

THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Examination

This is to certify that we the undersigned, as a committee of the Graduate School, have given Carl Edward Hendrickson final oral examination for the degree of Master of Arts . We recommend that the degree of Master of Arts be conferred upon the candidate.

Minneapolis, Minnesota

May 26 1921

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The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by Carl Edward Hendrickson for the degree of Master of Arts.

They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts.

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May 26.....1918<sup>21</sup>



THE RELATION OF READING ABILITY TO MENTAL ABILITY

A Thesis

Submitted to the Graduate Faculty

of the

University of Minnesota

by

CARL EDWARD HENDRICKSON

In Partial Fulfillment of the Requirements

for the

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THESIS

THE RELATION OF READING ABILITY TO MENTAL ABILITY

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## SECTION III

## INTRODUCTION

## 1. Statement of Problem.

Scientific educators have tended to avoid any analytical discussion of the relation of reading ability to mental ability. When one searches for hypotheses regarding the inter-relationship of these factors he seldom finds anything but empirical considerations of the same. It has been the purpose of the author of this study to determine and point out some relationships which exist between READING ABILITY AND MENTAL ABILITY on the basis of experimental inquiry. The statements given and the conclusions drawn have been based on data gotten by the use of standardized methods. Use has been made of materials such as standardized so-called Reading and Intelligence group tests, individual intelligence tests, vocabulary tests, amount of material read outside of school, and scholarship based upon the consensus of teachers' opinion. While working with ~~the~~ and discussing the above mentioned data, an attempt has been made to find and formulate answers to the following questions.

Do reading tests measure intelligence and do intelligence tests measure reading ability?

Do some intelligence tests, such as those that contain only non-verbal material, determine reading ability more accurately or less accurately than others which contain only reading material?

Is there a closer relationship between scholarship and reading ability than between intelligence and reading ability?

In the lower or upper grades, do the pupils who are low in mental ability ever read very well and do those who rank high in intelligence lack in ability to read?

Is there any significant indication that girls read better than boys,

if so, how much and where are they found in the range?

Is there a marked tendency to promote pupils on the basis of their ability to read rather than on the basis of certain other factors such as mental age and mental ability as measured by means of standard intelligence tests?

## 2. Need for the Study

Two of the most essential qualities for the success of any pupil, in school or out of school, are (a) a certain amount of ability to read, and (b) a certain amount of mental ability. It is generally agreed that good home conditions, a good teaching staff, sufficient equipment, complying with standard specifications, in the school, and other elements are of great importance, but one's stay and success in any school, this, as well as the other studies which are here-in reported, would indicate to be more dependent on one's reading ability and his mental ability. Dr. Melvin E. Haggerty states "There is no skill so important for any one to acquire in school as the power to read, hence it would seem that reading is the basic subject for classification of pupils".<sup>1</sup> In regard to the larger function of reading Dr. Haggerty adds: "The end of a liberal education is best achieved by learning to read" and "the best measure of a school from the point of liberal culture is the reading attainments of its students".<sup>2</sup> This fundamental importance of the function of reading has evidently been recognized for, after summarizing the results of a recent investigation, W. A. Schmidt writes "more than one-fourth of the time in the elementary schools of our cities is devoted to the teaching of reading".<sup>3</sup> However, the focus of attention has been somewhat misplaced for teachers have taught reading chiefly to prepare for speaking and writing and little attention has been paid to the more important factor of understanding with

1 Haggerty, Melvin E., "Measurement of Children's Achievements", St. Paul School Survey, 1917, pp. 373.

2 Haggerty, Melvin E., Ibid. pp. 399.

3 Schmidt, William Anton, "An Experimental Study in the Psychology of Reading", Supplementary Educational Monograph, Vol. 1, No. 2, University of Chicago Press, 1917, pp. 1.

the result that pupils of any grade vary greatly in reading ability. Dr. Haggerty says: "In every grade there are pupils together who in actual ability are from 3.1 to 4.4 grades apart".<sup>4</sup>

The factor of intelligence is probably no less important for educators to consider. Dr. Lewis M. Terman writes, "The chances are remote that a child testing much below 90 (IQ) will ever be able to satisfy the requirements for college graduation."<sup>5</sup> He also adds: "success in the professions of law, ministry, engineering, teaching, etc. is probably achieved only by individuals above the 115 or 120 I.Q. class".

Since each of these factors seem so very important, surely the inter-relationship of the same must be significant. Only a very few years ago, rational and scientific educators like Cubberly and Ayres withdrew from the more or less traditional and empirical methods of school administration. They did this only after having considered very carefully the relationships which exist between intelligence and such factors as progress in school, retardation, acceleration, elimination, and social adaptability. The findings of these educators have proven of immense value to the educational public in their attempt to make our schools function in the best possible manner. In Section IV, it will be noted that investigators have determined some significant things regarding reading ability and mental ability, but comparatively nothing has been done to determine the relation of one of those factors to the other. Hence, it was with a view to contributing something to this practically undeveloped field that this study was attempted.

### 3. Value of the Study

By means of the most modern statistical methods, this study has attempted to show the mutual relationship which exists between ability to read and mental

4 Haggerty, Melvin E., "The Ability to Read: Its Measurements and Some Factors Conditioning It". Indiana University Bulletin, 1917, pp. 22.

5 Terman, Lewis M., "The Intelligence of School Children". Houghton Mifflin Company, 1919, pp. 281-282.



ability. An attempt has been made to indicate whether the best so-called reading tests measure mental ability as well as reading ability. In short, an attempt has been made to throw some light upon each of the six questions raised under sub-section 1 of this introduction.

4. Terms Defined.

MENTAL ABILITY.

By mental ability is meant the intelligence of individuals, as estimated from the results obtained by the use of standardized individual and group so-called Intelligence Tests. One should rather mean the native mental ability or endowment than what is determined by the factors of learning, practice, opportunity, or industry. However, these factors seem very difficult to eliminate. Stern defines intelligence as "the general capacity of an individual consciously to adjust his thinking to new requirements; it is general adaptability to new problems and conditions of life".<sup>6</sup> Dr. H. H. Goddard offers the following explanation: "General Intelligence may be defined as all around, innate mental efficiency".<sup>7</sup> Another explanation of what constitutes that aspect of mental activity called intelligence is given by Edgar A. Doll. He writes: "We may consider Intelligence in four ways: (1) as a general ability, otherwise undefined, which pervades and controls all mental action outside the field of emotion and will, or (2) as a compound of the specific mental processes of structural psychology, or (3) as a fundamental faculty whose essential activities are judgment, comprehension and reasoning, and in relation to which the so-called simpler mental processes are phenomena, or (4) as a general capacity for conscious adaptation to new conditions of life".<sup>8</sup> The following definition of Dr. M. E. Haggerty indicates quite definitely what educational

6 Quoted by Terman, Lewis, M., "The Measurement of Intelligence". Houghton Mifflin Company, 1916, pp. 46.  
7 Goddard, H. H., "Feeble-Mindedness". Macmillan Company, New York, 1914, pp. 557.  
8 Doll, Edgar A., "The Growth of Intelligence". Psychological Review, Monograph No. 131, 1921, Princeton, New Jersey, pp.4.

psychologists popularly consider as intelligence: "The ability to profit by the work of a good school, to recognize the meaning of words and sentences, to remember important facts observed and learned, to discriminate essential from unessential material, and to infer correct conclusions from data presented".<sup>9</sup> The sum total of the above explanations of what constitutes mental ability would mean the ability to fit or adapt one's self to new environments.

#### READING ABILITY.

By ability to read is meant the ability of individuals to comprehend the material or information which is conveyed to them by means of the symbols of printed pages. This involves analysis and synthesis or the ability to interpret, to organize, to remember, and deliver thought material.

S. A. Curtis has summarized the ideas of a number of educators concerning READING ABILITY. He states: "Ability in reading may mean -

1. Ability to recognize silently the general meaning of words of a given range of difficulty, (Otis).
2. Ability to read aloud smoothly and with proper expression, without regard to whether the meaning is understood or not, (Gray).
3. Ability to 'sound' correctly a given set of words, (Jones).
4. Ability to read silently or orally and to understand the essential relations existing between the essential elements of what is read, (Curtis).
5. Ability to read silently or orally and tell in one's own words the substance of what has been read, (Starch, Brown, Gray).
6. Ability to read instructions silently or orally and be able to act in accordance with the instructions, (Kelly).
7. Ability to read again and again (study) until one has mastered the contents of a passage so that one can answer questions about it or use the information in solving problems, (Thorndike).

<sup>9</sup> Haggerty, Melvin E., "Manual of Directions for Achievements Examination in Reading: Sigma 1". World Book Company, New York, 1919, pp. 6.

9. Ability to read a passage and interpret the allusions it contains.

10. Ability to read a selection and be stirred emotionally by its aesthetic elements.

11. Ability to read a passage and interpret the mood, ideas, or ideals of the author.

12. Ability to read a selection and make judgments as to its style and merits as a piece of good English."<sup>10</sup>

Dr. Edward L. Thorndike recently published the following critical and diagnostic definition of reading: "Understanding a spoken or printed paragraph is a matter of habits, connections, mental bonds, but these have to be selected from so many others and given relative weights so delicately, and used together in so elaborate an organization that 'to read' means 'to think', as truly as does 'to evaluate' or 'to invent', or 'to demonstrate' or 'to verify'."<sup>11</sup> The eyes, the most important of the special senses, convey stimuli to the brain which determine behavior more than any other factor. This being true, it might be stated that each of the higher forms of animal life reads or recognizes animate or inanimate forms, cartoons, pictures, signs, etc. But that is not what is meant by reading here. It is rather the ability to recognize and interpret the thoughts conveyed by means of the symbols of the printed, written, or pictured page. Besides this, one should also, incidentally at least, include certain technical skills on which reading ability is more or less dependent, such as the ability to make proper use of indexes and tables of content; as well as certain reference material as cyclopedias, dictionaries, etc. found in libraries and elsewhere. Without including also the ability or opportunity that one should have of conversing with his fellow human beings about any mooted or ambiguous literary statements, this consideration of what constitutes reading ability would be quite incomplete.

<sup>10</sup> Courtis, S. A., "The Gary Public Schools". General Education Board, New York, 1919, pp. 265-266.  
<sup>11</sup> Thorndike, Edward L., "Understanding of Sentences". Elementary School Journal, XVIII, October, 1917, pp. 99.

## SECTION IV

## HISTORY OF THE PROBLEM

## 1. Reading - Oral and Silent

The methods of approach, whether it be to the study of ability in oral or silent reading, involve a consideration of the physiological and psychological facts of reading. Then, after these are comprehended, tentative working hypotheses may be formulated and later evaluated in terms of the ability of children to read. Such evaluations should discover the weaknesses to be guarded against and elements of efficiency which must be utilized in our attempt to build up a better pedagogy of reading. A summary of the findings of some of our educators concerning the factors mentioned above shall now be attempted.

Throughout human history no real critical attitude was developed towards reading methods until about the middle of the nineteenth century. Dr. C. H. Judd states <sup>12</sup> that as early as in 1654, in *Orbis Pictus*, Comenius advocated the word method, and that in 1838, Horace Mann, in a report to the Board of Education of Massachusetts, said in part: "Eleven-twelfths of the children in the reading classes do not understand the meaning of the words they read. Presenting the alphabet is giving them what they never saw, heard or thought before". Since the days of Horace Mann, various and divergent criticisms have been offered relating to reading and reading methods, but in this study mention may be made only of some of the more recent findings of scientific educators who have rationally studied the technical psychology of reading.

## 2. Reading - Silent and Oral

13

As early as 1884, Valentius studied the perceptual processes involved

12 Judd, C. H. "Reading, Its Nature and Development". Supplementary Educational Monograph, University of Chicago, 1918, pp.4.

13 Valentius, G., *Lehrbuch der Physiologie* - Quoted by Schmidt, W. A., in "An Experimental Study of the Psychology of Reading", Supplementary Educational Monograph, University of Chicago, 1917, pp.15.



in reading, and found it possible to perceive from three to four letters simultaneously in time intervals of from 100 to 270σ.

In 1898, Professor Huey of Clark University<sup>14</sup> studied eye movements of children mechanically by means of mirrors. He found that when reading silently at their ordinary rate, children read from 2.5 to 9.8 words per second and when reading orally they read from 2.2 to 4.7 words per second.

Miss Abell of Wellesley<sup>15</sup> was the first to study speed and comprehension in reading. She had a class of 41 girls read a selection at home and reproduce it in class. She found that her swiftest reader read six times as fast as her slowest and two of her fastest readers ranked highest in comprehension.

Later Dr. Quantz of the University of Wisconsin<sup>16</sup> tested fifty juniors and seniors and concluded from his results: 1. Rapid readers excel in grasping connected materials. 2. The visual type is superior to the auditory. 3. Motor mindedness, causing lip movement, etc, is a hindrance. 4. Rapid readers are superior in retention.

Dr. Dearborn of Columbia University, in 1905, tested 30 people and found that the fastest persons read three times as fast as the slowest.<sup>17</sup> E. E. Oberholzer tested 1800 children at Tulsa, Oklahoma,<sup>18</sup> and found a progressive increase in speed of reading from grade to grade, the averages being respectively: third grade 2.3 words per second; fourth grade 2.6 words; fifth grade 3.1 words; sixth grade 3.9 words; seventh grade 4.7 words; and eighth grade 4.8 words. About the same gradual increase was found later in the case of thousands of pupils by Daniel

14 Huey, E. B., "Psychology and Pedagogy of Reading", pp. 30, Macmillan Company, New York, 1908.

15 Abell, Adelaide M., "Rapid Reading", Educational Review, VIII, p 283.

16 Quantz, J. O., "Problems in the Psychology of Reading", Psychological Review, Supplementary Monograph, Vol. II, No. 1, Macmillan Company, New York, pp.49-50 1897.

17 Dearborn, W. F. "The Psychology of Reading", Columbia Contributions to Philosophy and Psychology, XIV, No. 1, pp. 116.

18 Oberholtzer, E. E., "Testing the Efficiency in Reading in the Grades", Elementary School Journal, XV, pp. 313.

Startch<sup>19</sup>. And still later, 1914, S. A. Courtis<sup>20</sup> distinguished between "normal" and "careful" reading. In the case of the former, he found a gradual increase in speed through the elementary and high school grades, but in the case of the latter no perceptible increase was evident beyond sixth grade.

In 1917, William Anton Schmidt, as a result of rather comprehensive study of the reading of elementary, high, and college students, made the following statements:<sup>21</sup> "On an average the subjects read 57 per cent more material silently than orally". His most rapid silent reader read three times as fast as the slowest, and the most rapid oral reader read two times as fast as the slowest. Schmidt also noticed the following:<sup>22</sup>

The average number of pauses per line for silent reading was from 4.1 to 10.8.

The average number of pauses per line for oral reading was from 6.1 to 11.5.

The average number of words perceived per pause during silent reading was from 2.15 to 0.931.

The average number of words perceived per pause during oral reading was from 1.62 to 0.86.

The perception time per line varies for silent reading from 1,140 to 3,684 .

The perception time per line varies for oral reading from 1,702 to 4,454 .

In the main, Schmidt's results agree with the following records of eye movement in silent reading, taken from C. T. Gray's Table of Fixations for 60 cases:<sup>23</sup>

19 Startch, Daniel, "The Measurement of Efficiency in Reading", Journal of Educational Psychology, VI, 1915, lff.

20 Courtis, S. A. "Standard Tests in English", Elementary School Journal, XIV, 1914, pp. 374.

21 Schmidt, William Anton, Ibid, pp. 82.

22 Schmidt, William Anton, Ibid, pp. 79.

23 Gray, Clarence Truman, "Types of Reading Ability", Supplementary Educational Monograph, University of Chicago, 1917, pp. 99.

Grade in School.	No. of pauses per line,	Length of pauses, 50th's sec.	No. of regressive movements,	Length of regressive movements, 50th's seconds
III	10.0	14.2	2.4	12.4
IV	9.0	12.5	2.1	11.5
V	10.0	13.8	2.4	12.0
VI	7.5	12.5	1.4	9.8
VII	8.8	13.6	1.5	9.0
High Schl.	6.4	11.5	0.8	5.6
College	6.9	11.3	1.1	8.1

Buckingham asserts that there is no physiological limit to prevent improvement in rate of reading and that 95 per cent of our reading time is consumed during pauses of the eyes. Hence we must either lessen the number of pauses or shorten each pause, or both. By so doing, one can more than double his rate of reading in a period of 39 days of practice.<sup>24</sup>

C. H. Judd<sup>25</sup> states that up to six years of age, a child's education consists chiefly in learning oral language and up to that time he is not able to move about independently in a large social circle or group. The rate of articulation of first graders is 75 per cent of that of seventh graders. Up to fourth grade, recognition of words is below capacity to articulate same. Above fourth grade, recognition of words is above the capacity to articulate same. Hence, "oral reading should give way to silent" and "phonic analysis to word analysis" in the fourth grade. It is better to come back to oral reading for appreciation and public exhibitions later. Since letters are symbols of sounds and not pictures of objects it is well not to force reading on very young children, but it should be given early after the sixth year.

Dr. Judd summarizes also in a general way, what should be taught in the different grades.<sup>26</sup> For grades 1 to 3, use stories and familiar matter made up of phonetically simple words. For grades 4 to 6, use concrete material, dealing with new, but definite experiences. For grades 7 to 12, satisfy the individual tastes,

<sup>24</sup> Buckingham, B. B., "Reading", Bulletin, Bureau of Educational Research, University of Illinois, October, 27, 1919.

