentile, which was considered a high level of expectancy for their grade.

18. Analysis of the fifth grade pupils' performance on the copying text section of the motor aptitude test showed a range of 10 with a high score of 34 and a low score of 13. The median score was 24.50; the mean, 24.70; the standard error of the mean, 2.11; and standard deviation, 7.90. The group's average level of performance was at the 50th percentile, which was considered an average level of expectancy for their grade.
19. Analysis of the fifth grade pupils' performance on the cross out letters section of the motor aptitude test showed a range of 33 with a high score of 59 and a low score of 26. The median was 35.13; the mean, 34.20; the standard error of the mean, 1.62; and the standard deviation, 6.06. The group's average level of performance was at the 70th percentile, which was considered a high level of expectancy for their grade.

20. Analysis of the sixth grade pupils' performance on the copying text section of the motor aptitude test showed a range of 24 with a high score of 45 and a low score of 18. The median was 29.00; the mean, 30.63; the standard error of the mean, 1.10; and a standard deviation, 4.12. The group's average level of performance was at the 60th percentile, which was an average level of expectancy for their grade.

21. Analysis of the sixth grade pupils' performance on the cross out letters section of the motor aptitude test showed a range of 36, with a high score of 62 and a low score of 24. The median score was 56.25; the mean, 51.00; the standard error of the mean, 1.70; and standard deviation, 6.36. The group's average level of performance was at the 90th percentile, which was considered a very high level of expectancy for their grade.

22. Analysis of the fourth grade pupils' performance on test of language aptitude test showed a range of 9, with a high score of 20 and a low score of 10. The median score was 14.00; the mean, 14.30; the standard error of the mean, .94; the standard deviation, 3.50. The group's average level of performance was at the 20th percentile, which was considered a low average of expectancy for their grade.

23. Analysis of the fifth grade pupils' performance on test of language aptitude indicated a range of 12, which had a high score of 24 and a low score of 11. The median was 16.60; the mean, 17.33; standard error of the mean, .72; and standard deviation, 2.70. The group's average level of performance was at the 50th percentile which was considered an average level of expectancy for their grade.

24. Analysis of the sixth grade pupils' performance on test of language aptitude indicated a range of 11, which had a high score of 22 and a low score of 11. The median score was 14.67; the mean, 16.00; the standard error of the mean, .99; and standard deviation, 3.51. The group's average level of performance was at the 10th percentile, which was considerably below the level of expectancy for their grade.
25. Findings concerning the relationship between reading achievement and letter memory of the visual aptitude showed that the obtained "r" of .20 denoted no relation since the "r" was not as great as three times its standard error of .14. These findings indicated that the "r" was not significant.

26. Findings concerning the relationship between reading achievement and form memory of the visual aptitude showed that the obtained "r" of .23 indicated no relationship since the "r" was not as great as three times its standard error of .14. These findings indicated that the "r" was not significant.

27. Findings concerning the relationship between reading achievement and letter memory of the auditory aptitude indicated that the obtained "r" of .45 denoted substantial relationship and was found to be significant at the .05 level of confidence. It was concluded that there was significant relationship between reading achievement and letter memory.

28. Findings concerning the relationship between reading achievement and discrimination and orientation indicated that the obtained "r" of .41 with a standard error of .12 was found to be significant at the .05 level of confidence. The conclusion was drawn that there was a substantial relationship between reading achievement and discrimination and orientation.

29. Findings concerning the relationship between reading achievement and copying text of the motor aptitude showed that the obtained "r" of .28 indicated no relationship since the "r" was not three times as great as its standard error of .14. These findings led to the conclusion that the relationship between reading achievement and copying text was non-existent.

30. Findings concerning the relationship between reading achievement and crossing out letters of the motor aptitude showed that the obtained "r" was not as great as three times its standard error of .14. These findings led to the conclusion that there was no relationship between crossing out letters and reading achievement.

31. Findings concerning the relationship between reading achievement and language aptitude showed that the obtained "r" of .43 with a standard error of .12 was found to be significant at the .05 level of confidence. These findings were accepted as indicative of a substantial relationship between reading achievement and language.
32. Findings concerning the differences between relationships of reading achievement and letter memory of visual aptitude and reading achievement and letter memory of auditory aptitude showed that the "z" score equivalents were .20 and .48 respectively. The differences between the "z"'s was .28 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of 1.27 was regarded as insignificant.

33. Findings concerning the differences between relationships of reading achievement and form memory of visual aptitude and reading achievement and discrimination and orientation showed that the "z" score equivalents were .25 and .44 respectively. The difference between the "z"'s was .21 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of .95 was regarded as insignificant.

34. Findings concerning the differences between relationships of reading achievement and copying text of motor aptitude and language aptitude showed that the "z" score equivalents were .29 and .46 respectively. The standard error of $z_1 - z_2$ was .22 and the difference between the "z" was .17. The obtained "t" of .77 was regarded as insignificant.

35. Findings concerning the differences between relationships of reading achievement and crossing out letters and language aptitude showed that the "z" score equivalents were .31 and .46 respectively. The difference between the "z" was .15 and the standard error of $z_1 - z_2$ was .22. The obtained "t" of .68 was regarded as insignificant.

Conclusions.—The conclusions of this study are specific answers to the eight questions proposed under the purpose of this study. These conclusions are based wholly upon the data collected and interpreted in the present study.

1. The subjects of this study gave evidence that the fourth grade was six months below the standardized level of expectancy in reading achievement; the fifth grade was seven months below the standardized level of expectancy in reading achievement; and the sixth grade was one year and seven months below the standardized level of expectancy in reading achievement for their grade.
2. The test performance of the group gave evidence that they had high levels of visual aptitude.

3. The test performance of the group gave evidence that they had high levels of auditory aptitude.

4. In general, the group's levels of motor aptitude, as indicated by their test performance, were average according to levels of expectancy for the respective grades.

5. The test performance of the group gave evidence that they had low average levels of language according to the standardized levels of expectancy for their respective grades.

6. The evidence gained from the comparison of the grades indicated no differences in the levels of visual, auditory, motor and language according to the expectancy levels of respective grades.

7. With regard to relationships, there were little or no relationships between reading achievement with visual and motor aptitudes; but there were substantial relationships between reading achievement with auditory and language aptitudes. There were insignificant differences between relationships of reading achievement with visual, auditory, motor, and language aptitude.

Implications.- The implications that grew out of these conclusions are:

1. Since the relationships between reading achievement and auditory aptitude were substantial and significant, it seems that a part of their reading experience should make appropriate provision for the development of word recognition through the use of phonics.

2. Since reading achievement and language were significantly and substantially related one to the other as tested in this study, it follows that many efforts should be made to integrate and correlate these areas.

3. There is evidence to show the need for a developmental and corrective program planned to meet the individual needs and differences of the pupils of this group.