<sup>25</sup> Judd, C. H., "Reading, Its Nature and Development", Supplementary Educational Monograph, University of Chicago, 1918, pp. 136.

<sup>26</sup> Judd, Charles H, Ibid, p 184.

or let specialization in. Judd further adds that method is 90 per cent of the problem of reading. He has found that by suppressing articulation, seeing phrases, and restraining eye movements, in four week's time, one's intelligent reading may be changed from an average of 2.3 to 5.25 words per second. Lastly, Dr. Judd states that "the changes in school practices must serve as a scientific check on the theories developed in our effort to apply the results of laboratory studies and experiments."

### 3. Reading and Intelligence

It has already been mentioned that the earlier writers at least seem to have agreed that reading ability is directly dependent on one's mental ability. Before giving any correlations and other data presented by late investigators and experimentors, it is probably well to consider some of those earlier and more traditional and empirical views.

Bacon in his essay "Of Studies" tells us that "reading maketh a full man" and Addison in "The Tatler" gives his views concerning reading - "Reading is to the mind what experience is to the body. As by the one health is preserved, strengthened and invigorated: by the other, virtue, (which is the health of the mind) is kept alive, cherished, and confirmed". Carlyle relates that "we are all poets when we read a poem well". It seems that only toward the end of the last century were there any definite statements offered, relative to the interdependence of reading and intelligence. In 1875, an educator, E. O. Vaile, stated: "The ability to read well depends on our power of mental perception. The degree of this faculty, more than any other one thing, constitutes the difference between dull and sharp minds. Also it seems to be, more than any other faculty, a native endowment."<sup>27</sup>

More recent findings show that intellectual as well as scholastic ad-

<sup>27</sup> Vaile, E. O. "Reading as an Intellectual Process", Popular Science Monthly, December 8, 1875, p. 212.



vancement depends on reading capacity to a large extent. In 1914, H. A. Brown wrote "Progress in school depends on one's ability to get a maximum of thought out of the printed page in the smallest amount of time possible".<sup>28</sup> And in 1915, Daniel Starch<sup>29</sup> found that the average correlation between teachers' marks and reading of 256 grade pupils was 58. He suggests classification of pupils on the basis of their reading abilities, for "One third (31.8%) of pupils of any grade could do the reading work of the next grade above as well as the average of that grade". "One fifth (20.1%) of pupils of any grade could do the reading work of the second grade above as well as the average of that grade". "One eighth (13.2%) of pupils of any grade could do the reading work of the third grade above as well as the average of that grade". "One thirtieth (3.3%) of pupils of any grade could do the reading work of the fourth grade above as well as the average of that grade".

In 1915, M. E. Haggerty and J. M. Thomas studied the relation of scholastic attainment to reading attainment of 600 college freshmen. They found the correlation between reading tests and rhetoric marks to be about .50 and state, "In general the distribution curve for reading tests parallels the curve for college marks".<sup>30</sup> It appears that E. L. Thorndike would have agreed with the foregoing statement for in 1917, he stated "To read means 'to think' as truly as does 'to evaluate' or 'to invent', or 'to demonstrate', or 'to verify'".<sup>31</sup> While considering correlations, Dr. Judd<sup>32</sup> states that it is well to remember that there are some individuals who never can learn to read or who have the disease called Dyslexia, which is sometimes considered as a "congenital word - blindness". This Judd states causes "an extreme difficulty to learn to recognize printed or written

28 Brown, H. A., "The Measurement of Efficiency in Reading", Elementary School Journal, June 1914, p. 477.

29 Starch, Daniel, "Measurement of Efficiency in Reading", Journal of Educational Psychology, January, 1915.

30 Haggerty, M. E., and Thomas, J. M., "Reading Attainment of College Freshmen", Report National Education Association, 1915, p. 230.

31 Thorndike, Edward L., "Understanding of Sentences", Elementary School Journal, 18; October, 1917, p 98.

32 Judd, Charles H., Ibid, p. 121.

language on the part of persons otherwise normally developed mentally and without defect of vision or other physical defect of such gravity as to constitute an interference of the process of learning to read". Before the war the school physicians of Warburg, Germany, found the disease present to the extent of eighteen per thousand children in the Hilfsschule. It has been impossible to find any stated estimate of its prevalence in this country; however, it is very likely that we have not escaped it much more than Germany and England. If these cases could be detected and eliminated, the correlations might be somewhat altered. This factor, neither this study, nor any of the following which shall briefly be reported, has considered.

In 1917, Dr. King of Iowa,<sup>33</sup> found a correlation of only 0.04 between the college standing, of 94 juniors and seniors, and the results of the same students in Kansas silent reading tests. For freshmen engineers the correlation was .12. From this Dr. King concludes that this reading test "is not a test of reading at all, but of ability to follow directions and to solve simple problems". Using Monroe's Standardized reading tests in 1920, L. W. Webb of Northwestern University<sup>34</sup> got the following correlations for ninety college sophomores, juniors and seniors.

Average correlation Alpha army and rate of reading	.49
Average correlation Alpha army and comprehension of reading	.68
Average correlation Thurstone's and rate of reading	.64
Average correlation Thurstone's and comprehension of reading	.58
Average correlation Scholarship and rate of reading	.27
Average correlation Scholarship and comprehension of reading	.36
Average correlation Scholarship and Alpha army	.57
Average correlation Scholarship and Thurstone's	.51
Average correlation rate and comprehension of reading	.85

Dr. Webb concludes that the standardized reading test is a "fairly good intelligence test", but "it does not test scholastic ability very well, and rapidity of comprehension is one large factor in determining grade in intelligence tests".

<sup>33</sup> King, Dr. "Correlations Between Reading Tests and General Ability", School Review, 25, January, 1917, p. 58.

<sup>34</sup> Webb, L. W., "Ability in Mental Tests in Relation to Reading Ability", School and Society, 11, May 8, 1920, p. 567.

During the past winter, 1920-21, W. W. Theisen, while studying "Factors Affecting Results in Primary Reading", has gathered the following interesting data.<sup>35</sup>

1. Attendance and reading - "Absences of less than two months probably have little effect on attainment". For 210 first grade children the correlation between attendance and reading was .008 and for 190 second grade children the correlation between attendance and reading, based on the results on Haggerty's Sigma 1 reading test was .073.

2. Kindergarten training and reading - In first grade the kindergarten group got higher scores, in third "the converse was true".

3. Intelligence and reading - For 200 pupils of grades I, II and III, the correlation between teachers estimate of intelligence, when weighted according to grade location, and scores in Sigma 1 reading tests was .76 and for 144 eight year old children for the same factors the correlation was .79.

4. Chronological age - The younger children excel the older. For 210 first grade pupils the correlation between chronological age and scores on sigma was 0.00.

5. Nationality and reading - Foreign language in the home is a distinct handicap to a child's reading development. Relatively, foreigners make better showing in oral than silent reading.

6. Oral and silent reading - For grade eight pupils the correlations between the estimated proportion of recitation time devoted to silent reading and rate and comprehension scores on Monroe's reading test were .01 and -.13 respectively.

7. Phonics and reading - For 200 first grade pupils the correlation between time devoted to phonics and scores on Sigma 1 was -.178.

8. Books read and reading - For 210 first grade pupils the correlation

<sup>35</sup> Theisen, W. W., "Factors Affecting Results in Primary Reading", 20th Year Book, National Society for the Study of Education, 1921, Chapter I.



between the number of books read at home and scores on reading tests was about .45 and for fourth grade children .53. Professor Theisen says that much of the present "Weakness is due to mass instruction". In Stoughton, Wisconsin, a second grade pupil who could not read the primer, after thirty-six special lessons, revealed: 1. Rate almost doubled; 2. Quality more than doubled and four points above the standard for the grade; and 3. Lip movement eliminated. "Only fifteen per cent of primary teachers made a serious attempt to fathom interests of individuals". And in conclusion, Dr. Theisen states that supervision of reading is sorely needed. At Madison, Wisconsin, Miss Reichert recently found that by supervising one group for six weeks the average score was increased from 5.5 to 11.3 on Monroe's reading tests, form II, as against an increase from 5.3 to 8.3 for another group under ordinary control.

#### 4. Summary of History of Problem

On the basis of the published studies, which have briefly been reviewed, the following may be offered as a summary of the data collected by other investigators bearing directly or indirectly on the present problem.

1. In America, ever since the time of the Puritans, the social and educational systems have been very largely reading systems. Hence reading methods and the relation of reading to other factors have been and are very important.

2. A few people may be found who never can learn to read because of being inflicted with the disease called Dyslexia (word blindness).

3. Everywhere one finds that individuals differ, or vary markedly in speed, comprehension, and other factors pertaining to reading.

4. In the case of children's reading, recognition is narrow, slow, and irregular, which shows that the fixation pauses and periods are varied. This is brought about because the children have not fixed or established their motor habits.

5. In high schools poor reading is caused because of the persistence



of short units of recognition, long fixations, and confusion.

6. The use of good technique of reading enables our better students to read very fast without sacrificing understanding.

7. It seems that over-emphasis has been and is placed on oral reading in the upper grades and in the high schools. This is caused because of the natural tendency to continue teaching what proved efficacious in the lower grades, and because of the presence of a large number of poor readers who cover effects that are evil.

8. Up to fourth grade children should read in order to learn to read. This means that here we must make use of mechanical and other devices to attach meanings to words.

9. After fourth grade it is our business to teach children to read in order to learn. Here the emphasis must be laid on the cultivation of the powers of interpretation, or, in other words, on the deriving of meanings from words.

10. From the results of past investigators, one cannot even formulate tentative statements relative to the dependence of reading on intelligence and vice versa.

11. Traditional and empirical principles have, until a very recent date, controlled our training in reading which is recognized as one of the most important forms of human behavior to the extent that silent reading has been almost entirely excluded. Yet in the later years of school life and sure in after school life, this form of reading is of far greater importance than oral reading.

12. Of late, there has been a favorable changing of focus from oral to silent reading. This has been due to the recent scientific and rational movements in education which include the technical psychology of reading.

MATERIALS AND METHODS

## SECTION V.

## Materials and Methods.

## 1. Number of cases, where from, etc.

## Group A-

The groups from which the data bearing on this problem have been collected may be divided into three distinctly different groups. The first shall now be considered here under group A. It consists of 100 children of grades I, II, and III in Scheffer, Neil, and Murray schools of St. Paul, Minn. These schools are located in mixed communities as far as social conditions are concerned.

## Group B-

The second group is 35 pupils scattered throughout grades IX, X, XI, and XII, in a private denominational secondary school, namely Breck School. This school is built and supported by the Episcopal Church, and is located in St. Anthony Park, St. Paul, Minnesota.

## Group C-

The third and largest group is made up of the 210 pupils of grades IX-XII in the University High School of the University of Minnesota, Minneapolis. This seems to be a very select group as far as mental, moral, and some other factors are concerned. The majority of these pupils come from the homes of the best professional people of the Twin Cities. Dr. Miller, the Principal of the school, states that on the basis of the scores in "The Miller Group Test of Mental Ability",

85% of his Freshmen were found above the median of one thousand High School Freshmen throughout the state of Minnesota. It should be noted here that when vacancies exist in the upper grades of the University High School, the same are filled from a waiting list. The selection of persons to fill such vacancies is based in part on the previous scholastic attainment.

### 2. Tests used.

The following outline will indicate by which media the writer has collected his data for each of groups A, B, and C respectively:

#### Group A- Elementary grades, St. Paul-

- a- Achievement examination in Reading, Sigma 1, Haggerty and Noonan.
- b- Intelligence examination, Delta 1, Haggerty, M.E.
- c- Non Verbal Intelligence examination, Johnson, Oscar.
- d- Mental Survey Tests, Primer Scale, Pressey, S.L.
- e- Rating by the teachers- weighted according to grade location.

#### Group B- Breck School-

- a- Achievement Examination in Reading, Sigma 3, Haggerty, M.E. and L.C.
- b- Thorndike-McCall Reading Scale, Form 1.
- c- Mental age, as derived by the use of Stanford Revision of "The Binet-Simon Intelligence Scale."
- d- The Miller Group Test of Mental Ability, Miller, W.S.
- e- Number of books read- not assigned to pupils.
- f- School Marks.



g- Pupil's Vocabulary.

Group C- University High School-

a-Achievement Examination in Reading, Sigma 3,

Haggerty, M.E. and L.C.

b- Thorndike-McCall Reading Scale, Form 1.

c- Intelligence Quotient,\* as derived by the use of Stanford

Revision of "The Binet-Simon Intelligence Scale."

d- The Miller Group Test of Mental Ability, Miller, W.S.

e- Intelligence Examination, Delta II, Haggerty, M.E.

f- Group Test of Mental Ability, Form A, Terman, L.M.

g- Army Group Examination, Alpha, Medical Dept. U.S.A.

h- Mentimeter Intelligence Scale, Stockbridge and Trabue.

i- Average School Marks.

j- Marks in English.

### 3. Methods.

A- Of giving the tests, etc.

In the case of the elementary grades, Mr. Oscar Johnson, Psychologist of the St. Paul schools, directed the giving and scoring of the tests during the months of October and November, 1920.

In the case of the Breck School, the Principal, Mr. Varner and the writer collected the data with the willing assistance

\*  
The intelligence quotients are given here rather than the mental age, because of lack of data as to the exact dates when each of the tests were given.

of the teachers.

In the University High School, the data for this study were collected by the Principal, Dr. W.S. Miller and the present writer with the assistance of members of the high school staff. The data for Delta II, Terman, Army Alpha, the Mentimeter scale scores, and the school marks were gotten from the permanent record cards in the Principal's office. In this school, as well as in Breck School, nearly all the data were collected during the months of December 1920, and January and February 1921.

The standardized methods and rules supplied by the authors of the tests, were rigidly followed at all times, and the tests were given under similar conditions, as far as possible, and in the same order. The individual Stanford Revision of "The Binet-Simon Intelligence Scale" was conducted as carefully as possible in each case by the writer and other College of Education graduates, or by advanced students in educational psychology.

#### B- Of computing statistics.

While making statistical computations, the writer has made use of late methods used by educational statisticians, such as Professors Rugg and Thorndike. In computing correlations, use has been made of the following formulae of Professor Pearson, the Rank Difference and the Products Moment respectively.

The Rank Difference formula--  $p=1-\frac{6 \sum D^2}{N(N^2-1)}$  corrected to  $r$  according to table 36 found on page 186 of "Mental and Social Measurements" -E.L. Thorndike, was used for all groups up to thirty-five.

The Products Moment formula  $r = \frac{P}{\sigma_x \sigma_y} = \frac{\sum xy}{N \sigma_x \sigma_y}$  or

$$r = \frac{\sum \xi y - N d_x d_y}{N \sqrt{\frac{\sum \xi^2}{N} - d_x^2} \sqrt{\frac{\sum y^2}{N} - d_y^2}}$$

thirty- five.

was used for all groups above

SECTION VI  
RESULTS - GROUP A



SECTION VI.

Statement and discussion of the data.

Results- Group A.

a- Range and distribution of scores:

As has already been stated in section V, the elementary pupils, whose results shall be discussed here, may be considered typical pupils of grades I, II, and III of cities with very mixed populations like that of St. Paul. Hence, what shall be stated concerning these can probably be stated relative to the pupils of other similar groups.

It becomes apparent, if one but glances at Figures 1 to 4 and Tables 1 to 3, that only Delta 1 and the Non Verbal tests give normally distributed scores. Pressey's Mental Survey scale gives a decided bunching with the mode in the upper part of the range, and Sigma 1 gives a still less normal grouping, since the mode falls between scores 1 and 5 with the average at 12.4, while the entire range of scores is from 0 to 41. On Sigma 1 seven of the pupils got scores of 0 and thirty-three of the one hundred pupils got scores of 5 or less. Undoubtedly, the fact that many of the pupils came from homes of foreigners where they seldom, if ever, become associated with English words or phrases, caused some of the abnormal grouping. It is noted in Table 1 that all the zero scores and most of the lowest scores were made by the pupils of grade I B in Scheffer school. Mr. Oscar Johnson, psychologist of the St. Paul school system, gave the tests and explains the abnormally low scores of these pupils on the basis of the fact that they were taught by a very poor teacher of reading and that nearly all of them came from homes of foreign workmen in an industrial center of the city.