Recommendations.- The findings, conclusions, and implications provided the following recommendations:
1. Attention should be given to the pupils' relatively low levels in reading achievement and the visual, auditory, motor, and language aptitudes, through inservice study and improved classroom procedures.

2. The specific class period should be devoted to training pupils through methods and activities based on survey and analytical testing, coupled with careful teacher observations.

3. The teacher should be supplied with materials and suggestions which give pupils wide experiences in the reading necessary to require high levels of aptitudes for performance of their grade.

4. Further studies should be made which concentrate upon the differences and relationships of reading achievement and certain basic factors.
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**UNPUBLISHED THESIS**


**METROPOLITAN ACHIEVEMENT TESTS**

**ELEMENTARY BATTERY: FORM T**

**BY RICHARD D. ALLEN, PH.D.**
**HAROLD H. BIXLER, PH.D.**
**WILLIAM L. CONNOR, M.A.**
**FREDERICK B. GRAHAM, PH.D.**
**AND GERTRUDE H. HILDRETH, PH.D.**

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<td>2. Vocab.</td>
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<tr>
<td>Aver. Reading</td>
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<td>3. Arith. Fund</td>
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<td>Aver. Arith.</td>
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<tr>
<td>5. Lang. Usage</td>
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<td>Aver. Acct.</td>
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* Do not include when figuring average achievement.

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TEST 1. READING: PART I

a. The cow gives
   
   eggs silk mush milk
   
   We have some pretty fish. They swim in the bowl. Jane feeds the fish. The fish eat the green plants.

1. The fish live in a
   
   basket box house bowl

2. Who takes care of them?
   
   Jane Mother John baby

3. What do they eat?
   
   bowl plants fish Jane

Every spring I go to the country to visit my grandmother. One day I planted a garden. I planted corn and beans and peas. Next day I went out to see the garden. Some chickens had scratched up all the seeds. I must put a fence around my garden.

4. Grandmother lives in
   
   the city a village the country a park

5. The garden was spoiled by the
   
   rain farmer corn chickens

6. In my garden I was going to raise some
   
   vegetables fruit flowers chickens

Mother made the sandwiches. Donald and Paul got the lemonade ready. Betty went to the store to get some cookies. When the lunch was packed, the family started out.

7. They were going
   
   to church on a picnic to school to a show

8. The lemonade was made by
   
   Betty Mother Donald and Paul Betty and Paul

The albatross is one of the largest birds of the sea. It lives chiefly upon small fish caught just below the surface of the water. When fully grown it sometimes has a wing spread of twelve to fifteen feet and a weight of twenty pounds. The albatross is regarded with suspicion by sailors. Some sailors believe that great misfortune will result if an albatross is killed.

9. An albatross is a whale  bird  sailor  shark

10. The food of the albatross is mainly mice  insects  grain  fish

11. This bird spends most of the time on land  at sea  in a nest  in bushes

The fir tree stood in the forest. The snow fell softly on its branches. One day a man came and cut it down. He brought the tree to Ann’s house. Ann put silver balls and bright stars on the tree, and the children danced around it.

12. The story is about a Christmas tree  a snowstorm  a birthday party  cutting down trees

13. A man got the tree in a store  the forest  a park  the garden

14. The tree was trimmed with candles  forest flowers  silver balls  bright ribbons

One day we had a post office at our house. John played postman. Billy worked at the post office. We wrote letters to Betty and Jane and put them in a toy mailbox. The postman took the letters to the post office.

15. We had a play post office at school  camp  home  the mailbox

16. A letter was sent to Betty  John  Carl  Billy

17. The letters were taken to the post office by John  Billy  Betty  Jane
Silver foxes are raised in the United States for their fur. Some large ranches have thousands of foxes, but most fox farms have a much smaller number. In late winter or early spring the mother fox, called the vixen, has a litter of three to ten pups. The foxes are protected from the sunlight because this may cause the fur to look rusty. They are allowed out only at night or in dense woods. The pelts are usually taken in November or December when the animal is nine or ten months old.

18. This story is about
   - silver foxes
   - ranches
   - a mother fox
   - furs

19. A mother fox is called a
   - vixen
   - pup
   - litter
   - pelt

20. Foxes are protected from the sun to keep their fur from looking
    - coarse
    - white
    - yellow
    - rusty

21. Silver foxes are raised in the United States for
    - meat
    - leather
    - fur
    - pets

   The eagle is a large bird found all over the world. Since ancient times the eagle has been a symbol of royal power, for the bird has great strength and keen vision. The American or bald eagle lives in North America near streams, lakes, and seacoasts. It is a handsome bird with black plumage streaked with white, and with a white head, neck, and tail. The bald eagle is the national emblem of the United States.

22. The story is about
    - ancient times
    - the eagle
    - the emblem
    - the United States

23. The eagle is a symbol of royal power partly on account of its
    - size
    - plumage
    - strength
    - head

24. The American eagle is said to be
    - homely
    - ancient
    - spotted
    - bald

25. According to this paragraph, the eagle most often lives near
    - a body of water
    - the desert
    - mountains
    - plains

One morning I was on my way to school. I looked down the street and saw puffs of smoke rolling up to the sky. I thought there must be a fire at the grocery. Ding, dong, clang! Soon the fire engine came rushing down the street. The hose truck came after it. In a minute the firemen had the hose out of the wagon. Streams of water came from the hose. I did not see what was left of the building until the next day. Most of the store windows were broken and the building was still black with smoke.

26. First came the
hose truck  groceryman  fire chief  fire engine

27. Next day I saw that
the building was damaged  nothing was hurt
the fire was still burning  the windows were fixed

28. The dark color of the building after the fire was caused by
water  smoke  broken glass  hose

At the dock we saw a big fishing boat starting out on a long voyage to the North Atlantic. An old fisherman said the boat would hold four hundred thousand pounds of fish. He said that the ship would return after several months filled with cod and halibut. We could see nets tied to the masts of the ship.

29. The boat was bound for
Europe  Spain  Atlanta  the northern ocean

30. Part of the ship's load will be
oysters  whalebone  mackerel  halibut

31. Hanging from the ship's mast were some
fish nets  clothes  fish lamps

32. If the ship left on May 1, it might return about
May 15  June 1  August 15  May 2
One day there was a wreck. A freight train was standing on a track in the switch yard when an engine came along and gave it a push. Off it went down the track. Just at a bend in the track there was a long tunnel. A long passenger train was coming out of the tunnel. The switchman in the tower threw the wrong switch. The passenger train rushed into the freight train, smashing several cars and throwing them off the track. No one was killed, but several people were injured. It took several days to clean up the wreckage.

33. The wreck happened in the street near the station in the tunnel near a tunnel.

34. Out of the tunnel came the freight train switchman passenger train freight engine.

35. The wreck was the fault of the switchman conductor road worker engineer.

Our master was a good, kind man. He gave us good food and a large pasture in which to run. He spoke to us as gently as he did to his little children. We were all fond of him, and my mother loved him very much. When she saw him at the gate, she would neigh with joy and trot up to him. He would pat and stroke her, and say, “Well, old Pet, and how is your little Smoky?” I was a dull gray, so he called me Smoky; then he would give me a piece of bread, which was very good, and sometimes he brought a carrot for my mother.

36. This story is about a dog monkey chimney horse.

37. The one who tells the story is a boy Smoky the mother the master.

38. The master treated them very badly cruelly kindly carelessly.

Over two hundred years ago Benjamin Franklin started the first circulating library. He produced the books and hired a librarian to help take care of the books. Thus was America started on a habit of spare-time reading that has lasted ever since. Recently the bookmobile has been introduced to assist those country people who live too far from the city to take advantage of city libraries. The bookmobile is a truck which travels from house to house. This library is truly a circulating library.

39. The first circulating library was started by Carnegie Webster Franklin Lincoln

40. The library was started about. 50 years ago
   200 years ago 100 years ago 500 years ago

41. A bookmobile was used in Franklin's day was the first library
is a library on wheels had no librarian

The mail carrier's horse was very, very lazy.
He shuffled along, with his head down, as if he
liked to keep the people waiting. I thought, in-
deed, that he sometimes chuckled over this reflec-
tion, but the carrier said he was only troubled with
a cough. The carrier had a way of keeping his
head down, like his horse, and of drooping sleepily
as he drove, with one arm on each knee. I say
"drove," but I am sure the cart would have gone
to Yarmouth quite as well without him, for the
horse did all that. The carrier's conversation con-
sisted of whistling.

42. The carrier was riding along
   on horseback on a bicycle in a cart in an automobile.

43. When the horse seemed to chuckle he was only
   shuffling whistling coughing lazy

44. Instead of talking the man was inclined to
   whistle drive sing cough

STOP!
PART II

SAMPLE. Dick, Tom, and Fred are brothers. The names of Dick's brothers are (a) and (b) . . . . . . . . . .

46. The librarian takes care of the books in the library. She knows where every (a) belongs . . . . . . . . . .

46–48. Chocolate first became known to the white race when explorers from Spain reached the New World. The explorer, Cortez, was given a drink of chocolate by an Indian emperor. Cortez liked chocolate so much that he took it back to (a). For many years (b) (b) and his men refused to tell where they had obtained the new drink and sold it to the wealthy people of Europe for a high (c) . . . . . . . . . . . . . . . . . . . . . .

49–52. When you first learned to read, you (a) aloud, so of course you (a) your lips. This is not necessary in silent (a). Moving the lips makes the reading much too slow, because your eyes can take in the meaning faster than your (c) can say it . . . . . . . . . .

53–54. Because cold air is heavier than warm air, it settles to the floor and the (a) air rises to the ceiling. Children playing on the floor are much more likely to be (a) than a person sitting in a chair in the same room . . . . . . . . . .

55–57. It is often said that Gutenberg, a German, was the first to invent printing from movable type. This is not true. Printing from movable type had been used in Asia long before (a) time. It is quite possible (b) that Gutenberg got his ideas from some traveler returning from (b). However, Gutenberg was the first to use alphabetic type in a (b) press . . . . . . . . . . . . . . . . . . . . . .

58–61. Few families continue to use fireplaces as a main source of heat. They are more for the enjoyment that comes from sitting in front of an open (a) , watching the logs burn, noticing how the (a) dance up and down and change color. Now we may be able to have all the enjoyment of a (a) in our homes and at the same time have a good source of heat. A new kind of heater has been developed, consisting of a pipe running through the fireplace and a fan. The fan draws in cold air, and when this is heated blows the warm (a) back (a) into the room.
62—67. Rafts were the earliest means of water travel. In the olden days Indians in Canada (63) rafts of reeds which grew along the rivers. Logs (69) together with vines were used on smooth water, but could not be (64) in rapids. Airplanes which fly over oceans carry rubber rafts. Such (65) take up a very small amount of (66) when rolled up, but in case of accident they can be blown up and then will be large enough to (67) three or four men.

68—70. In growing rice in China the seed often is sown in nurseries and the young plants are afterward taken up and set out in the fields in regular rows. The transplanting takes place about a month after the seed has been (68), when the (69) have grown a foot high. (69) The laborers make a hole in the earth with their fingers and thrust a bunch of three or four plants into it and squeeze the (70) tight around it:

71—74. The song of the white-eyed vireo is unlike that of any other wild bird. Once you have learned its (71), you can always (72) it when you hear it again. (72) It is short, musical, and energetic. Nearly every song (73) contains a loud, clear, rather long, whistled (73) like “whee.” The number and the timing of the notes vary, but some (74) will be the same in every song. (74)

STOP!
TEST 2. VOCABULARY

kitten wear cat girl chair dog
jump down ride leap see look
run stay ask race fun sit

1. hen mouse chicken rabbit horse cow
2. boy ball store play child book
3. farmer field cow truck man work
4. tiny sharp little brave thin tall
5. big round small large quick bug
6. kind pretty good still fine sorry
7. cabbage stew fruit animal vegetable taste
8. cottage beach house roof porch step
9. beautiful careful plentiful steady homely handsome
10. strong selfish strange powerful foolish weak
11. chop hammer buy make eat cut
12. shut door street open leave close
13. freedom age liberty story honor courage
14. like take give enjoy look hate
15. hit strike miss wait find hunt
16. cake water grass food serve bake
17. acorn tree juice candy bean nut
18. king ruler student teacher crown wealth
19. improve add better express hurry try
20. receive accept spend count cook send
21. collect remember forget find compare gather
22. destroy ruin annoy carry hire save
23. dragon anchor cargo insect beast carriage
24. forward backward behind ahead already away
25. boot foot boat shop shoe slipper

[To ] Go right on to the next page.
26. choose  bite  reject  select  change  winner
27. shears  knife  sews  sharp  wheat  scissors
28. single  many  all  both  one  several
29. pretend  work  assume  meet  frighten  mend
30. almost  anywhere  nearly  perhaps  soon  already
31. sword  revolver  shield  staff  duel  weapon
32. under  cover  over  beneath  between  upon
33. barge  canal  big  boat  ravine  sell
34. calm  peaceful  pleasant  hard  stormy  rough
35. lively  dainty  burning  electric  active  fire
36. raise  sink  lift  reach  above  level
37. couple  six  pair  plenty  marry  cents
38. remind  remit  recall  transmit  remain  forget
39. noble  able  cheap  degraded  honorable  humble
40. entire  tempt  whole  sleep  cover  unite
41. wide  narrow  broad  long  short  thin
42. physician  clown  plumber  minister  doctor  grocer
43. appeal  presence  request  sound  paring  echo
44. exhibit  skill  display  excuse  prevent  hide
45. depend  rely  race  guard  help  deeper
46. show  train  story  display  delay  actor
47. mistake  mischief  correction  errand  error  title
48. idle  image  unoccupied  busy  healthy  ill
49. retire  repair  return  reserve  retain  withdraw
50. reveal  cry  tell  scorn  conceal  noise