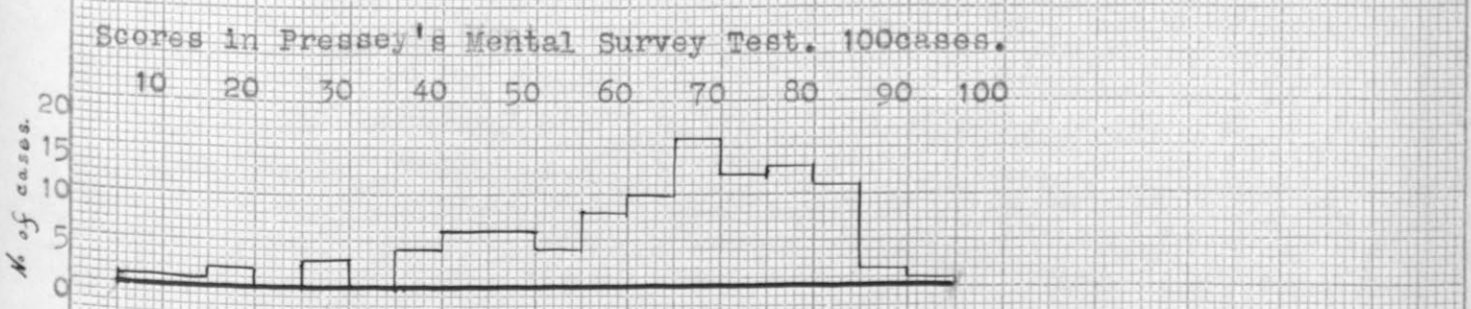
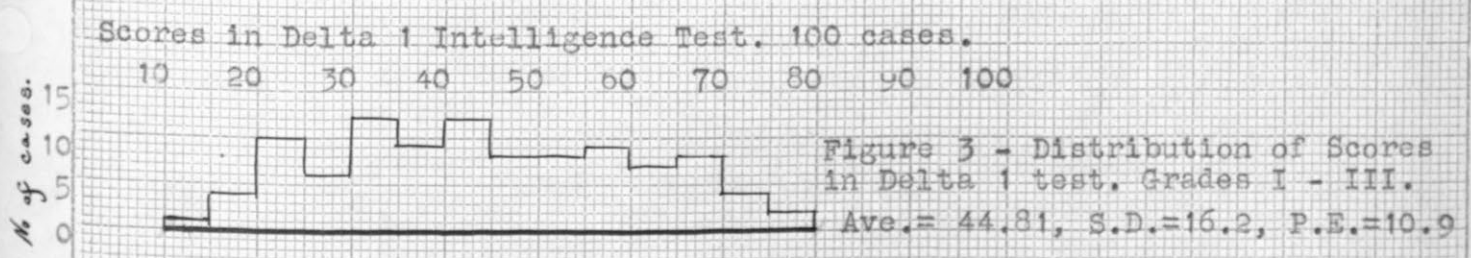
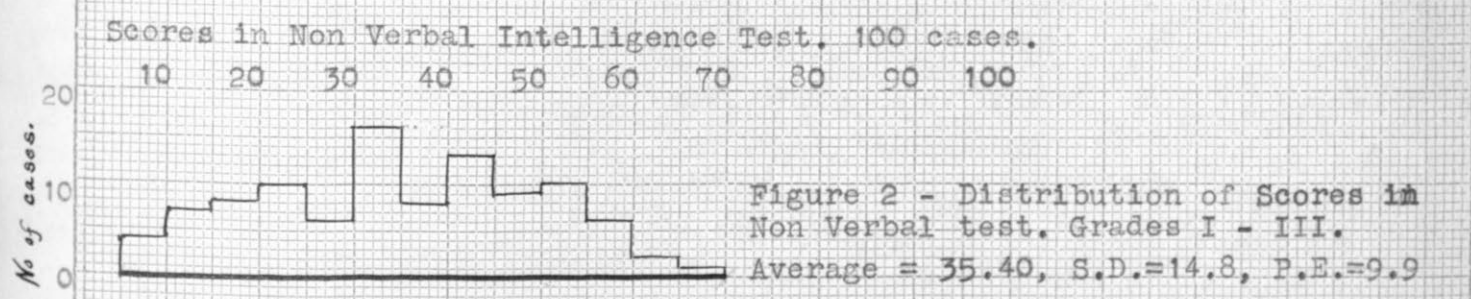
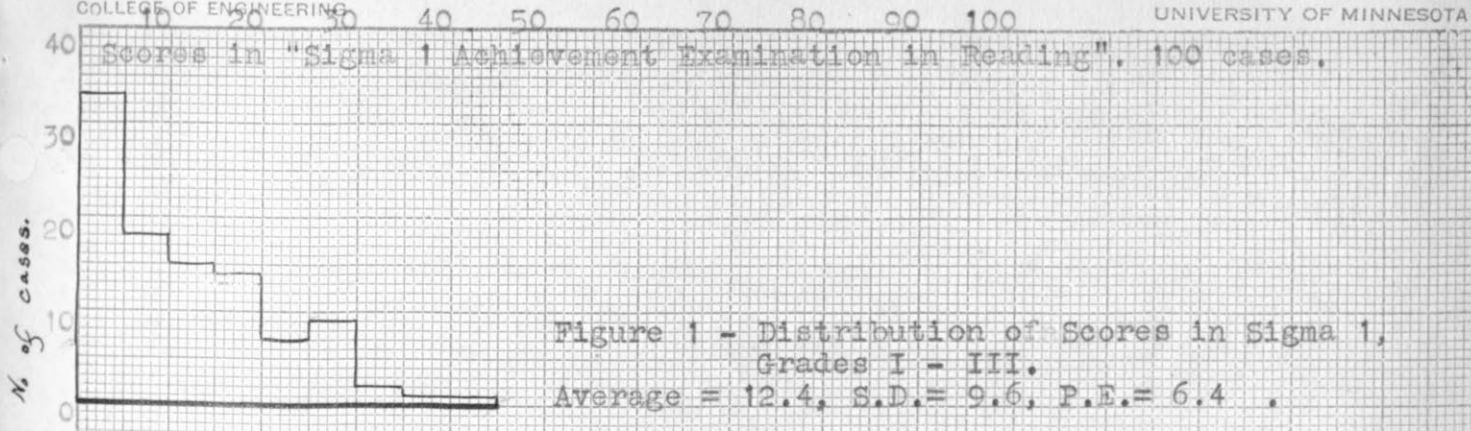


Figure 4 - Distribution of Scores in Pressey's Mental Survey Test.  
Average score = 63.04, S.D.= 17.45, P.E.= 11.77.

Table 1.

## Original Scores - Group A.

Original scores for 100 pupils of grades I, II, and III in various schools of St. Paul, Minnesota.

Grade I B, Scheffer School.

Terminology: A- Number of pupil; B- Age; C- Sex, m-male, f-female; D- Scores in Johnson's Non Verbal Intelligence Scale; E- Delta 1; F- Pressey's Mental Survey Scale; G- Rating by teachers, x-for scholarship, y-for industry; H- Sigma 1 Achievement Examination in Reading.

A	B		C	D	E	F	G		H		Total.
	Yr.	Mo.					x	Y	Part 1.	Part 2.	
1	6	5	f	26	33	66	F	G	1	2	3
2	7	2	f	31	31	64	G	G	8	6	14
3	6	10	m	31	32	75	F	F	4	0	4
4	7	1	f	23	35	45	F	G	3	0	3
5	8	3	m	31	32	54	F	G	5	3	8
6	7	7	m	19	18	15	F	G	2	1	3
7	6	10	m	17	35	71	F	G	4	3	7
8	7	1	m	30	31	65	F	G	4	1	5
9	7	5	f	11	40	51	G	G	3	4	7
10	7	5	f	22	19	44	G	G	4	0	4
11	6	10	f	21	21	49	F	G	4	0	4
12	7	2	f	21	45	55	G	G	4	4	8
13	7	4	f	15	22	46	G	G	6	2	8
14	6	11	f	33	21	81	F	F	1	0	1
15	8	1	m	12	31	46	P	G	0	0	0
16	7	3	m	35	28	62	F	F	4	0	4
17	8	1	f	14	26	16	F	F	0	0	0
18	7	9	f	36	40	75	G	G	9	2	11
19	6	7	f	42	38	66	F	F	2	3	5
20	8	3	f	22	23	45	F	G	2	1	3
21	8	2	m	24	37	60	P	G	0	0	0
22	6	11	m	18	24	43	F	G	0	0	0
23	6	9	f	26	27	59	G	G	6	4	10
24	7	1	f	9	20	28	G	G	0	0	0
25	8	2	m	14	22	40	E	P	0	0	0
26	7	0	f	12	34	56	F	F	2	0	2
27	7	4	f	6	16	30	P	G	0	0	0
28	7	1	m	36	45	72	F	G	2	4	6
29	7	5	m	18	36	38	F	G	1	0	1
30	6	6	m	16	23	20	F	F	2	3	5
31	7	3	f	42	28	70	F	G	9	0	9
32	7	9	f	12	34	50	F	G	1	1	2
33	6	9	f	10	23	55	F	F	1	4	5
Medians =				21	31	55					3

Continued.



Table 1. Continued.  
Original Scores, Group A, GRADE II B, Scheffer School.

Terminology: A- Number of Pupil; B- Age; C- Sex, m= male, f= female;  
D- Score on Johnson's Non Verbal Intelligence Scale; E- Delta 1;  
F- Pressey's Mental Survey Scale; G- Rating by Teachers, x = Scholarship, y= Industry; H- "Sigma 1 Achievement Exam. in Reading."

A	B Yr. Mo.	C	D	E	F	G x y		Part 1.	Part 2.	Total
34	7.10	m	32	38	74	F	G	9	3	12
35	8.4	f	48	37	76	G	G	7	10	17
36	8.	f	29	72	76	F	F	5	0	5
37	7.9	f	27	66	48	F	G	7	0	7
38	7.8	m	50	53	89	F	F	14	11	25
39	7.10	m	24	66	67	P	F	5	0	5
40	7.5	f	31	42	67	P	F	9	3	12
41	7.1	m	34	42	70	G	G	7	6	13
42	8.1	m	51	55	78	F	F	16	1	17
43	8.5	m	55	65	81	G	G	12	8	20
44	8.7	m	28	49	56	F	F	0	4	4
45	7.2	f	27	37	65	F	F	4	0	4
46	7.6	f	44	46	65	G	G	15	11	26
47	7.11	m	20	34	58	F	F	4	0	4
48	7.5	m	34	48	66	P	F	9	2	11
49	8.6	f	35	47	38	F	G	7	10	17
50	6.11	m	37	45	72	F	F	7	6	13
51	9.6	f	25	21	42	P	F	1	0	1
52	7.4	m	41	54	70	F	G	10	8	18
53	9.1	f	45	59	72	VG	G	12	11	23
54	7.6	f	17	24	46	F	P	1	2	3
55	7.3	f	37	44	73	F	F	4	9	13
56	7.4	m	43	56	67	G	F	15	5	20
57	7.7	f	45	36	64	F	F	2	2	4
58	8.4	f	25	44	69	G	G	17	12	29
59	8.7	f	45	59	57	P	F	9	4	13
60	7.3	f	40	48	49	G	G	5	8	13
61	8.1	m	43	12	70	G	F	10	2	12
62		m	32	57	84	VP		4	0	4
63	9.3	f	40	50	95	VG	VG	13	10	23
64	7.3	F	31	56	75	G	F	12	15	27
65	8.6	f	46	63	76	F	F	8	5	13
66	8.3	m	45	43	84	G	G	16	8	24
67	8.0	m	54	56	75	G	G	11	6	17
68	8.0	f	46	47	83	F	G	4	2	6
Median=			38	49	70					16



Table 1. Continued.  
Original Scores, Group A, GRADE II A, NEILL SCHOOL.

Terminology: A- Number of Pupil; B- Age; C- Sex, m= male, f= female;  
D- Scores on Johnson's Non Verbal; E- Delta 1; F- Pressey's;  
G- Rating by Teachers, x= Scholarship, y= Industry; H- Sigma 1.

A	B Yr. Mo.	C	D	E	F	G		H		Total
						x	y	Part 1.	Part 2.	
69	7.0	m	46	51	63	P	F	7	0	7
70	9.2	f	44	51	60	P	F	11	10	21
71	7.8	f	38	55	65	P	P	0	9	9
72	8.5	m	46	51	73	F	F	11	7	18
73	7.9	f	31	56	81	F	G	7	2	9
74	7.5	f	51	56	69	G	F	16	11	27
75	7.4	f	41	62	76	F	G	12	5	17
76	7.11	m	38	31	56	P	F	6	1	7
77	7.10	f	34	41	76	F	F	8	10	18
78	7.6	F	52	59	62	F	G	11	2	13
79	8.3	f	61	54	83	F	F	6	8	14
80	7.11	f	31	44	78	F	F	7	3	10
81	8.9	m	18	30	28	P	G	6	0	6
82	9.2	m	66	70	85	P	P	5	2	7
83	7.8	f	10	30	43	F	F	1	0	1
84	7.2	m	41	44	69	G	F	18	10	28
Median =			41	51	69					10

GRADE III B, MURRAY SCHOOL.

85	8.5	f	59	73	72	G	G	12	7	19
86	8.5	m	65	76	86	G	F	15	6	21
87	8.6	m	56	61	73	VG	VG	10	18	28
88	8.5	m	50	57	80	VG	VG	10	10	20
89	8.5	m	49	70	59	G	F	13	5	18
90	9.7	f	53	72	78	VG	VG	18	10	28
91	8.5	f	49	69	79	G	G	15	14	29
92	8.2	f	54	71	78	G	VG	16	18	34
93	8.10	f	53	64	84	G	G	19	14	33
94	9.4	f	59	62	67	F	G	12	8	20
95	8.5	f	54	69	68	F	F	23	15	38
96	7.8	m	57	77	81	E	E	21	20	41
97	9.7	m	22	43	37	P	P	8	4	12
98	9.11	m	57	50	84	F	F	6	4	10
99	8.3	f	55	67	66	G	G	12	10	22
100	9.0	m	59	67	77	G	G	13	14	27
Median =			54	67	77					25

b- A consideration of the correlated abilities:

The writer realizes that the results herein discussed can only be considered suggestive as various conditions tend to make more or less insignificant the correlations and other statistical data on which the results are based.

In general, the range of distribution of the scores on the various tests was fairly wide for the group as a whole. For example, as shown in Figure 3 and Table 1, the scores on Delta 1 range from 12 to 77 with the median at 44 and the average at 44.81. It may be noted that the media used were late standardized achievement and mental group tests. Hence, the results obtained by the use of these tests can be considered fairly reliable.

When one observes the table of correlations, Table 4, he is led to infer that "Sigma 1 Achievement Examination in Reading" measures what teachers consider as scholarship somewhat better than the so-called standard mental tests for elementary pupils. The correlation of Sigma 1 with scholarship, 71 cases being considered, yielded .722, while the correlations of scholarship with Non Verbal, Delta 1, and Pressey's tests were .413, .419, and .322 respectively.

The mental ability of these elementary pupils can be measured fairly accurately by means of a standardized silent reading test like Sigma 1. When correlating Sigma 1 with Delta 1 and the Non Verbal tests correlations of .677 and .800 respectively were derived. It should be noted that the non-verbal test seems to measure reading ability, as that is measured by means of Sigma 1, somewhat better than either of the other group mental tests which are made

up largely of reading material.

Even if the correlations between reading ability and mental ability, as these are measured by the tests, are very high, one cannot conclude that the tests of one ability always measure the other ability very accurately. It seems that those elementary pupils who rank low in mental ability are always poor readers, but many of the pupils who make very high scores on any one of the mental tests, be they verbal or non-verbal, are found among the poorest in ability to read. These facts are clearly indicated in Tables 5, 6, and 7 and in Figures 5, 6, and 7, which give the actual distribution of all the cases graphically.

It is obvious that, in the case of the scores of these elementary pupils on tests of reading ability or of mental ability, the upper part of the arrays tends to contain the most widely scattered scores. This is noticed in the tables mentioned above, but much more clearly in Tables 2 and 3 which show that the median scores are generally less than the average scores. For example, the median scores on Non Verbal and Sigma 1 are 35 and 10 respectively and the average scores on the same tests are 35.40 and 12.4 respectively. This indicates that the pupils who make the scores below the median are more homogeneous than those who make the scores above the median.

The present data under consideration indicate that progress in school may be measured fairly well by means of standardized tests. Although the distribution is very wide within each grade as shown in Table 1, the median and average scores increase gradually according to the advance of grade location. For instance, as shown in Tables 2 and 3, the median scores on

Delta 1 Intelligence Examination for grades I B, II B, II A, and III B were 31, 49, 51, and 67 respectively.

c-SUMMARY. The statistical data mentioned above indicate that, in general, a reading test like Sigma 1 may be relied upon to measure scholastic ability of elementary school pupils with a greater degree of accuracy than the group tests of mental ability. Hence, if one accepts the theory that scholarship is determined chiefly by a child's native intelligence, Sigma 1 reading test gives us, not only an estimate of a child's reading ability, but also a fairly reliable measure of his mental ability or intelligence. If this be accepted, it can be concluded that, in the lower grades of our public schools at least, one cannot very well discriminate between reading ability and mental ability. Here these factors may apparently be considered the same for ordinary educational purposes.

*non-require*



Table 2.

## Median Scores for One Hundred Elementary Pupils by Grades.

Tests =		Non Verbal.	Delta 1.	Pressey's.	Sigma 1.	No.Pupils.
:.....						
Grade	I B	21	31	55	3	34
"	II B	38	49	70	16	34
"	II A	41	51	69	10	16
"	III B	54	67	77	25	16
<hr/>						
Grades	I - III	35	44	66	10	100

Table 3.

## Average Scores for One Hundred Elementary Pupils, Grades I - III.

Tests =		Non Verbal.	Delta 1.	Pressey's.	Sigma 1.	No.of Pupils.
:.....						
Grades	I - III.	35.40	44.81	63.04	12.4	100

Table 4.

A Table Giving Correlations of the Abilities of One Hundred Elementary Pupils of Grades I- III, in various Tests.

Tests.	No. of Cases.	Correlation.	Probable Error. Plus or Minus.
.....	.....	.....	.....
Sigma 1 and Pressey's	100	.494	050
" " Delta 1	100	.677	039
" " "	35	.302	112
" " Non Verbal	100	.800	024
" " "	35	.558	092
" " "	71	.695	060*
" " Scholarship	71	.722	059
Pressey's " "	71	.322	010
Delta 1 " "	71	.419	097
Non Verbal " "	71	.413	098
" " Delta 1	71	.726	056
" " Pressey's	71	.616	073

*clean*

\* - The balance of the correlations in table 4 were worked out and given to the writer by Mr. Oscar Johnson, Psychologist of the school system, St. Paul, Minnesota.

Table 5.

Distribution of Correlated Abilities in Reading and Intelligence.  
One Hundred Cases, Grades I-III. Correlation = .800 .

ABILITY IN READING-"Sigma 1 Achievement Exam. in Reading".

	1- 5	6- 10	11- 15	16- 20	21- 25	26- 30	31- 35	36- 40	41- 45	46- 50	Total.
65 :		1	1		1						3
60 :		1		2		2			1		6
55 :			1	3	1	2	2	1			10
50 :		2	1	4	1	1					9
45 :	2	1	2	3	3	2					13
40 :		3	4		1						8
* 35 :	5	3	5	2		1					16
30 :	4	2									6
25 :	7	1	1			1					10
20 :	6	2									8
15 :	5	2									7
10 :	4										4
5 :											
0 :											
Total=	33	18	15	14	7	9	2	1	1		100

\*- The y column of scores refer to the scores in Johnson's Non-Verbal test of Mental Ability.

Table 6.

Distribution of Correlated Abilities in Reading and Intelligence.  
One Hundred Cases, Grades I-III. Correlation=.677 ± 039 .

ABILITY IN READING-"Sigma 1 Achievement Exam. in Reading".

	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	Total.
80 :					1				1		2
75 :	1			1		1	1				4
70 :	1	2		1	1	2		1			8
65 :			1	3		2	1				7
60 :	1	1	2	3	1	1					9
55 :		2	1	3	2						8
50 :	1	2	2	1	1	1					8
* 45 :		3	5	1	1	2					12
40 :	5	1	2	1							9
35 :	8	3	1								12
30 :	3	3									6
25 :	9	1									10
20 :	4										4
15 :			1								1
10 :											
5 :											
0 :											
Total=	33	18	15	14	7	9	2	1	1		100

\* - The (y) column of scores by groups refers to the scores on Haggerty's Delta 1 test of Mental Ability.



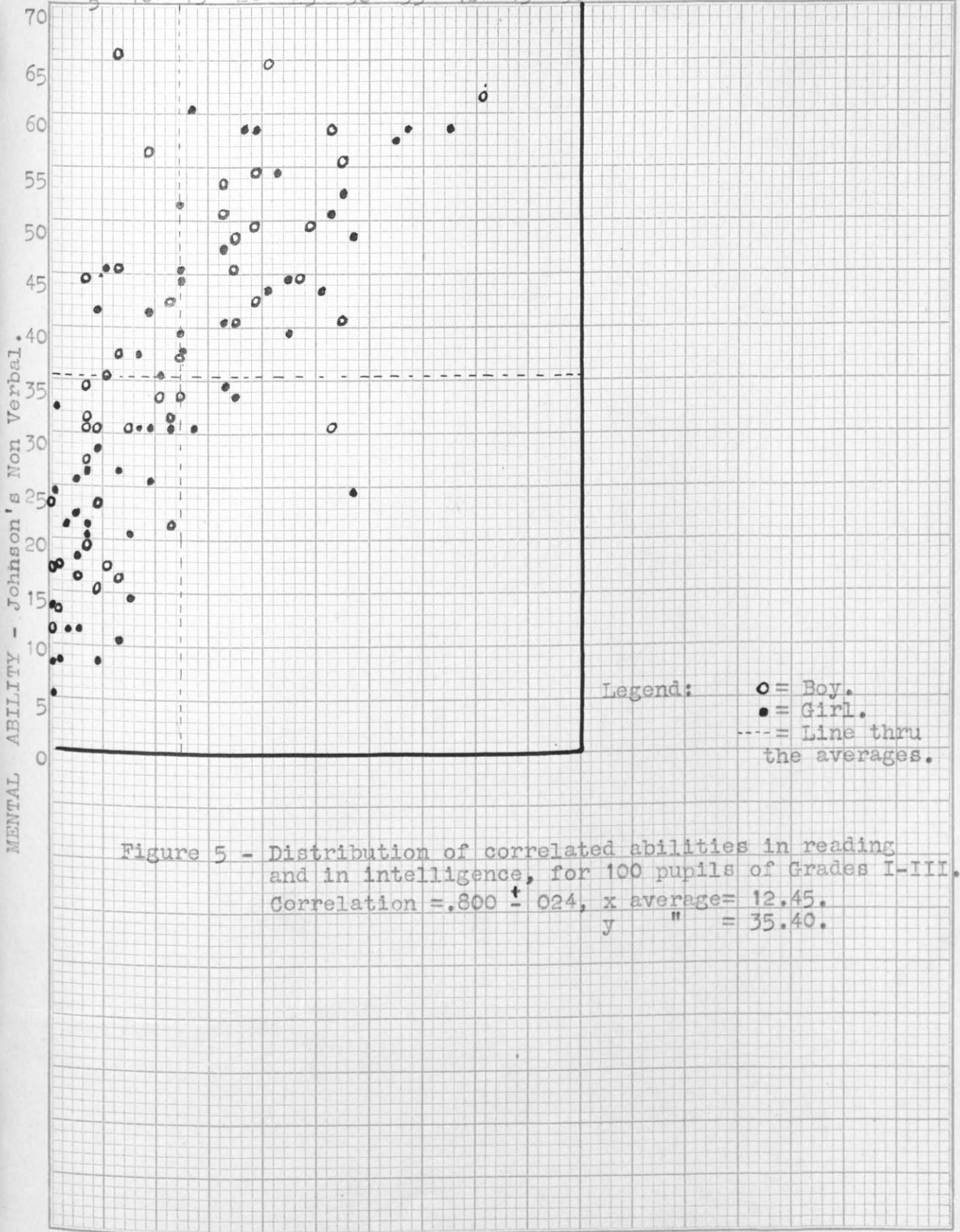
Table 7.

Distribution of Correlated Abilities in Reading and Intelligence.  
One Hundred Cases, Grades I-III. Correlation= .495 ± 050 .

ABILITY IN READING--"Sigma 1 Achievement Exam. in Reading".											
	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	Total.
95 :					1						1
90 :					2						2
85 :	2	4	1	1	1		1		1		11
80 :	1	2	1	5		3	1				13
75 :	1	1	4	3	1	2					12
70 :	3	1	4	3	1	3		1			16
65 :	5	2	2			1					10
60 :	3	2	1	1	1						8
* 55 :	1	3									4
50 :	4	2									6
45 :	6										6
40 :	2		1	1							4
35 :											
30 :	2	1									3
25 :											
20 :	2										2
15 :	1										1
10 :			1								1
5 :											
0 :											
Total=	33	18	15	14	7	9	2	1	1		100

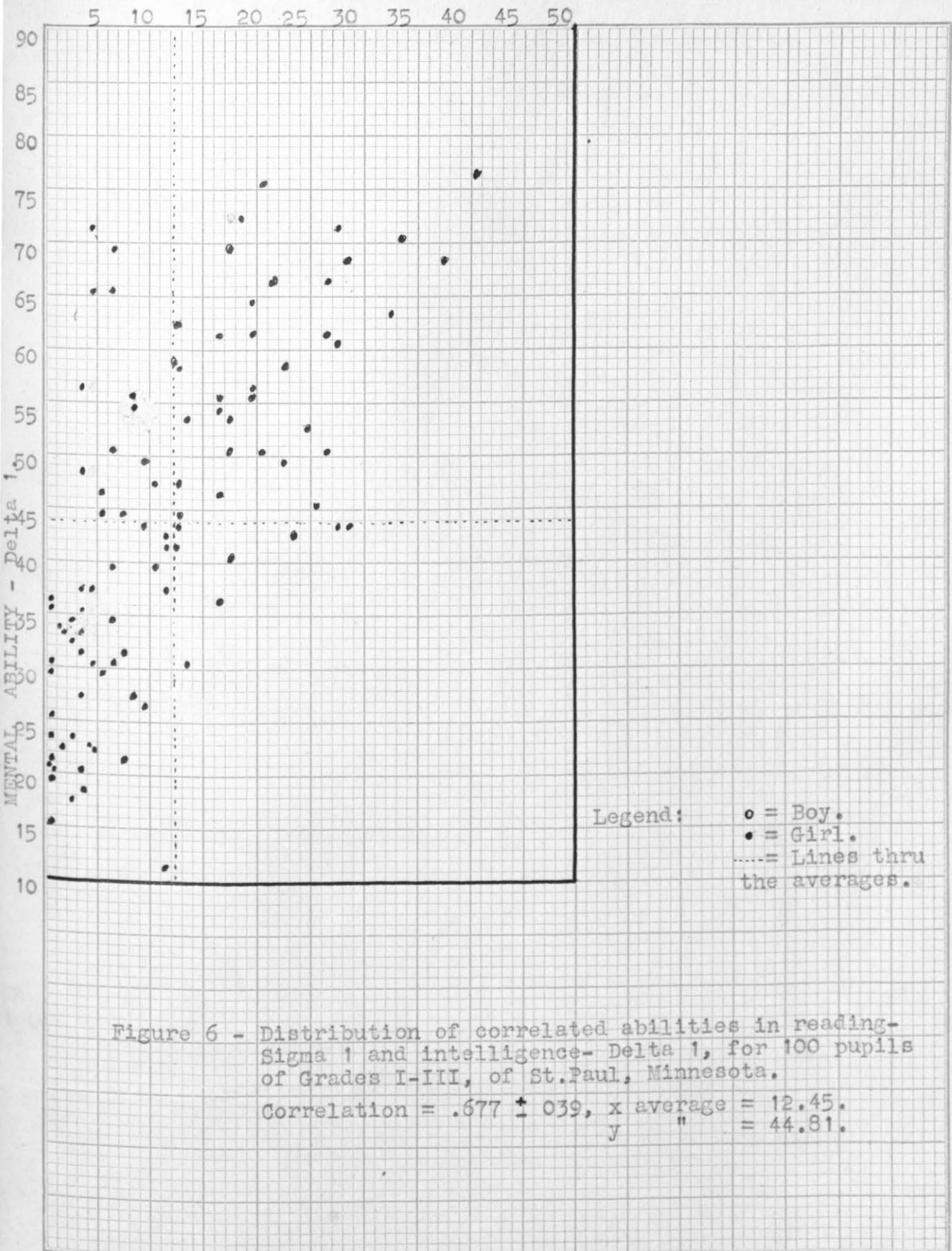
\* - The (y) column of scores by groups refers to the scores on Pressey's Mental Survey Scale for Primary Pupils.

ABILITY IN READING - "Sigma 1 Achievement Examination in Reading".



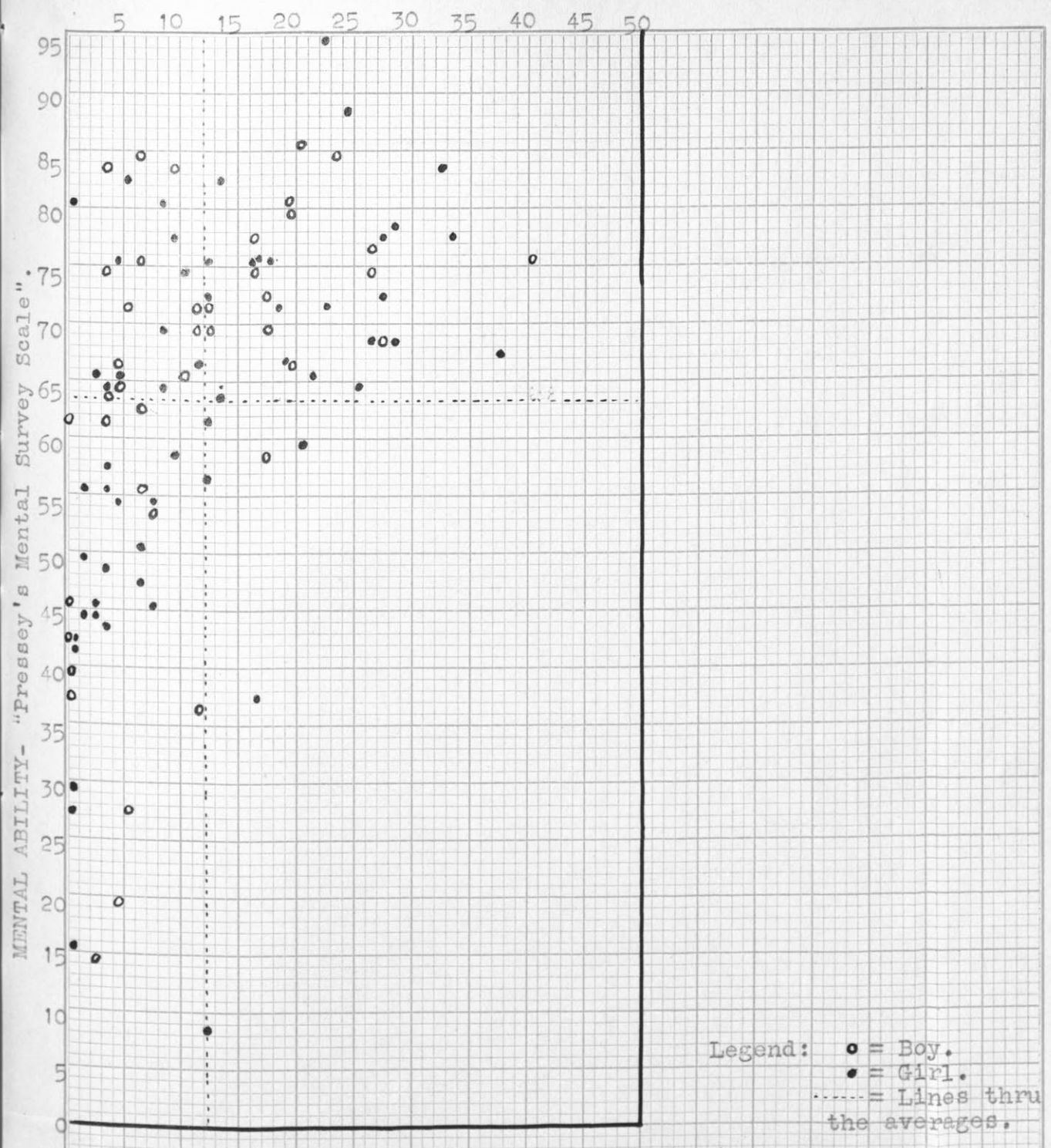
Legend: ○ = Boy.  
 ● = Girl.  
 ---- = Line thru the averages.

## ABILITY IN READING-"Sigma 1 Achievement Examination in Reading".





ABILITY IN READING-"Sigma 1 Achievement Examination in Reading".



Legend: ○ = Boy.  
● = Girl.  
----- = Lines thru the averages.

Figure 7 . Distribution of Correlated Abilities in Reading-Sigma 1 and Intelligence- Pressey's Mental Survey Scale, for 100 Pupils of Grades I-III, St. Paul, Minn.  
Correlation = .494 ± 050. x average = 12.45.  
y " = 63.04.



SECTION VI- Continued

RESULTS- GROUP B

## SECTION VI- Continued.

## Statement and Discussion of the Data.

## Results- Group B.

## a- Range and distribution of the scores:

The second group of thirty- five high school children are typical pupils in a typical small private secondary school of the middle west. Table 8 suggests that the pupils are very varied in many respects. In chronological age they vary from thirteen years and ten months to twenty years and one month. When one considers the fact that fifteen of the thirty- five pupils are freshmen or ninth grade pupils and that the oldest pupil also is a freshman, he can safely deduce that the majority of these pupils are over-aged or retarded. The range of Intelligence Quotients is even more extended. It varies from 76 to 142. This means that within this small group of high school pupils there are some "border-line cases" or nearly feeble-minded persons and also others who would be classified by Terman as belonging to the "near genius" or "genius" groups.

Figures 8, 9, and 10 further indicate the varied mental and scholastic attainments of the pupils of this group. The range of distribution of the scores on Sigma 3 reading tests was from 34 to 121, with the median at 89, for all the grades taken together. The established standard median for tenth grade pupils is 90. On the basis of the Thorndike- McCall reading tests, twenty- eight per cent of the pupils in this high school are below the median of eighth grade pupils in reading ability. As Figure 9 shows, ten of the pupils

are below the tentative standard median of 58.3 for eighth grade pupils in this reading test. The " Miller Group Test of Mental Ability", as shown in Figure 10, gave an almost perfectly normal distribution of scores, but again the median score is low when compared with the median scores made by other ninth grade groups. For the entire group the median score is 56, which is exactly the tentative grade median established for ninth grade pupils by W. S. Miller, the originator of the test.



Figure 8. Distribution of Scores in Sigma 3, Group B, 35 cases.  
Median = 89.

Scores in "Thorndike- McCall Reading Scale, Form I".

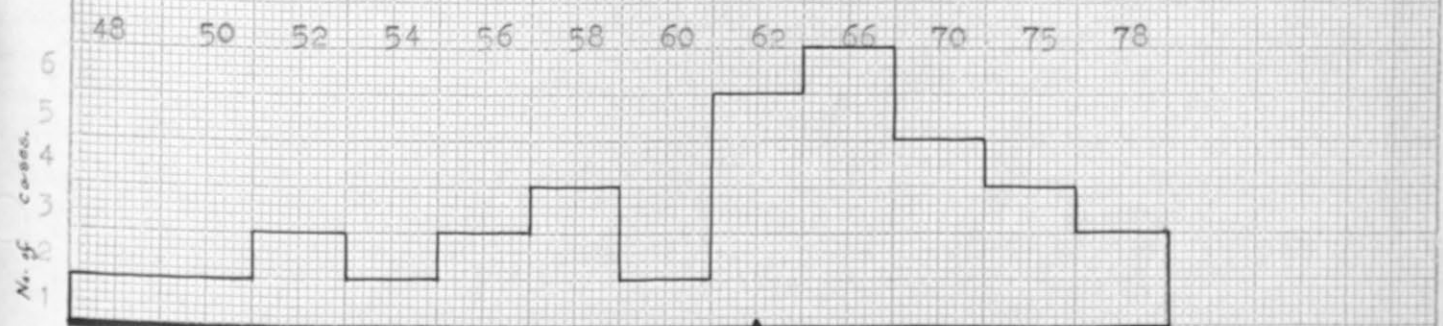


Figure 9. Distribution of Scores in Thorndike-McCall, Group B, 35 cases.  
Median = 62.