STOP!
TEST 3. ARITHMETIC FUNDAMENTALS

Add

\[
\begin{array}{cccccccc}
2 & 6 & 9 & 5 & 6 & 3 & 8 & 9 \\
+ 2 & + 4 & + 2 & + 3 & + 9 & + 3 & + 9 & + 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
50 & 25 & 23 & 8 & 57 & 97 \\
+ 30 & + 60 & + 6 & + 35 & + 28 & + 56 \\
\end{array}
\]

Subtract

\[
\begin{array}{cccccccc}
4 & 3 & 4 & 8 & 12 & 18 & 17 & 12 \\
- 3 & - 1 & - 2 & - 6 & - 8 & - 9 & - 8 & - 6 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
37 & 27 & 26 & 43 & 56 & 162 \\
- 14 & - 4 & - 6 & - 5 & - 39 & - 74 \\
\end{array}
\]

Multiply

\[
\begin{array}{cccccccc}
4 & 2 & 1 & 4 & 5 & 6 & 6 & 3 \\
\times 2 & \times 8 & \times 6 & \times 7 & \times 6 & \times 2 & \times 8 & \times 7 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
32 & 50 & 57 & $6.19 & 587 & 57 \\
\times 3 & \times 7 & \times 5 & \times 4 & \times 6 & \times 90 \\
\end{array}
\]

Divide

One half of 6 is \[ \sqrt{6} \] \[ \frac{15}{3} = 5 \]

\[
\begin{array}{cccc}
1) \overline{6} & 2) \overline{14} & 3) \overline{9} & .2) \overline{2} \\
1) \overline{9} & 3) \overline{27} \\
\end{array}
\]

[ 12 ] Go right on to the next page.
Divide

\[
\begin{array}{cccccc}
6)24 & 8)48 & 9)36 & 8)24 & 6)54 \\
7)50 & 2)68 & 4)62 & 5)475 & 2)604 \\
6)744 & 8)13.48 & 41)82 \\
\end{array}
\]

Add

\[
\begin{array}{cccc}
& 40 & & \\
& 65 & & 767 \\
39 & 493 & 12 & 198 \\
27 & 458 & 80 & 40 \\
16 & 946 & 73 & 763 \\
\end{array}
\]

\[
\begin{array}{cccc}
\frac{1}{3} & \frac{1}{3} & \frac{4}{5} & \frac{4}{5} \\
\frac{1}{3} & \frac{2}{5} & \frac{3}{4} & \frac{3}{4} \\
\frac{1}{3} & \frac{2}{5} & \frac{3}{4} & \frac{3}{4} \\
\end{array}
\]

Subtract

\[
\begin{array}{cccccc}
469 & 925 & 536 & 7000 & \$40.00 \\
- 64 & - 634 & - 478 & - 268 & - 39.34 \\
\end{array}
\]

Go right on to the next page.
Subtract
\[
\begin{array}{c}
\frac{4}{5} \\
- \frac{1}{5}
\end{array}
\quad \begin{array}{c}
\frac{6}{1} \\
- \frac{1}{4}
\end{array}
\quad \begin{array}{c}
\frac{3}{7} \\
- \frac{2}{7}
\end{array}
\]

Multiply
\[
\begin{array}{cccc}
27 & \times 43 & 304 & \times 17 \\
458 & \times 92 & 648 & \times 807 \\
& & 269 & \times 756
\end{array}
\]

Find
\[
\frac{1}{7} \text{ of } 28 = \quad \frac{3}{4} \text{ of } 36 = \quad \frac{5}{6} \text{ of } 24 =
\]

Divide
\[
\begin{array}{ccc}
48)305 & 78)9926 & 62)2860
\end{array}
\]

STOP!
TEST 4. ARITHMETIC PROBLEMS

1. I bought an orange for 5 cents, a glass of milk for 8 cents, and some bread for 3 cents. All the food cost how many cents?

   

2. We had 10 kittens and gave away 6. We had how many kittens left?

   

3. My cousin has 12 baby rabbits. She is going to give me half of them. How many baby rabbits shall I have?

   

4. I have 5 cents and want a ball that costs 12 cents. I need how many more cents to buy the ball?

   

5. My father gave me 25 cents. I spent 5 cents for a post card and 10 cents for a ride on the bus. How many cents did I have left?

   

6. 4 children are coming to my party. I am going to give each one of them 3 cakes. I must have how many cakes for all of them?

   

7. An automobile went 48 miles the first hour and 50 miles the second hour. How far did it go in the 2 hours?

   

8. I need 4 cups of flour to make a pudding. How many cups of flour do I need for 6 times as much pudding?
3. Our class had $1.75. We spent 85 cents for a picnic we gave. How much money did we have left? |

10. I bought 4 notebooks for 5 cents each and gave the clerk half a dollar. How much change did I get back? |

11. 14 children made doll dresses. Each child needed 6 inches of cloth. How many inches of cloth were needed for all the children? |

12. A farmer is going to plant 280 trees. He has already planted 155 of the trees. How many more has he still to plant? |

13. Last week I had 309 stamps in my collection. I have 359 now. How many more have I now? |

14. We plan to travel 260 miles a day in our car. How far shall we be able to go at that rate in 8 days? |

15. Tickets to our play are 15 cents each. If 10 persons buy tickets, how much money shall we make? |
16. Each room in our building has 48 seats, and there are 30 rooms. How many seats are there in the whole building?

17. At the grocery store Ralph bought half a pound of butter for 19 cents, six pears for 22 cents, and a bottle of tomato juice for 15 cents. How much change should the grocer give him from a dollar bill?

18. Marie bought 6 handkerchiefs for $2.34. At this rate, what was the price of one handkerchief?

19. The 49 girls of our class are going to have a party. If it costs each girl 25¢, how much will it cost for the entire class?

20. The school needs 366 cupcakes for a party. How many packages will they need to buy if there are 6 cupcakes in a package?

21. John bought a sled for $6.48. How much change should he receive from a 10-dollar bill?

22. We shall need 35 gallons of gasoline for our week-end trip. If we pay 18¢ a gallon, how much do we spend for gasoline?
23. If plums sell at 2 for 5¢, how much would 1 dozen cost?

24. We want 264 mints for our school party. We found that there were 44 mints in a pound. How many lb.
   should we buy?

25. The meals for our family cost $23.10 for one week. How much would that be a day?

STOP!
TEST 5. LANGUAGE USAGE

a. My brother ________ he would hurry.

b. I want a piece ________ bread.

c. She ________ t coming to my party.

1. The baby is sitting ________ the floor.

2. The child is sleepy. He should ________ to bed.

3. Last night my father ________ me a dollar.

4. “Please ________ me go,” said the little boy.