Scores in " The Miller Group Test of Mental Ability".

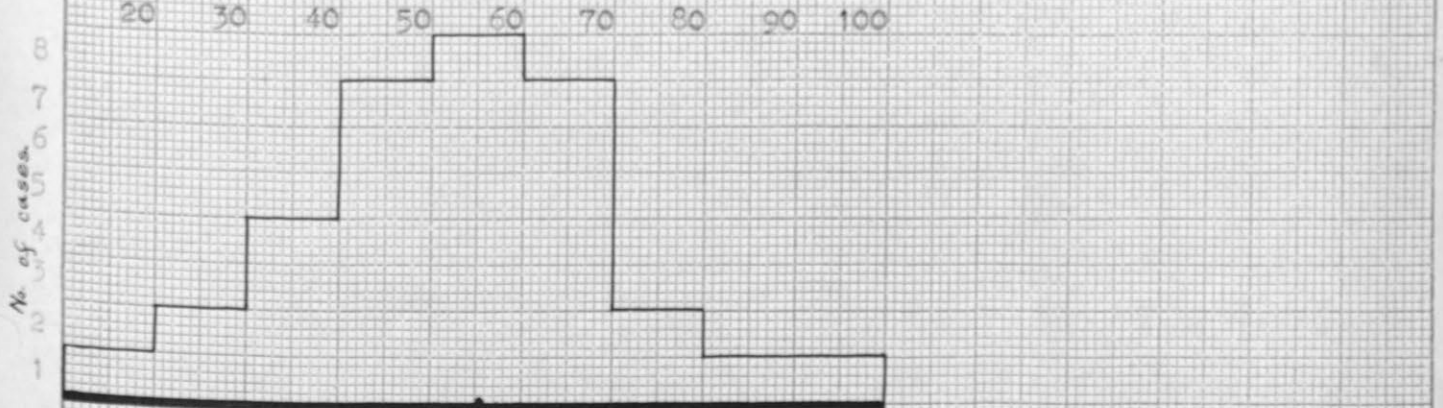


Figure 10. Distribution of Scores in the Miller Test, Group B, 35 cases.  
Median = 56.



Table 8.  
Original Scores- Group B.

Table giving the original scores for the thirty-five pupils of Group B, or the pupils of Breck Private High School, St. Paul.

Terminology: A- Number of pupil; B-Age; C- Grade; D- Sex, m= male, f= female; E- Scores in Sigma 3 reading test; F- Thorndike-McCall; G- Miller Group Test; H- Mental Age; I- Intelligence Quotient; J- Number of Books Read; K- Vocabulary; L- Average School Marks.

A	B Yr. Mo.	C	D	E	F	G	H Yr. Mo.	I	J	K	L
1	17.4	IX	f	34	52	44	12.2	76	4	7200	F
2	16.	IX	f	49	56	34	13.6	78	14	9000	D-
3	16.	IX	f	49	50	26	12.9	80	10	7200	D-
4	13.10	IX	m	59	48	44	19.8	142	15	9720	D+
5	16.11	IX	m	69		19	13.3	83			F
6	16.7	IX	m	70	58	33	15.3	95	15		F
7	18.11	XII	m	72	56	48	14.9	93	6	9000	D-
8	15.1	IX	f	73	62	28	18.1	120	50	9360	B-
9	17.	X	f	74		45	12.8	79	8		C-
10	17.10	X	f	74	62	60	17.11	112	15	10800	C
11	15.13	IX	f	78	58	56	12.9	79	75	7920	D-
12	14.11	X	m	80	58	59	16.7	111	50	8280	C+
13	14.8	IX	f	83	66	54	16.3	111	10	9720	B+
14	16.2	XI	m	84	54	42	16.	99	50	9000	F
15	14.9	IX	m	86	60	66	17.3	117	20	10440	C+
16	16.6	XI	f	87	70	67	13.3	83	30		C
17	16.8	IX	f	88	66	44	17.7	110	25	11520	C
18	14.6	X	m	89	62	72	16.9	114	45	11880	B+
19	13.5	IX	f	90	62	69	15.7	116	10	9720	A
20	16.1	X	f	92	52	57	13.9	86	25	9360	C
21	18.3	XI	m	93		51	16.8	104		10440	F
22	15.1	IX	f	96	70	46	15.5	102	25	10080	C+
23	18.7	XI	f	99		80	18.5	115	75	11160	D
24	18.2	XII	m	99	66	69	17.3	108	50	10800	B+
25	18.	XII	f	100	78	62	16.	100	12	12960	B+
26	16.	XII	m	100	62	70	16.10	105	15	10800	B+
27	14.	X	m	101	75	40	17.11	128	25	10080	C
28	14.8	IX	m	106	75	56	16.4	111	30	9360	A
29	16.4	X	m	107	70	53	17.4	108	7	11340	C+
30	14.8	IX	m	109	66	63	18.5	125	55	11520	D-
31	20.1	XII	f	114	78	72	18.5	115	75	13680	B+
32	16.10	XI	m	118	66	92	18.5	115	150	10440	C
33	15.8	IX	f	119	75	34	17.7	112	125	10800	B
34	15.	X	f	120	70	88	17.7	117	50	11520	B-
35	17.1	XII	m	121	66	74	17.6	109	40	10440	B-
Median=16.1				89	62	56	16.8	109	25	10080	C

## Group B- Continued.

b- A consideration of the correlated abilities:

Also when correlating the reading and mental abilities of this group, it is imperative that the person who interprets the results bears in mind the fact that there are certain factors which tend to make more or less insignificant even correlations that are numerically high. Constant errors have been eliminated and the results have been dealt with in their unweighted form, as far as possible, yet, the very best possible conditions did not always obtain. The number of cases were few and the entire Group B was somewhat abnormal if it be compared with other high school groups. As was noted in Section V, the media used in collecting the data were varied and some, perhaps, of little scientific worth.

Figures 8, 9, and 10 and Table 8 show that, when the scores of the entire group of pupils in this school are considered together, there is a fairly wide and even distribution. In other words, what constitutes an approximate normal distribution is gotten in the case of the scores on any one of the achievement or mental group tests.

There appears to be a decidedly significant interrelationship between reading ability and many other factors involved in scholastic attainment. Table 10 presents the results obtained by correlating reading ability with those other factors. It will be observed here and in Figures 20 and 21 that the ~~decidedly high~~ correlations of <sup>.687</sup>~~.954~~ and <sup>.697</sup>~~.943~~ were derived when the vocabulary of the pupils was correlated with their results in Sigma 3 and Thorndike- McCall reading tests. This would indicate that as one acquires more and more ability to read, his vocabulary is corres-

pondingly enlarged and vice versa. The individual pupils who got low scores in reading tests were invariably found to possess a small vocabulary.

In this school , at least, it would appear that school marks or credit gotten for work done in school is determined by a pupil's reading ability as much, if not more, than by some other factors. This was also noticed in the case of the elementary pupils already considered. This means that also in some high schools do standardized silent reading tests measure what teachers consider as scholarship fairly accurately. Table 10 shows that the correlation between Sigma 3 and school marks was found to be .637. This relationship is further illustrated in Tables 11 and 12 and in Figures 18 and 19.

On the basis of the results obtained by means of the various tests, these high school pupils were found to be poor in reading ability if they were poor in mental ability. This is shown in the table of correlations, Table 10, and is made somewhat clearer in Figures 11, 12, 14, and 15. Correlations of .618 and .487 were found when correlating Sigma 3 with " The Miller Group Test of Mental Ability" and with mental age respectively; and when correlating the results in the Thorndike- McCall reading test with the same factors, correlations of .375 and .456 were found. The figures mentioned above indicate that, in general, a pupil who ranks low in mental ability will also be found to rank correspondingly low in reading ability.

Neither the reading ability nor the size of the vocabulary, of the pupils at present under consideration, seem to play an important part in determining the amount of material that they

volunyarily read outside of school. A correlation of only .333 was computed between Thorndike- McCall reading scale and the number of books that the pupils read, without the same being assigned to them. Figure 17 shows the relationship between these two factors in a graphical way. Between the vocabulary of these pupils and the number of books that they read the correlation was .292 as numerically shown in Table 10 and graphically in Figure 16. The figures just referred to show that there would be a very wide scatter of the arrays about the regression lines ( lines through the means of the arrays ), it matters little where the same lines fall. This means that neither the one nor the other of the media used in measuring the reading ability or the vocabulary of these pupils of group B can be relied upon to measure the amount of reading that these pupils do of their own accord. Other factors, such as home training and opportunity, may be more important. However, the importance of these factors the writer has not attempted to determine in the present study.



Group B.  
Continued.

c- The significance of the results:

On the basis of the data collected and considered, in the case of group B or the pupils of Breck Private High School, it may be stated that, in general, standardized silent reading tests like Haggerty's "Sigma 3 Achievement Examination in Reading" and "The Thorndike-McCall Reading Scale" measure the ability of the pupils mentioned above to perform on the most modern standardized so-called tests of mental ability, with a fair degree of accuracy.

Likewise it may be stated that the pupils of this group who make the higher scores on tests of mental ability, like "The Miller Group Test of Mental Ability" or "The Stanford Revision of The Binet Simon Intelligence Scale" are the pupils who make the high scores on the modern tests of silent reading ability.

The statistical data further indicate that, in general, the school marks or grades of these high school pupils are determined largely by the ability of the same pupils to perform on standardized tests of silent reading ability. The pupils who got the better marks for their school work were invariably the pupils who got the higher scores on either of the reading tests and vice versa.

Table 9.

Table giving the median scores made by thirty-five pupils found in Breck Private High School, St. Paul, Minn.

Chronological age.	Mental age.	I.Q.	Sigma 3.	Thorndike McCall.	Miller.	No. of books read.	Vocabulary*	
Yr. Mo.	Yr. Mo.							
16	1	16 8	109	89	62	56	25	10080

Table 10.

Table of correlations for thirty-five pupils in Breck Private High School, St. Paul, Minn.

Correlated tests.	No. of cases.	Correlation.	Probable error. Plus or Minus.
Sigma 3 and Vocabulary	30	. <del>654</del> <sup>687</sup>	<del>042</del> <sup>06</sup>
" " Thorndike-McCall	35	.784	044
" " School Marks	35	.637	071
" " Miller's	35	.618	070
" " Mental Age	35	.487	092
" " Intelligence Quotient	35	.477	092
Thorndike " Vocabulary	30	<del>043</del> <sup>687</sup>	<del>042</del> <sup>06</sup>
McCall " Sigma 3	35	.784	044
" " Mental Age	31	.456	100
" " Miller's	31	.375	103
" " No. of Books Read	31	.333	112
Vocabulary " " " " "	30	.292	112

\* - Vocabulary, as estimated by means of the vocabulary test contained in the Stanford revision of "The Binet Simon Intelligence Scale".

Table 11.

Table giving the relation of School Marks to Reading Ability,  
for thirty-one pupils in Breck Private High School, St. Paul.  
Ability in Reading—"Sigma 3 Achievement Exam. in Reading".

	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	Total.
A :						1		1			2
B+ :						1	3		1		5
B :									1		1
B- :				1	1				1	1	4
C+ :				1	1	1	1				4
C :				1	2	1	1	1			6
C- :											
D+ :			1								1
D :											
D- :		2			2			1			5
F :	1			1		1					3
Total =	1	2	1	1	5	7	5	4	4	1	31

Table 12.

Relation of School Marks to Reading Ability, Breck High School.  
Ability in Reading—"Thorndike-McCall Reading Scale, Form I".

	46-50	51-55	56-60	61-65	66-70	71-75	76-80	Total.
A :				1		1		2
B+ :				1	2		2	5
B :						1		1
B- :				2	2			4
C+ :			2		2			4
C :		1		1	3	1		6
C- :				1	1			2
D+ :	1							1
D :								
D- :	1		3		1			5
F :		2	1					3
Total =	2	3	6	6	11	3	2	33

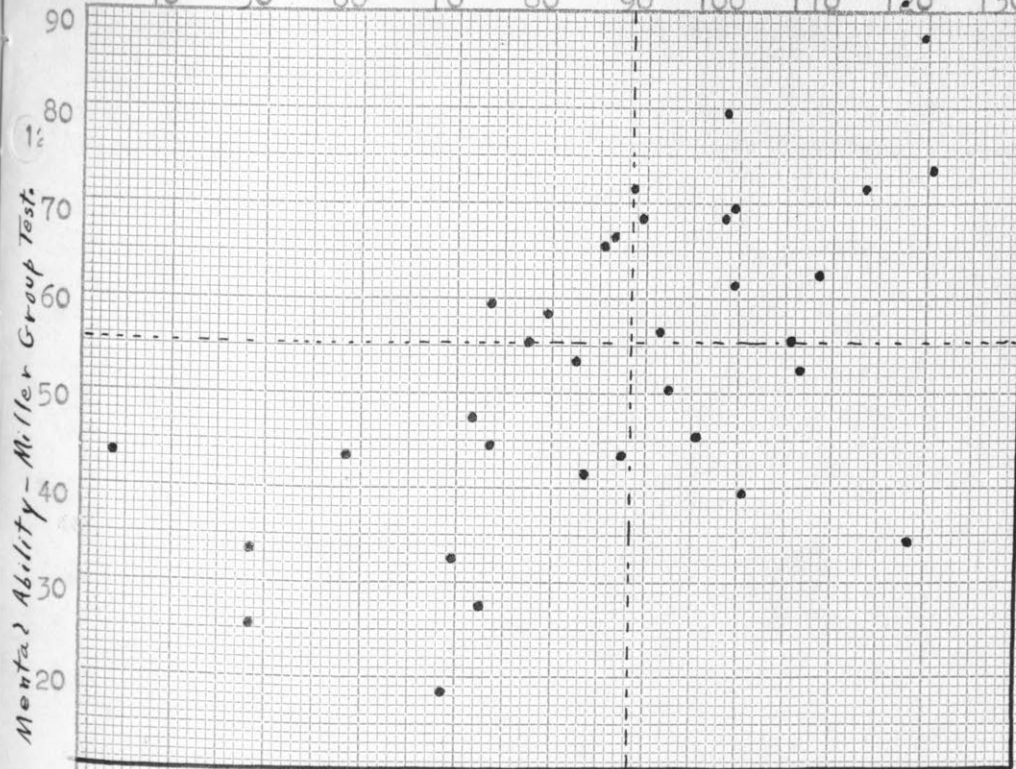


Figure 11.

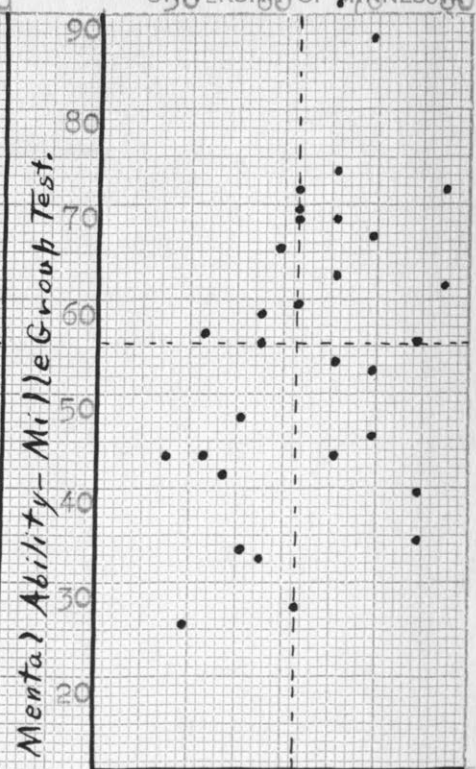


Figure 12.

Figure 11. Distribution of Correlated Abilities in Reading and in Intelligence, for 35 cases in Group B.  
Correlation = .618, x median = 89, y median = 56.

Figure 12. Distribution of Correlated Abilities in Reading and in Intelligence, for 31 cases in Group B.  
Correlation = .375, x median = 62, y median = 56.

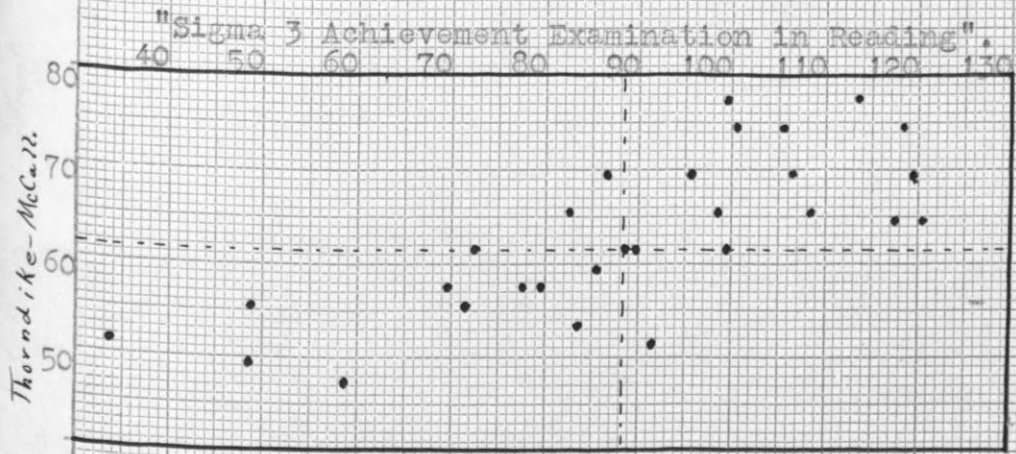


Figure 13. Distribution of Correlated Abilities in Reading, for 31 cases in Group B.