5. Ruth ________ her work before supper yesterday.

6. Mrs. Smith has to feed her little boy because he cannot ________ himself.

7. Mary cried when she fell down because she ________ her knee.

8. Two children ________ playing in the park.

9. The children ________ many happy songs.

10. It took Bill an hour to reach my house. He left his house ________ eight o’clock, and he ________ to my house at nine.

11. Chester played marbles and lost. Now he has hardly ________ marbles left.

12. She ________ a song before. Do you think she will sing again?

13. You and John must be good friends, for I always see you ________ together.

[ 19 ] - Go right on to the next page.
14. This is a soft chair. __________ down here.

15. Bob has never __________ New York City.


17. Every girl must clean __________ own room.

18. There is the boy __________ was lost.

19. If he had been to the show, he would __________ said so.

20. I asked her to __________ the book on the table.

21. Mother, __________ I go over and play with Fred?

22. Have you __________ gifts for all your friends for Christmas?

23. I am anxious to eat lunch. I have not __________ since morning.

24. Edna has not been invited to the party. That is the reason she __________ going.

25. A quarter is larger __________ a penny.

26. “Does he always take the same train?”

“Yes, he has __________ the same train nearly every day for a year.”

27. Of course I can swim. Mr. Johnson __________ me to swim.

28. The balloon __________ because I pricked it with a pin.

29. Betty said, “I can run faster than Helen though she is taller than __________.”
30. Fred is just beginning, but Jenny \( \underline{li} \) ten minutes ago.

31. The flowerpot broke when Ella dropped it. She said, "I will bring a new flowerpot because I have \( \underline{br} \) yours."

32. It is fun to \( \underline{l} \) on the ground in front of a fire, after a picnic supper.

33. I haven't \( \underline{w} \) a letter to my grandmother in a long time.

34. My father usually walks to his work. He says he \( \underline{cl} \) care to ride on the streetcar.

35. You are making too much noise. Play more \( \underline{w} \).

36. The bird has \( \underline{fl} \) away.

37. The child has neither father \( \underline{m} \) mother.

38. \( \underline{w} \) did you say wanted to see me?

STOP!
## Test 6. Spelling

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INDIVIDUAL PROFILE CHART
METROPOLITAN ACHIEVEMENT TESTS: ELEMENTARY BATTERY

| Test 1 | Test 2 | Test 3 | Test 4 | Test 5 | Test 6 | AVE. | AGR T.
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* These two scales are independent. Only one should be used at one time.
† An additional scale is provided here in order to make it possible to plot the chart in terms of norms other than those of age or grade.

The Profile Chart is designed to furnish a graphic picture of the achievement of an individual pupil as revealed by his test scores. In plotting the equivalents (grade, age, or other type), open the test booklet and lay it flat so that both the title page and the Profile Chart are in view. Plot the equivalent of each test score on the proper stave and join these points to make the profile.
INTERMEDIATE FORM
(GRADES 3 to 9)

Group Diagnostic Reading Aptitude and Achievement Tests

By MARION MONROE
Specialist in Remedial Instruction, Public Schools, Pittsburgh, Pa.

and EVA EDITH SHERMAN
Director of Testing and Evaluation, Public Schools, Santa Barbara, Calif.

Name ___________________________ Date ___________________________ Grade ______

School __________________________________________ Birthdate ___________________________ Age ______

Intelligence Tests:

Name of test ___________________________ Date given ___________________________ C. A. ______ M. A. ______ I. Q. ______

Name of test ___________________________ Date given ___________________________ C. A. ______ M. A. ______ I. Q. ______

EDUCATIONAL PROFILE

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{GRADE} & \text{C. A.} & \text{M. A.} & \text{ARITH.} & \text{SPELL.} & \text{READING} \\
\hline
10 & 15 & 15 & & & \\
9 & 14 & 14 & & & \\
8 & 13 & 13 & & & \\
7 & 12 & 12 & & & \\
6 & 11 & 11 & & & \\
5 & 10 & 10 & & & \\
4 & 9 & 9 & & & \\
3 & 8 & 8 & & & \\
2 & 7 & 7 & & & \\
1 & 6 & 6 & & & \\
\hline
\end{array}
\]

INTELLIGENCE DATA

Years Months

C. A. at date of reading test ______

M. A. (corrected to date of reading test, as follows:)

1. Change present C. A. to months
2. Multiply by last I. Q.
3. Omit last two figures of this product.
4. Divide by 12 to get years. Remainder is months.

EDUCATIONAL DATA

Reading tests

Grade

1. Paragraph Meaning.
2. Speed of Reading.

Average ______

Arithmetic test

Spelling test

WORD DISCRIMINATION DATA

Percentile for Grade

Types

1. Vowels
2. Consonants
3. Reversals
4. Additions and Omissions
Use this page for recording additional data, such as the child's school adjustment, problems in behavior, physical, or other defects, home conditions, etc.
Part 1. Achievement Tests
READING TEST 1. PARAGRAPH UNDERSTANDING

Directions: Read the question. Then read the paragraph and find the answer to the question. At the end of the paragraph, draw a line under the word which answers the question. When you finish this page, go on to the next.

Sample: What does Tom's dog do?
Tom has a dog.
The dog runs.

1. What does Peter have?
Peter is a boy.
He has a ball.

2. Who is here with the car?
Mother said, "Come, Jane. Father is here with the car."

3. Who likes the cat?
Baby has a cat.
She does not like the cat.
Brother likes it.

4. What did the boy lose?
A boy was looking for something he lost.
A man said, "I will help you find it."
They found the penny in the grass.

5. Who was the child?
Molly saw a child.
She said, "What is your name?"

6. What did Peter have?
Peter is a boy.
He has a ball.

7. What did the farmer feed the cows?
A farmer had cows, horses, chickens and ducks. He fed the cows and horses hay.
To the chickens and ducks he fed corn.

8. How old is Bill?
Mary is ten years old. She has little twin brothers named Tom and Bill, and a brother Jack who is twelve years old. Tom is six.

9. What did Father want the children to do?
Father said, "Hurry, children. We shall be late for the train. We are going to see Grandma and Grandpa."

10. Where does Bob help his father?
Bob goes to school every day except Saturday and Sunday. On Saturday he helps his father at the store. On Sunday he and his father go to church.

Allow 7 minutes
12. Where did John go last?
John said, "I did two things today. I went to the bank after I took my book back to the library."

13. When is Alice's next music lesson?
Alice is becoming a fine musician. She practices on the piano every day. On Tuesday and Friday she takes her music lesson. Today is Wednesday.

14. Of what are toy animals made in Mexico?
In Mexican markets many things are on display. The tourist can buy brightly colored blankets of wool or cotton; leather shoes or purses; clay pigs, cats, or rabbits; and interesting carved human figures made of wood. Many of the toy animals are painted in bright colors with funny dots and stripes.