Correlation = .784, x median = 89, y median = 62.



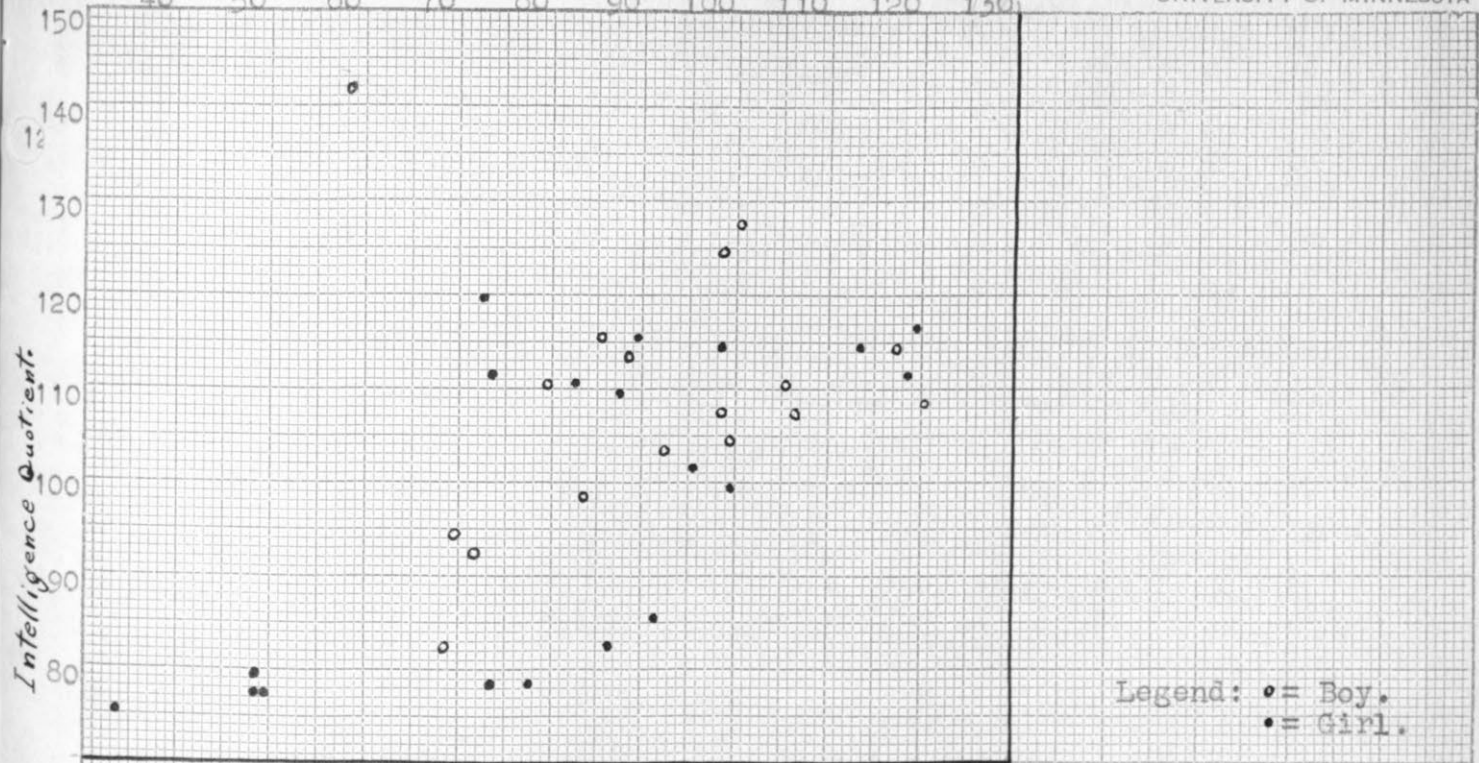


Figure 14. Distribution of Correlated Abilities in Reading and in Mental Ability-Intelligence Quotient, for 35 cases, Group B. Correlation = .477, x median = 89, y median = 109.

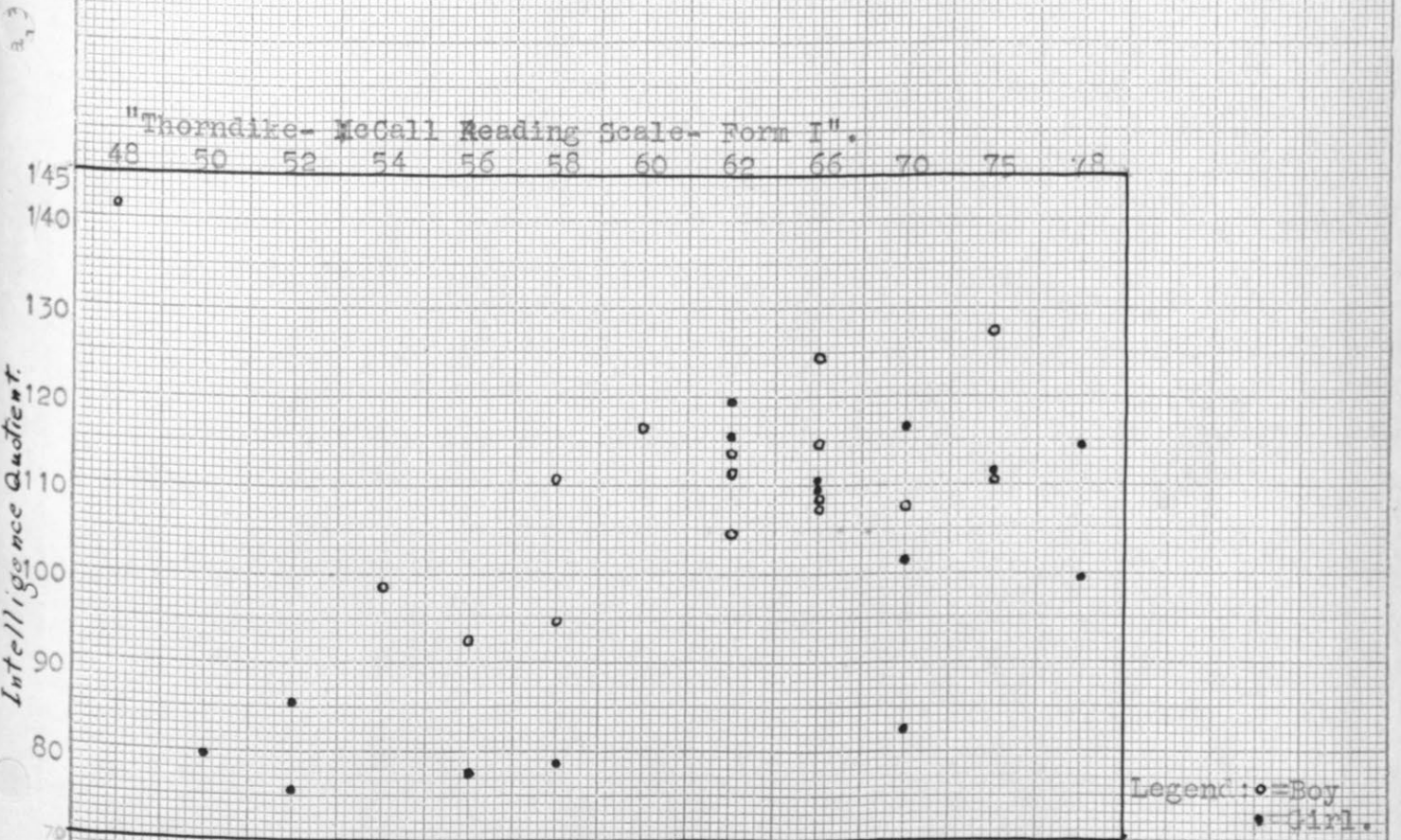


Figure 15. Distribution of Correlated Abilities in Reading and in Mental Ability-Intelligence Quotient, for 31 cases, Group B. Correlation = .456, x median = 62, y median = 109.

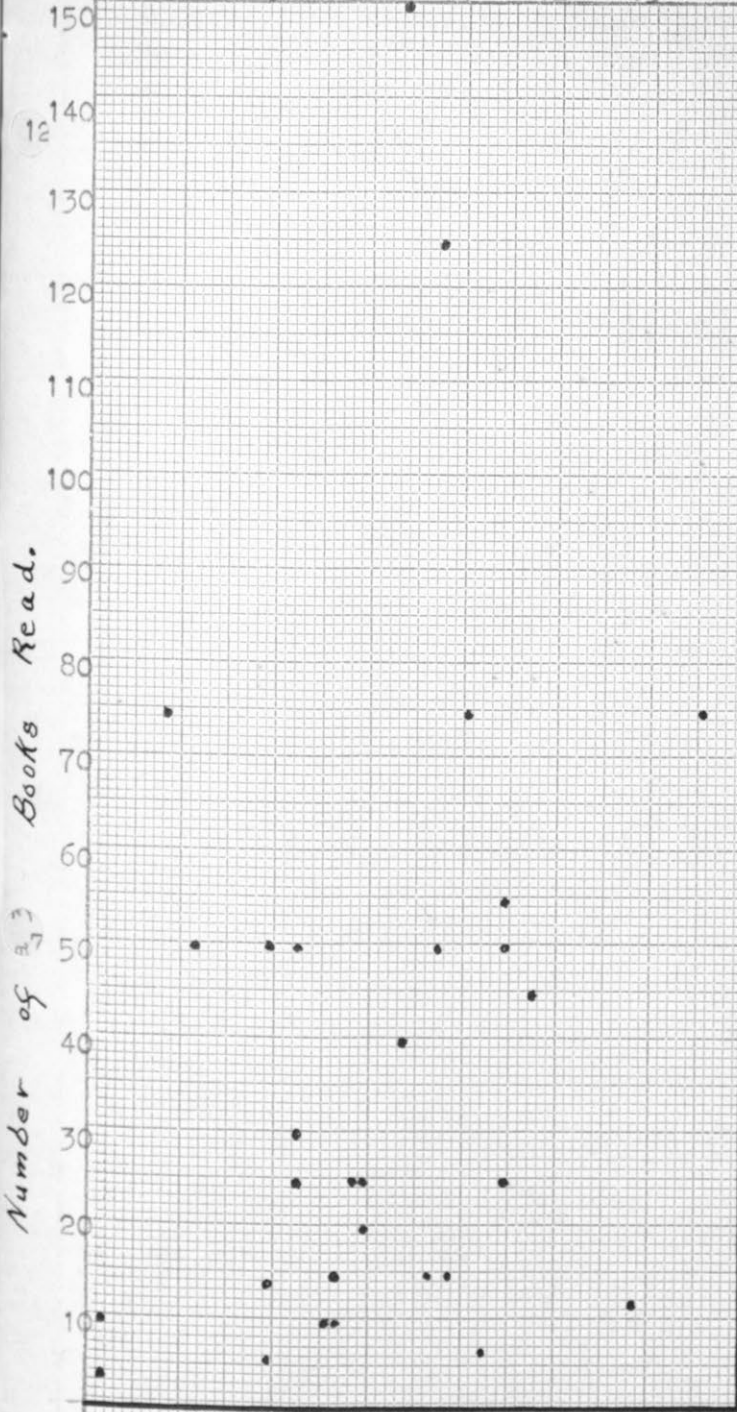


Figure 16.

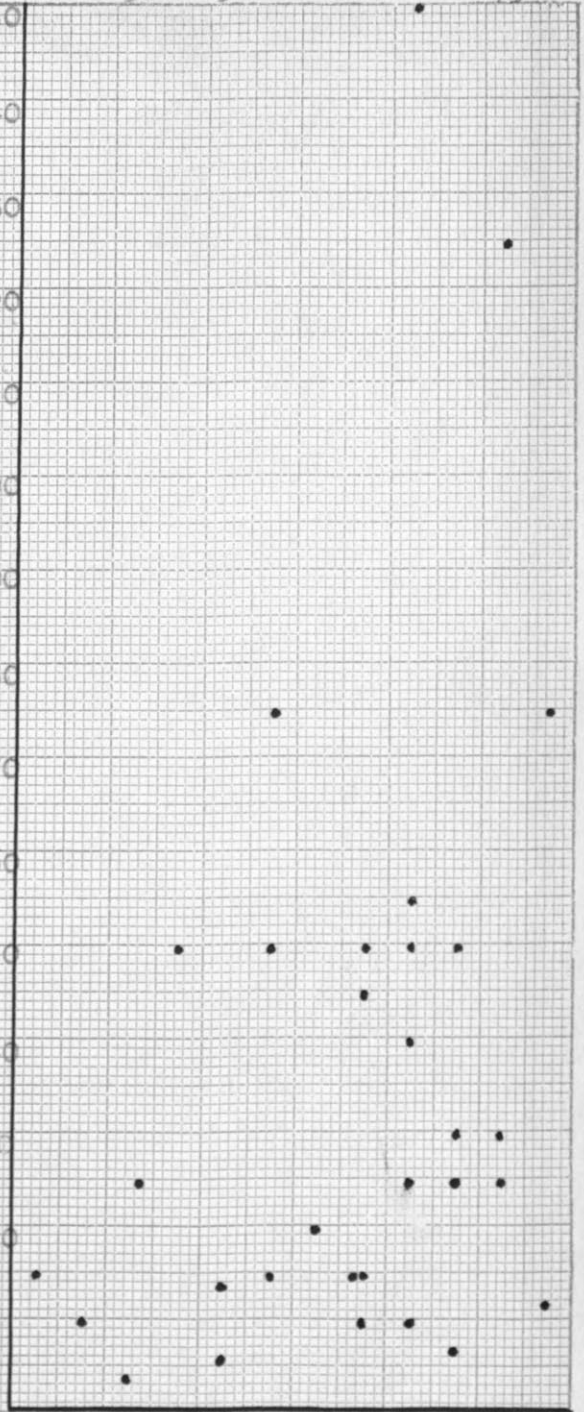


Figure 17.

Figure 16. Distribution of Correlated Vocabulary and Number of Books Read by 30 Pupils of Group B.  
 Correlation = .292, x median= 10,000 Words.  
 y " = 25 Books.

Figure 17. Distribution of Correlated Ability in Reading and Number of Books Read by 31 Pupils of Group B.  
 Correlation = .333, x median= 62, y median =25.



SCHOOL MARKS.

Average School Marks.

F D D- C- B B+ A

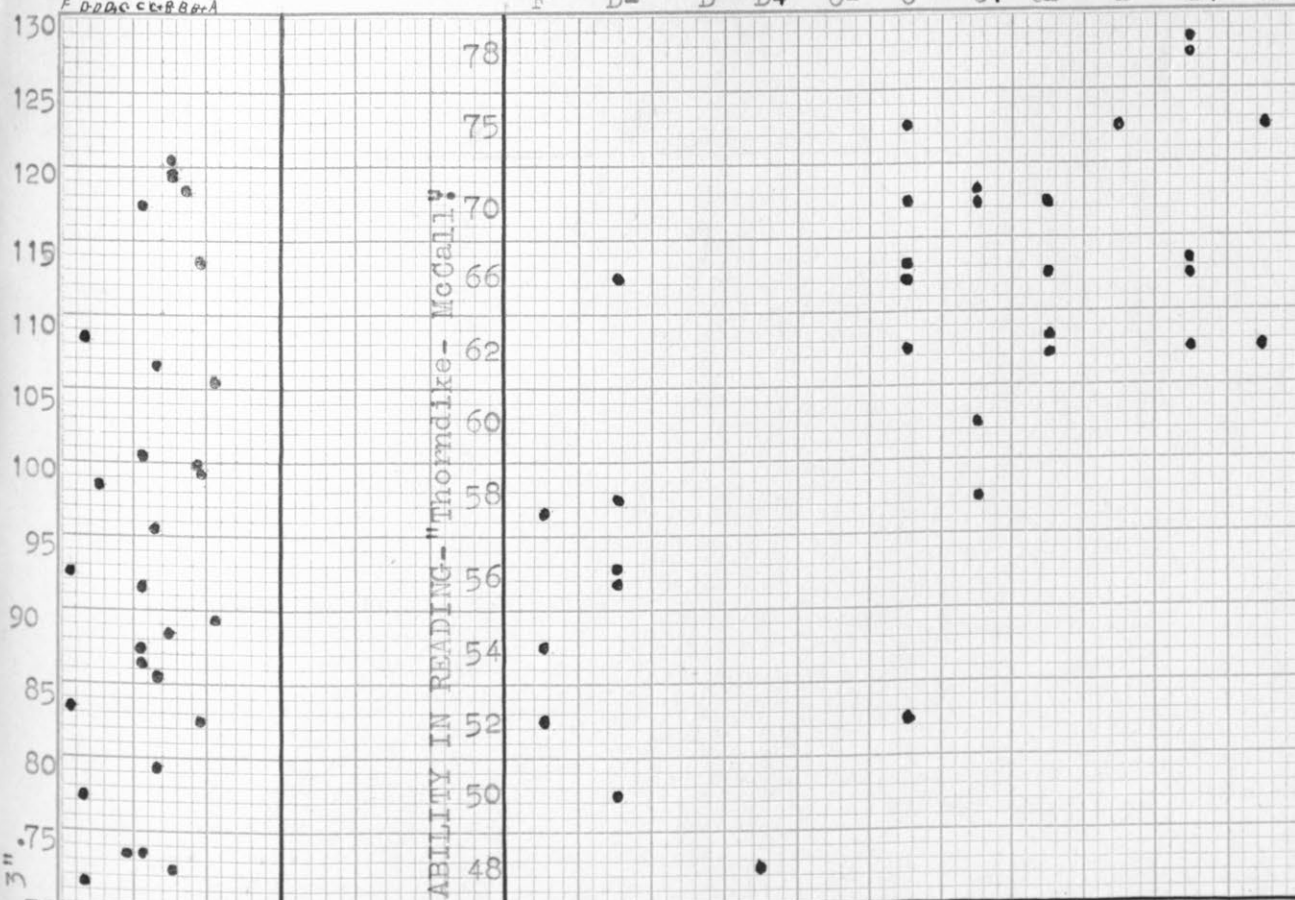


Figure 18. Distribution of Correlated Ability in Reading and Average School Marks, for 31 cases Group B.