15. When did the children go for a walk?
On Tuesday it rained, so the children played indoors. Wednesday morning it was still too muddy to play outside, but their father took them for a ride in the park. Yesterday was bright and clear, and they went for a walk in the forest. They met an old woman when they had gone about a mile.

16. Which rug is most expensive?
The merchant said, "The dye used in this red rug comes from a very tiny animal. Thousands of animals are necessary to make even a small amount of dye."

18. How did I feel?
The angry rhinoceros came so close that I could hear the huge beast snort. I reached for my automatic rifle, although I well knew that my bullets would have little effect on his tough hide. Terrified, I watched him advance toward me.

19. Whom did Washington praise?
During the hardships of the Revolutionary war, everyone—young and old, soldiers, farmers, and artisans—all worked arduously for their country. Washington frequently commended especially the patriotism and devotion of the women. They worked as tirelessly as the soldiers on the battlefields, but with other implements than firearms.

20. What means of transportation seemed peculiar to Mr. Jones?
For thirty years Mr. Jones lived in a country where the dog-team was the sole means of transportation. Accustomed as he was to the sled or travois, he found it difficult, on his return to civilization, to refrain from gaping wide-eyed in wonder at the automobiles of our modern city streets.

21. What is the most economical type of locomotive?
Engineers strive to reduce the weight of engines and thereby lessen the pounding
22. Who may submit entries in the contest?

The committee of judges will give careful attention to every entry submitted. The entrants should type the manuscripts on only one side of the paper. Any magazine reader is eligible to compete. The contest is closed to relatives of the judges, or employees of the firm.

committee members employees
judges judges' relatives
magazine readers

23. Future buyers of airplanes may expect a reduction in what?

Airplanes are rapidly being improved to increase speed and safety. In fact, each new plane built is out of date soon after delivery to the purchaser. Eventually, when the experimental stage in aviation has been passed, airplanes will be standardized and produced at a considerably lower price than at present.

delivery speed safety price aviation airplanes

24. What do vocational tests measure?

Tests for vocational guidance are effective tools in helping high school students select suitable occupations. The counsellor explains to the student that the tests cannot dictate his future vocation in absolute terms, but rather point out his aptitudes and abilities. He may then make a more intelligent and successful occupational choice than would be possible otherwise.

occupations absolute terms aptitudes counsellor guidance

25. What kind of abstracts appear in “Biological Abstracts”?

“Biological Abstracts” is a scientific journal consisting of extremely condensed summaries or abstracts of current scientific, biological literature. Biology, however

26. What should citizens do in reading news items?

A newspaper becomes an organ of propaganda when subversive influences are allowed to invade the field of reporting events. Citizens should be trained to evaluate each news item in terms of its authenticity, and to expend unmitigated efforts in denouncing newspapers which flagrantly violate veracity in efforts to influence political conduct.

evaluate denounce violate
invade influence veracity

27. What partially overcomes the limits of human perception?

There are limits of exactness in human perception which are irremedial. As two lines or forms are made more nearly equal, a point is reached at which the unaided eye can no longer distinguish between them. To eliminate this source of error in observation, precision instruments have been devised which permit greater accuracy of measurement than could be obtained otherwise.

observation instruments exactness accuracy irremedial forms

28. What makes diagnosis of fatigue difficult?

Depression, inattention, and erratic behavior may result from fatigue. In any consideration of fatigue, the capacity of the human being to compensate temporarily by special effort should be remembered. This capacity not infrequently produces remarkable results and may be correspondingly misleading. Interpretation of fatigue is impossible, even when aggravated, unless this capacity is controlled or eliminated.

compensation capacity results fatigue aggravated eliminated depression
Directions: This is a test to find out how fast you can read. You will find things to do in almost every sentence. Be sure to do each thing right, but go as fast as you can.

Allow 1½ minutes

Put a ring around the flag. Put a line under the tree. Make a cross on this line. Write the number three after this sentence. Read as fast as you can.

Write "yes" on this line.

If you have two eyes, write 2 after this sentence. If you can see, put a ring around this S. If you like to eat, make two circles here. Now cross out the number three. I 2 3 4

Boys and girls like these games because they are easy. Put a dot in this ring. How many feet have you? How many ears have you? How many feet has a dog?

This is fun. Cross out all the o's in follow. Cross out the l's in little. Cross out the last letter in boy. Put a line under the last word in this sentence. Make two crosses on this line.

You are doing very well. Keep it up.

Draw a line under the girl's name:

white, and blue? Do hens lay eggs? Does milk come from birds? Would you like to have ten dollars?

You are a fast reader. How many letters are in the word two? How many letters are in the word up? Write a capital B here. Put a cross in this ring.

Draw a line under the name of a color: red, pretty. Cross out a word that means big: small, large. Put a ring around a word that means glad: happy, sorry. If you like to play these games, make a circle here.

Draw a line under the right answer. When does the sun shine? night, day. Which is larger? boy, man. Which is cold? ice, fire. Which is blue? sky, apple. Who is older? mother, baby.

Only a few pupils can read as far as this. How many things make a pair? Draw a ring around something good to eat: coal, apple. Put a line under a toy: doll, lake. Put a line under each t in butter.
**READING TEST 3. WORD DISCRIMINATION**

**Directions:** Underline the correct sentence in each group.

**Sample:**
The cat runs after the hat.
The cat runs after the rat.
The hat runs after the rat.

---

**Part 1. Vowels**

1. A dog can run fast.
   A dig can run fast.
   A dug can run fast.

2. We sleep in a bid.
   We sleep in a bed.
   We sleep in a bad.

3. The mat wore a hat.
   The man wore a hot.
   The man wore a hat.

4. I like to eat bread and butter.
   I like to eat broad and butter.
   I like to eat bread and bitter.

5. We get milk from the coo.
   We get milk from the cow.
   We get milk from the coy.

6. I hope that you will come soon.
   I hope that you will come soon.
   I hope that you will come soon.

7. He will tape on the door.
   He will tap on the door.
   He will tip on the door.

8. I am fond of animals.
   I am found of animals.
   I am fond of animals.

9. Did you knew my brother?
   Did you knee my brother?
   Did you know my brother?

10. Have you heard what happened today?
    Have you hard what happened today?
    Have you hoard what happened today?

15. The girl is hopping to go to the picnic.
    The girl is hoping to go to the picnic.
    The girl is hooping to go to the picnic.

16. Let this accident be a reminder to be careful.
    Let this accident be a reminder to be careful.
    Let this accident be a remainder to be careful.

17. The rubber confessed that he was guilty.
    The robber confused that he was guilty.
    The robber confessed that he was guilty.

18. Workmen were hired to constrict the bridge.
    Workmen were heard to constrict the bridge.
    Workmen were hired to construct the bridge.

19. The man said that he would come latter.
    The man said that he would come later.
    The man said that he would come letter.

20. He was reworded for finding the expensive jewels.
    He was rewarded for finding the expensive jewels.
    He was rewarded for finding the expansive jewels.