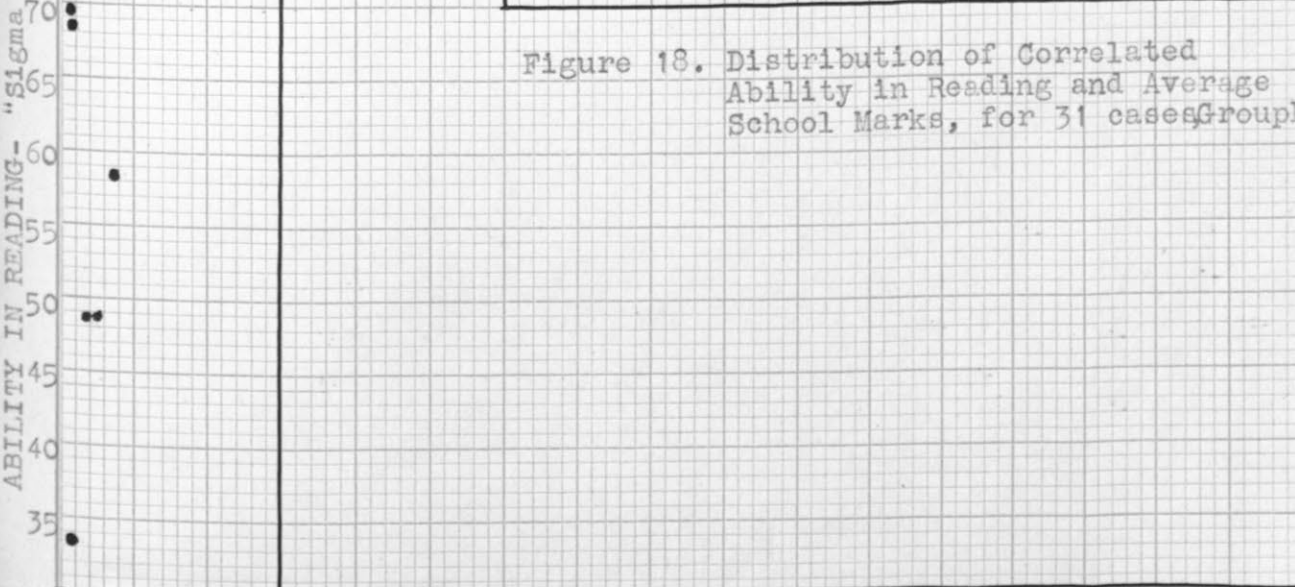


Figure 19. Distribution of Correlated Ability in Reading and the Average of School Marks for 35 cases, Group B. Correlation = .637 .

VOCABULARY- No. of Words Known by Pupils, by Thousands.

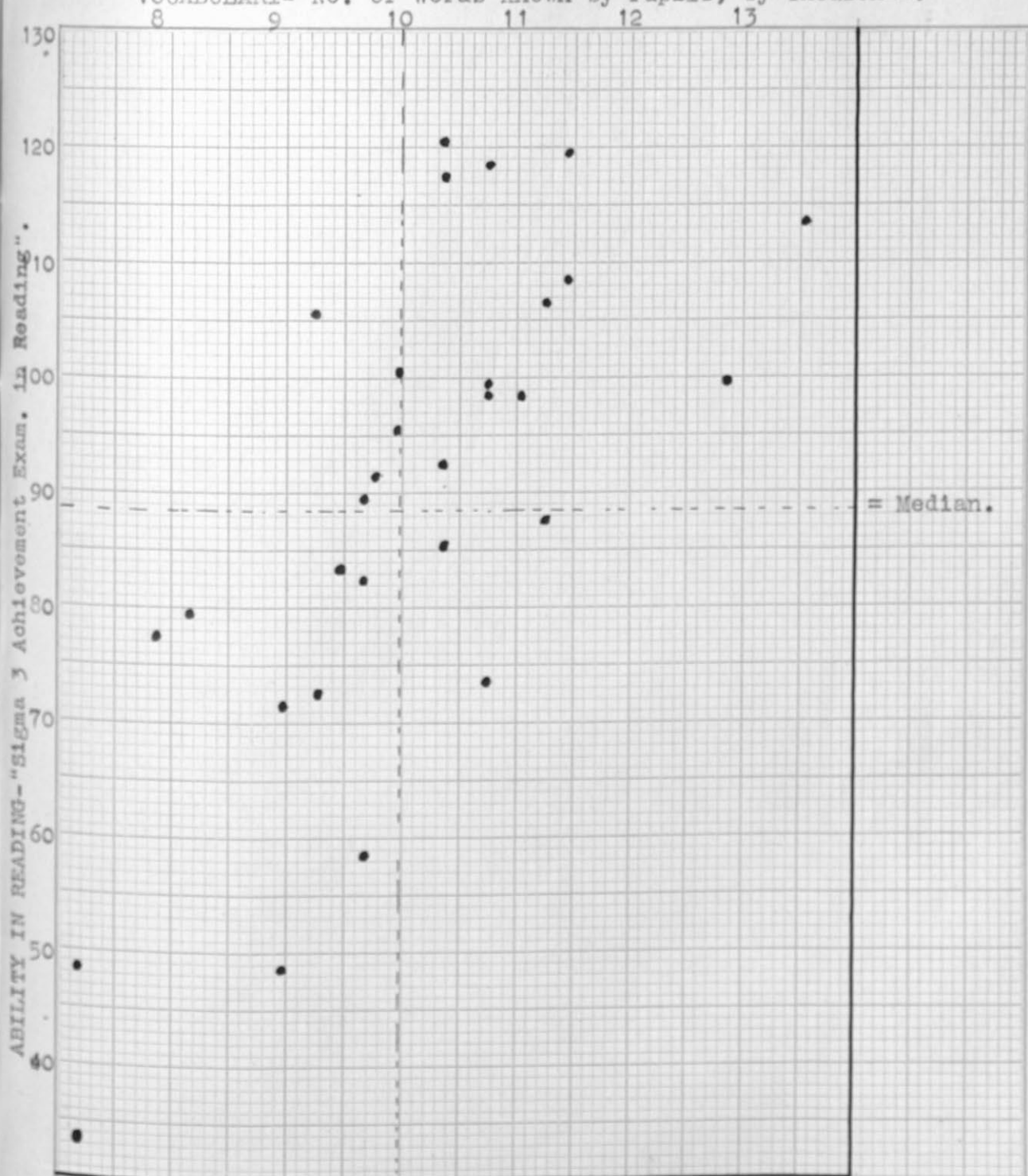


Figure 20. Distribution of Correlated Abilities in Reading and Vocabulary of 31 Pupils of Group B.  
Correlation = .954. '687



VOCABULARY- No. of Words Known by Pupils, by Thousands.

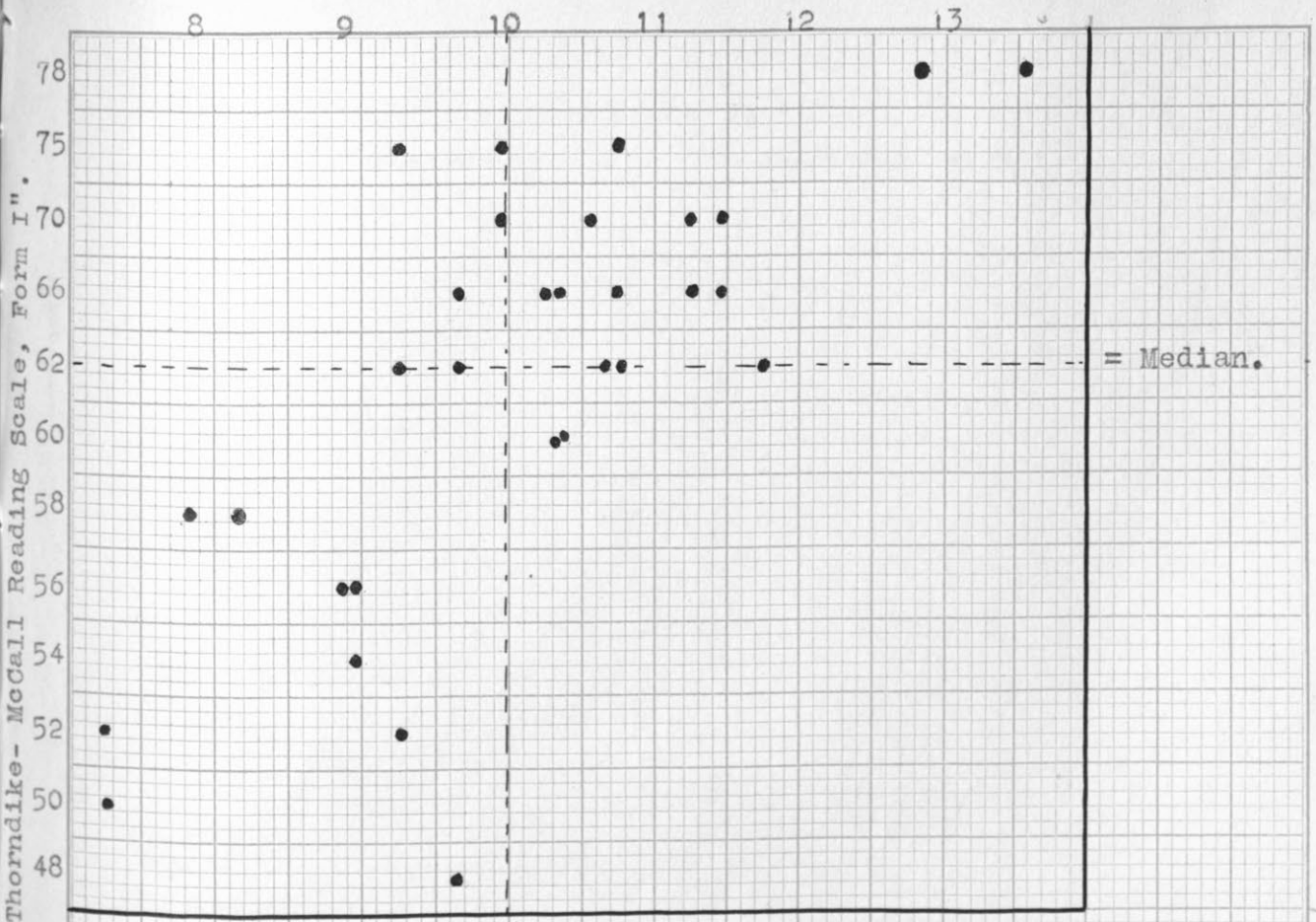


Figure 21. Distribution of Correlated Ability in Reading and Vocabulary of 30 Pupils of Group B.  
 Correlation = ~~.943~~ .697

SECTION VI- Continued

RESULTS Group C

SECTION VI.-continued.

Statement and discussion of the data.

Results- Group C.

a- Range and distribution of the scores:

This group of two hundred and ten pupils has been found to be a somewhat select group of high school children. Not only has eighty- five per cent of the freshmen of this group been found above the median of one thousand high school freshmen throughout the state, as explained in Section V, but it is observed that, on the basis of any one of the media used in measuring this group, each of the four groups within the high school was found above the standard set for corresponding groups in the ordinary American high schools. This fact is indicated in Figures 22 to 26 and in Table 13 which show, in a composite manner, the scores made by all the pupils of the group under consideration in the various tests. The presentation of the medians of this group in some of the tests and the comparison of the same with the established standards, as shown in the following table, will help to make more obvious the relative standing of this group.

Table of medians made by the pupils of group C as compared with the established standards for similar groups.

Grade.	Intelligence Quotient, Sigma 3.		Miller test			
	Standard.	Group C.	Standard.	Group C.		
IX	105*	114	84	87	56	64
X		115	90	102	62.5	82
XI		104	96	114	68	91
XII		109	102	115	75	88

\* - The writer has not been able to find any established standards for IQs, but gives the median reported by Dr. Terman in "The Intelligence of School Children", pp.80. Houghton Mifflin Co., Boston, 1919.

When a consideration is made of the ranges of scores made by the pupils of each grade in this high school, it is evident that, in the case of all the group tests of reading ability or of mental ability, the array of scores begin and end higher as advance is made from grade to grade. The same holds true for the medians with the exception of the "Miller Group Test of Mental Ability", in which case the writer found, as Tables 15 and 18 indicate, a drop from 91 for grade XI to 88 for grade XII, but the median scores for grades IX and X were 64 and 82 respectively. The medians for Sigma 3 reading test were 87, 102, 114, and 115 respectively for grades IX, X, XI, and XII. The advance of the arrays from grade to grade is clearly indicated in Table 18, where it is shown that, for Sigma 3, the lowest scores made in each of the four grades were 39, 72, 84, and 85 respectively and the highest scores made in each of the same grades were 114, 129, 137, and 148 respectively.

Figures 22 to 26, which have already been considered, show in a graphical way that this relatively select group is itself an approximately normally distributed group if all the pupils are taken together. However, Figures 23 to 26 show that, if each of the grades is considered by itself, there is a marked tendency for the scores of the pupils to be clustered together more closely above the median than below. In other words, the frequency curve is skewed so that the mode falls above the median instead of directly at the median as it would were the groups normal.

In the case of the higher grades the distribution is narrowed. Here the children are more select as we find that the difference between the medians for grades nine and ten is greater than that between the other grades.