21. All the problems accept the first are impossible.
    All the problems accept the first are impassible.
    All the problems except the first are impossible.

22. This author mansions the American Revolution.
    This author mentions the American Revolution.
    This author mentions the American Revelation.

23. Some people object to foreign imports.
    Some people object to foreign imparts.
    Some people object to foreign imparts.

24. The possession is filled by an eminent man.
    The position is filled by an inminent man.
    The position is filled by an eminent man.

**Score**
1. A little dog is a good pet.  
   A little dog is a good pen.  
   A little dog is a good peg.  

2. We sleep in a bet.  
   We sleep in a bed.  
   We sleep in a bell.  

3. Please look at the pretty doll.  
   Please look at the pretty doll.  
   Please book at the pretty doll.  

4. This paper cost a time.  
   This paper cost a dine.  
   This paper cost a dime.  

5. The poor man was very tin.  
   The poor man was very fin.  
   The poor man was very thin.  

6. Give the toy to then.  
   Give the toy to there.  
   Give the toy to them.  

7. Get the nail at the post office.  
   Get the mail at the post office.  
   Get the rail at the post office.  

8. Which is the way to town?  
   Witch is the way to town?  
   Wish is the way to town?  

9. Wash the dishes in the sing.  
   Wash the dishes in the sink.  
   Wash the dishes in the zinc.  

10. You will get yet in the water.  
    You will get wet in the water.  
    You will get whet in the water.  

11. The pupil corrected his mistake.  
    The pupil connected his mistake.  
    The pupil collected his mistake.  

15. I do not know weather it will rain tomorrow.  
    I do not know whether it will rain tomorrow.  
    I do not know weter it will rain tomorrow.  

16. This package of sugar is infested with ants.  
    This package of sugar is infected with ants.  
    This passage of sugar is infested with ants.  

17. The halls resounded with echoes of chimes.  
    The halls rebounded with echoes of chimes.  
    The balls resounded with echoes of chimes.  

18. We defend on the army for protection.  
    We depend on the army for protection.  
    We depend on the army for protection.  

19. The boy deserts a liberal allowance.  
    The boy deserves a liberal allowance.  
    The boy deserves a literal allowance.  

20. The floor squealed as he replaced his steps.  
    The floor squeaked as he retraced his steps.  
    The floor squeaked as he replaced his steps.  

21. The award will be a blonde medal.  
    The award will be a bronze metal.  
    The award will be a bronze medal.  

22. She fiercely relented his angry resort.  
    She fiercely resented his angry retort.  
    She fiercely relenting his angry retort.  

23. The wrestler's huge muzzles showed in the photograph.  
    The wrestler's huge muscles showed in the photograph.  
    The wrestler's huge muscles showed in the phonograph.  

24. Contracting colors appealed to the girl.  
    Contrasting colors appealed to the girl.  
    Contracting colors appealed to the girl.
Part 3. Reversals

1. A little bog can run fast.
   A little dog can run fast.
   A little god can run fast.

2. The man was the cat.
   The man saw the cat.
   The man sam the cat.

3. A big likes mud.
   A dig likes mud.
   A pig likes mud.

4. Please do not come late to school.
   Please do not come late to school.
   Please do out come late go school.

5. Write your name on the crab.
   Write your name on the carp.
   Write your name on the card.

6. A dog can bark.
   A dog can park.
   A dog can dark.

7. The boy used an ax to split wood.
   The boy used an ax to split wood.
   The boy used an ax to slipped wood.

8. Do not bump the garbage on the street.
   Do not dump the garbage on the street.
   Do not dumb the garbage on the street.

9. I like to eat beard and butter.
   I like to eat dread and butter.
   I like to eat bread and butter.

10. The red light means stop.
    The red light means stop.
    The red light means pots.

11. The small boy won the race.
    The small boy own the race.
    The small boy now the race.

15. The bride looked like an angel.
    The bride looked like an angel.
    The bride looked like an angel.

16. Healthy pink cheeks need no rogue.
    Healthy pink cheeks need on rouge.
    Healthy pink cheeks need no rouge.

17. He tried to perform the difficult task.
    He tried to perform the difficult task.
    He tried to perform the difficult task.

18. Farmers must guard against frost.
    Farmers must guard against frost.
    Farmers must guard against frost.

19. The child who perseveres can except to succeed.
    The child who preserves can expect to succeed.
    The child who perseveres can expect to succeed.

20. Are you intending to move this month?
    Are you intending to move this month?
    Are you intending to move this month?

21. He was greatly assumed, reading the funny verse.
    He was greatly amused, reading the funny serve.
    He was greatly amused, reading the funny verse.

22. The calvary paraded to martial music.
    The calvary paraded to martial music.
    The calvary paraded to martial music.

23. The best reader was commended for his skill.
    The best reared was condemned for his skill.
    The best reader was condemned for his skill.

24. We conserved about antique silver.
    We conversed about antique silver.
    We conversed about antique silver.

Score
(Number right minus number wrong)
Part 4. Additions and Omissions

1. The little girl has a black at.
The little girl has a black cat.
The little girl has a black cats.
2. I play a drum in the bad.
I play a drum in the ban.
I play a drum in the band.
3. He rode his pony pass my house.
He rode his pony past my house.
He rode his pony pat my house.
4. This hat cost the most.
This hat cost the mostly.
This hat cost the almost.
5. We eat dinner ever day.
We eat dinner very day.
We eat dinner every day.
6. I gave the book to a fried.
I gave the book to a friend.
I gave the book to a fiend.
7. The boy's farther is a doctor.
The boy's fathers is a doctor.
The boy's father is a doctor.
8. The baby wants to sleep.
The baby wants to sleepy.
The baby wants to asleep.
9. Tie the bundle with a sing.
Tie the bundle with a string.
Tie the bundle with a sting.
10. I have been presents every day.
I have been presently every day.
I have been present every day.
11. We tramped through the forest.
We tramped thorough the forest.
We tramped though the forest.
12. Here is a small particular of sand.
Here is a small participle of sand.
Here is a small particle of sand.
13. The widow kept her car in our garbage.
The window kept her car in our garage.
The widow kept her car in our garage.
14. The artist created a statute from clay.
The artist created a statue from clay.
The artist crated a statute from clay.
15. It is imprudent to spend money lavishly.
It is impudent to spend money lavishly.
It is imprudent to spend monkey lavishly.
16. The invisible team won a gold medal.
The invincible team won a gold medial.
The invincible team won a gold medal.
17. He gave more liberality than others in his locally.
He gave more liberally than others in his locally.
He gave more liberally than others in his locality.
18. The bandit intimidated the crowd with a revolver.
The bandit intimated the crowd with a revolver.
The bandit intimidated the crowd with a revolve.
19. A processionflowed the parade.
A procession followed the parade.
A possession followed the parade.
20. This printed publican is nationally known.
This printed publication is nationality known.
This printed publication is nationally known.
21. He studied, oblivious to the conversation.
He studied, oblivious to the conversation.
He studied, oblivious to the conversation.
22. Your direction is really too indefinite to follow.
Your direction is reality too indefinite to follow.
Your direction is really too infinite to follow.

Score
(Number right minus number wrong)

GRADE

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ARITHMETIC COMPUTATION

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<th>Directions: Write the answers to these problems as quickly as you can.</th>
<th>Allow 5 minutes</th>
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1. (Add) 2 3 = __________
2. (Add) 4 3 = __________
3. (Subtract) 6 - 3 = __________
4. (Subtract) 14 - 8 = __________
5. (Add) 234 + 461 = 925

6. (Subtract) 322 - 154 = __________
7. (Multiply) 8 \times 3 = __________
8. (Multiply) 204 \times 7 = __________
9. (Divide) 3 \div 12 = 4 \div 492

10. (Divide) 492 \div 25 = 1326

11. (Divide) 7 \div 65 = __________
12. (Multiply) 23 \times 9 = __________
13. (Subtract) 4203 - 3705 = __________

14. (Divide) 25 \div 1326 = __________
15. (Divide) 1326 \div 25 = __________

16. (Add) 10 + 2\frac{1}{2} = __________
17. (Add) \frac{1}{2} + \frac{1}{4} = __________
18. (Subtract) 7 - 5\frac{1}{2} = __________

19. (Add) \frac{1}{4} + \frac{1}{4} = __________
20. (Add) \frac{1}{4} + \frac{1}{4} = __________
21. (Add) 192\frac{1}{2} + 21\frac{1}{2} = __________
22. (Multiply) \frac{27}{2} \times \frac{3}{4} = __________
23. (Multiply) \frac{3}{4} \times \frac{3}{4} = __________
24. (Divide) \frac{3}{4} \div \frac{1}{2} = __________
25. (Multiply) 39 \times .04 = __________
SPELING TEST

Directions: Write the words which the teacher pronounces. One word belongs in each space.

1. A___________drinks milk.
2. The___________runs.
3. He___________a letter.
4. The grass is______________________
5. Please_________________some candy.
6. This is a toy______________________
7. You should_________________your lesson.
8. The horse is______________________
9. We_________________very quietly.
10. I live in a very large_______________
11. You can_________________out a candle.
12. Do not_________________around.
13. The train is on the__________________
14. Are you_________________to go?
15. We cook in the_____________________
16. Open the_________________wide.
17. Throw the ball_________________the posts.
18. This is_________________eighteen.
19. Why do you_________________?
20. She has a_________________new dress.
21. What is the______________________?
22. Many_________________are here.
23. We went to a_____________________meeting.
24. The horse pulls the_________________
25. The_________________is the man who commands the army.
26. I_________________I saw you
27. What_________________is your hair.
28. What did you eat for_________________?
29. My_________________is a good typist.
30. He has very little__________________
31. The_________________collects taxes and makes laws.
32. On my_________________I can answer letters.
33. Be_________________in choosing friends.
34. This_________________is easy.
35. How many yards of cloth are_________________to make this coat?
Part 2. Aptitude Tests

VISUAL TESTS

**Letter Memory**

**Directions:** The teacher will show you a card on which is printed a nonsense word. Study the word until the teacher removes the card. Then write as much of the nonsense words as you remember.

Show each card 5 seconds.

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 
13. 
14. 
15. 
16. 
17. 
18. 

**Form Memory**

**Directions:** The teacher will show you some designs on a card. Study these designs until the teacher removes the card. Then draw as many of them as you can remember.

Show each card 10 seconds.

Card 1. 

Card 2. 

Card 3. 

Card 4. 

**Score** (Number of nonsense words correct) 

**Score** (Number of single designs correct)
## Letter Memory

**Directions:** The teacher will spell aloud the letters of some nonsense words. Listen carefully and when she says “write”, write as many of the letters as you can remember.

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**Score:** ____________
(\text{Number of nonsense words correct})

## Discrimination and Orientation

**Directions:** This is a test to see how well you can listen. Wait until the teacher tells you what to do.

**Sample:** boot bat beat bit

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**Score:** ____________
(\text{Number right})
Copying Text
Directions: Copy this little story as quickly and plainly as you can. When the teacher says "Stop", hold up your pencil.

Allow 1½ minutes

A little boy lived with his father in a large forest. Every day the father went out to cut wood. One day the boy was walking through the woods with a basket of lunch for his father. Suddenly he met a huge bear. The boy was frightened, but he threw a piece of bread and jelly to the bear.

Crossing Out Letters
Directions: In every other word there is a letter "a". Cross out all of the a's you can find. Remember there is one in every other word. Do it this way: sheik puuk vərõne le ānet.

Allow 1 minute

Bot ralentch tokel stad voule san cherm
anoos. Evidid wheal oron vade su av
olein sair newok eay ki poleat selur
laes ov prusath. Toshel wanetor tuk
splenat olor wark lishes eator, thesur
squal se haed sunch, iga niding. Ballon
luzzes thail jiekes, asselum mey jaublet.
Mo shoam kleidorp pae synoghet lanke.
Prounth ab shill veroaki spleev to thrun
ake squiton achorles ev sloak dunket,
apporience woll. Lackech woesp traskel
wois appin ovilt anevish. Drist flunoat,
hispeal adnoll, dite riha thi havod hevod
thenna. Thop calch eline yeating zellos
atherm pitoe tad wrote prall ven acholet
xeb. Cholat wheb whay, slooter anenine
gloes oda moster aberove, lin thoak drist
penota, ideok, wark lishes nald neth
wonat spliger atherm worsk denna.

Score
(Number of words written correctly)

Score
(Number of a's crossed out)
**LANGUAGE TEST**

**Vocabulary**

**Directions:** Here are groups of words, some pairs of which make good sense, while others are foolish. Listen while the teacher reads each group aloud. Decide which pair of words in the group makes the best sense and draw a line under that pair.

**Sample:**
- bed sleeps
- baby sleeps
- grass sleeps
- broom sleeps
- pretty rose
- ugly rose
- high rose
- ring rose

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<td>9.</td>
<td>coin ropes</td>
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| 23. | industrious laggard |
|     | loitering laggard |
| 24. | hopeful pessimist |
|     | misty pessimist |
|     | optimistic pessimist |
|     | hopeless pessimist |

| 25. | carnivorous cow |
|     | carnivorous wolf |
|     | carnivorous rabbit |
|     | carnivorous carnival |

| 26. | venerable sage |
|     | venerable mention |
|     | venerable younger |
|     | venerable novelty |

| 27. | menial master |
|     | menial professor |
|     | menial servant |
|     | menial bully |

| 28. | subterranean mountain |
|     | subterranean substitute |
|     | subterranean submarine |
|     | subterranean cavern |