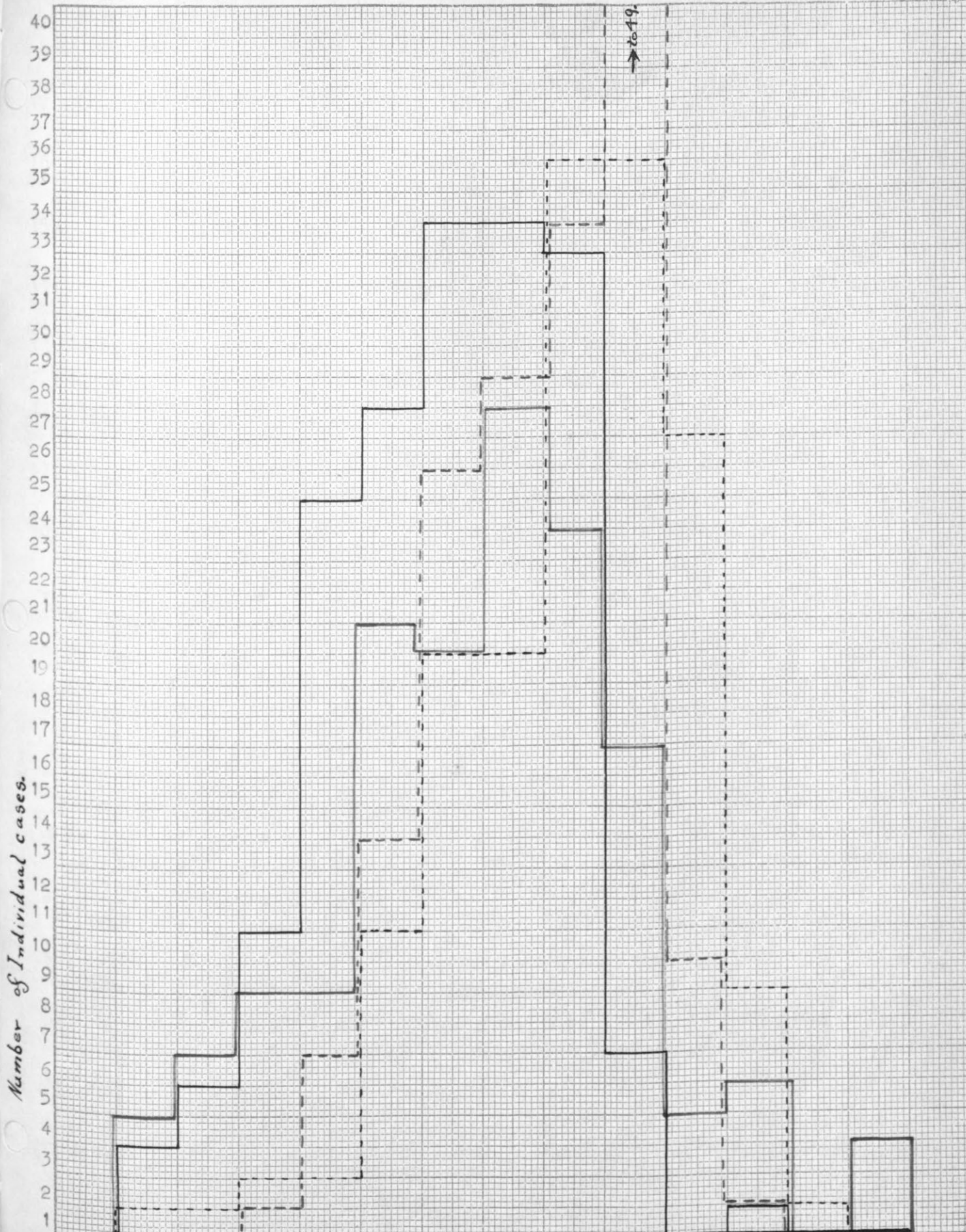
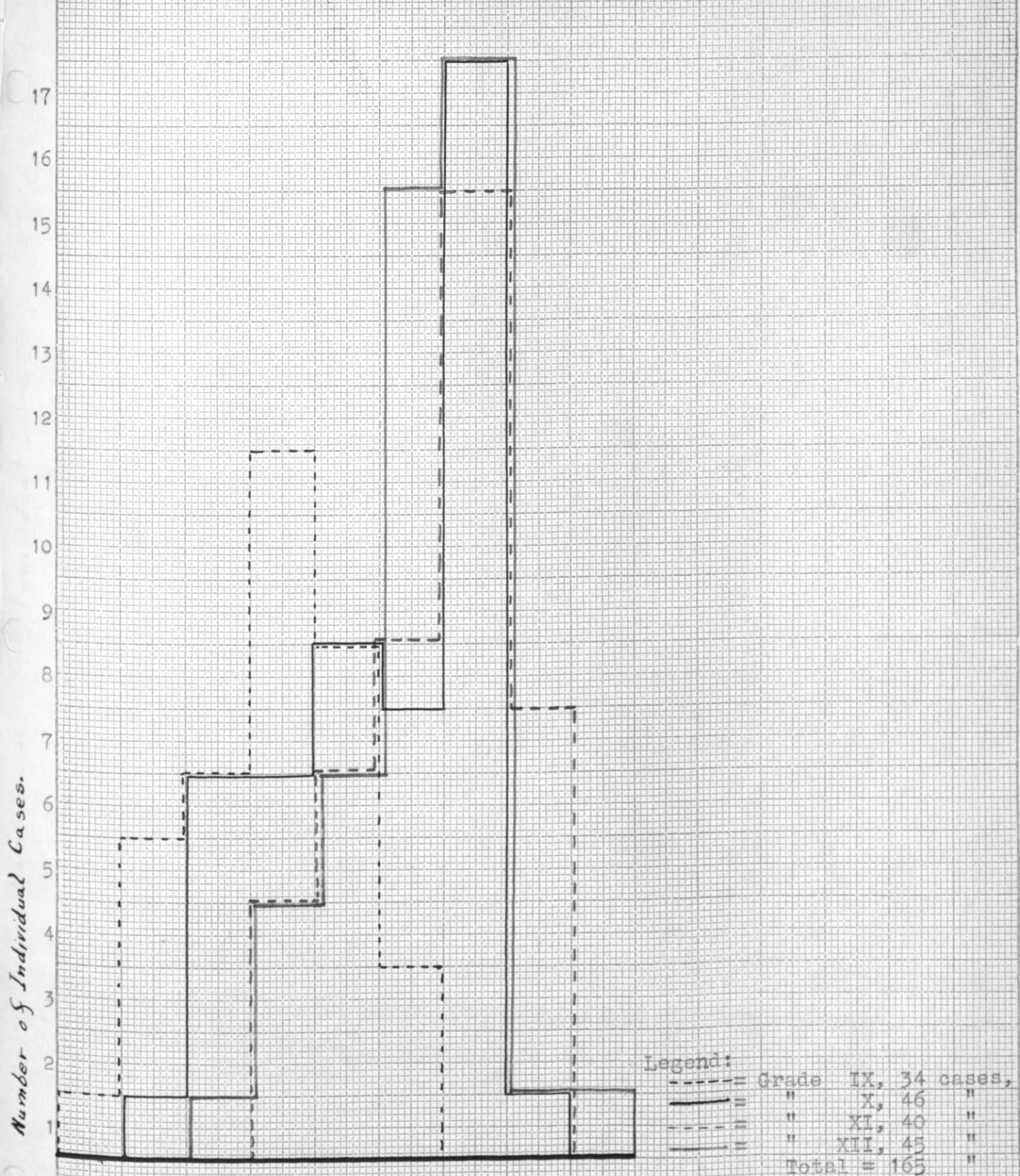


Figure 22. Distribution of Scores for University High School, Grades IX-XII.  
 --- = Sigma 3- 159 cases, — = Thorndike-McCall-174 cases,

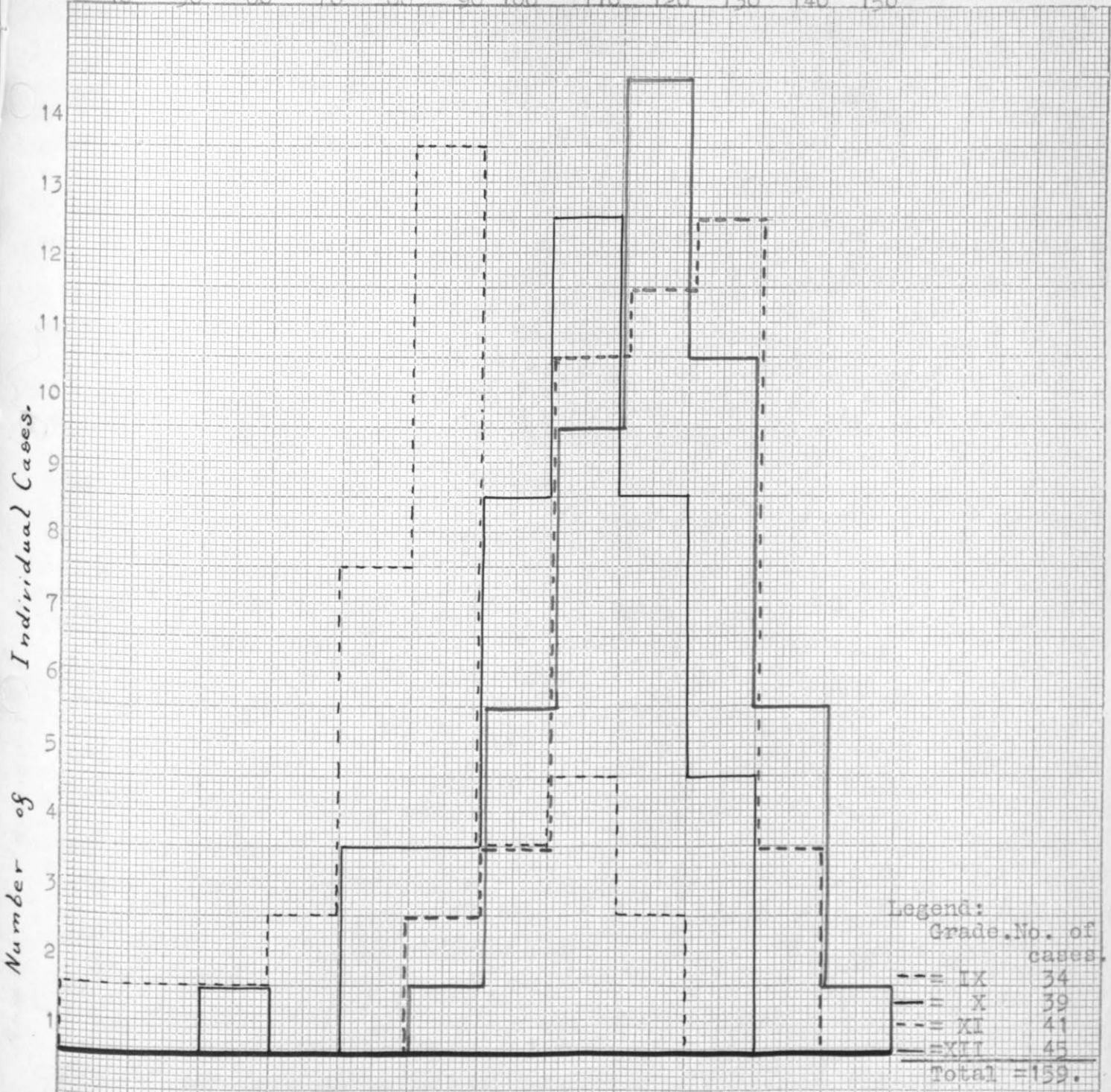


Number of Individual Cases.

Legend:  
 - - - - - Grade IX, 34 cases,  
 ————— " X, 46 "  
 - · - · - " XI, 40 "  
 - - - - - " XII, 45 "  
 Total = 165 "

Figure 23. Distribution of Scores on "The Miller Group Test of Mental Ability." Median Grade IX= 64, Median Grade XI= 91,  
 " " X= 82, " " XII= 88.  
 " " IX-XII= 83, Average " IX-XII= 75.57 .

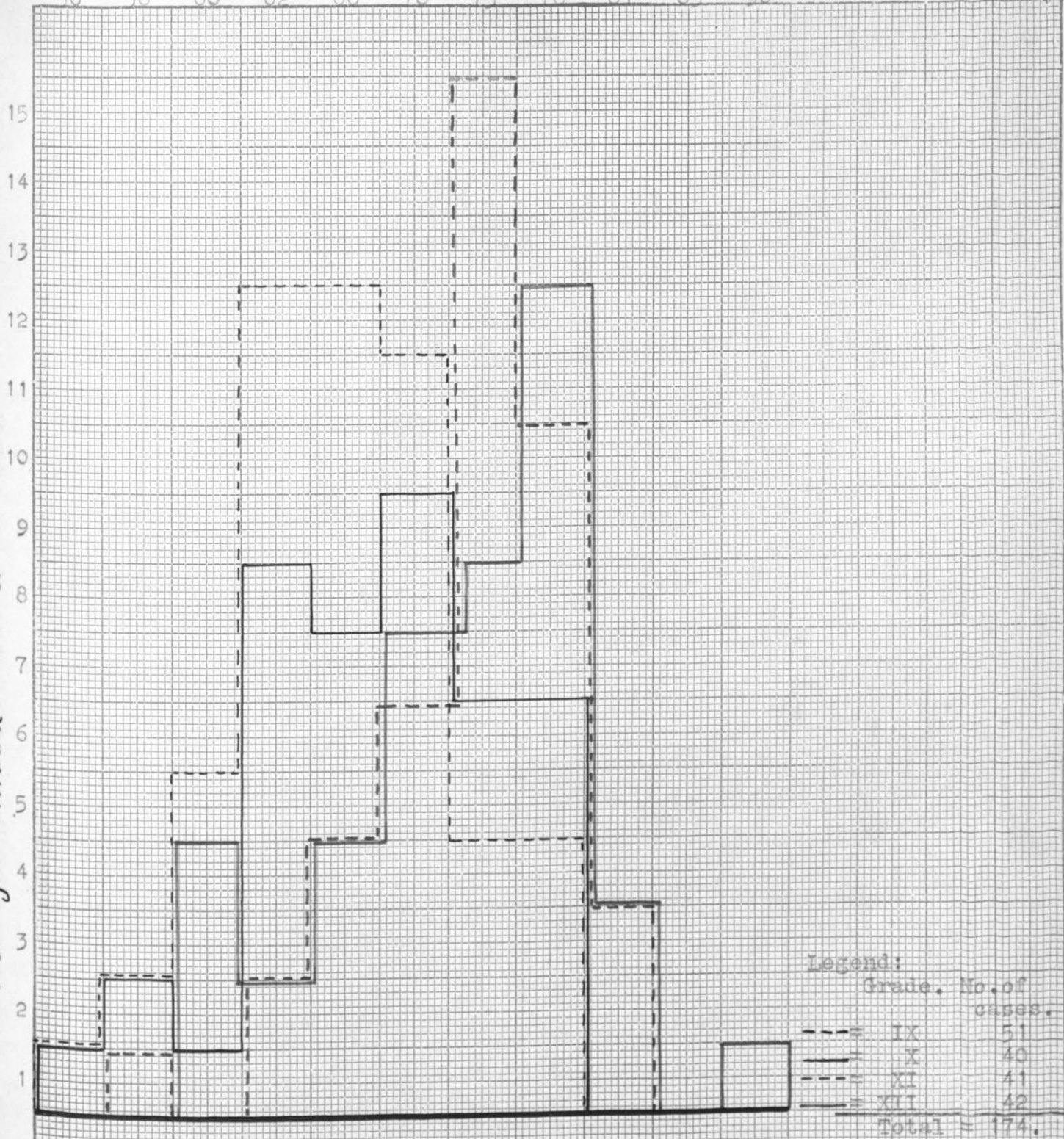




Legend:  
 Grade.No. of cases.  
 --- IX 34  
 — X 39  
 -·- XI 41  
 - - XII 45  
 Total =159.

Figure 24. Distribution of Scores, Sigma 3, by Grades.  
 Median Grade IX= 87, Grade XI= 114,  
 " " X= 102, " XII= 115.  
 " GradesIX-XII= 108, Average Grades IX-XII= 97.03 .

Number of Individual Cases.



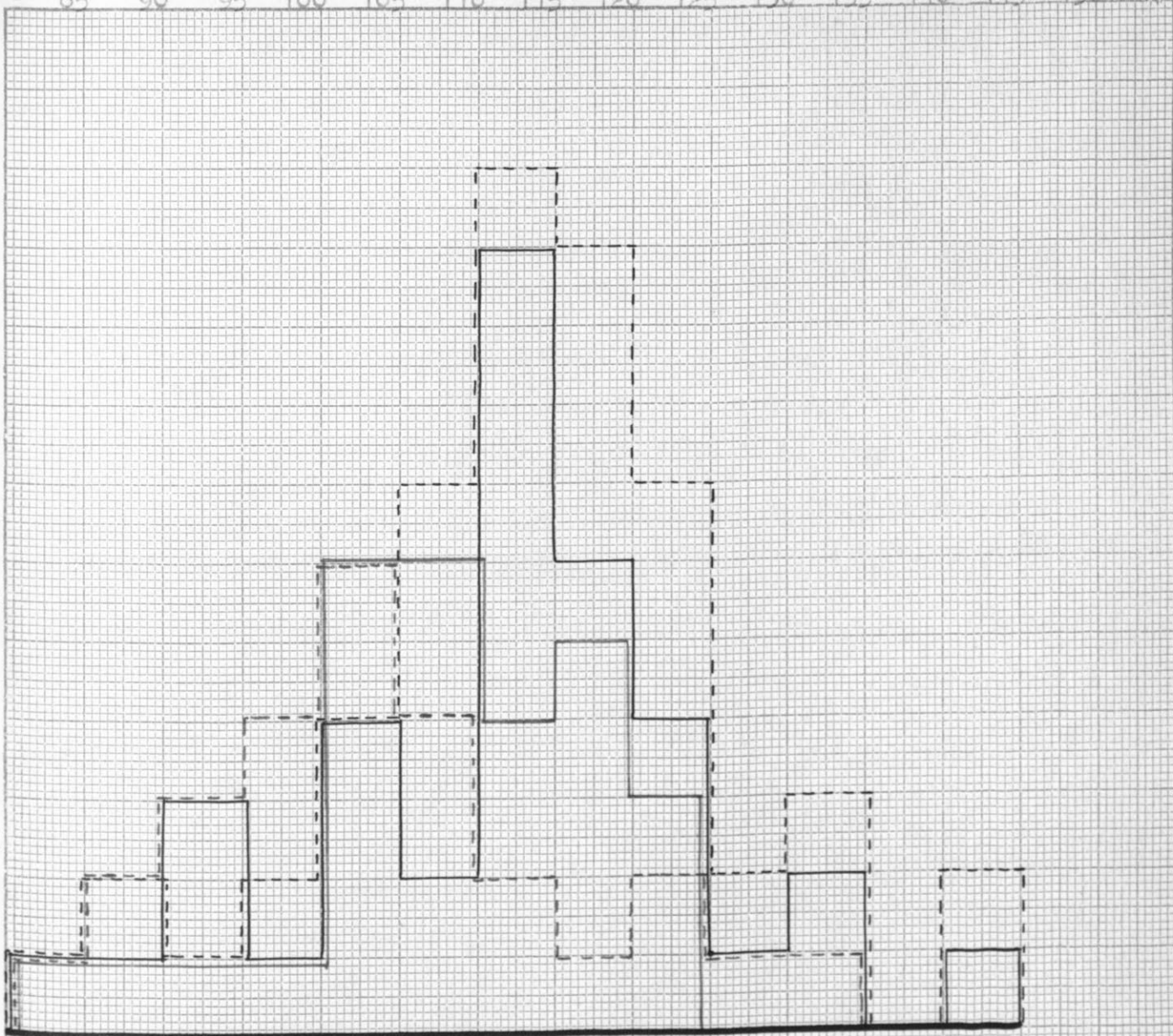
Legend:

Grade.	No. of cases.
IX	51
X	40
XI	41
XII	42
Total = 174.	

Figure 25. Distribution of Scores, Thorndike-McCall Reading Scale,  
 Median Grade IX = 66, Median Grade XI = 75,  
 " " X = 70, " " XII = 75.  
 " " IX-XII = 70, Average " IX-XII = 69.97.



Number of Individual Cases.



Legend:

Grade.	No. of cases.
--- (dashed)	IX 52
— (solid)	X 36
- · - (dash-dot)	XI 27
- - - (long-dashed)	XII 28
Total = 143.	

Figure 26. Distribution of the Intelligence Quotients of 143 pupils of University High School, Minneapolis, Minnesota.

Median Grade IX = 114, Median Grade XI = 104,  
 " " X = 115, " " XII = 109.

Median " IX-XII = 112, Average " IX-XII = 109.97.

Table 13.

## 3. Original Scores- Group C.

Table giving the original scores of all the pupils of Group C. These were pupils of all the grades of University High School, Minneapolis.

## GRADE NINE.

Terminology: A- Number of pupils; B- Age; C- Sex, m=male, f=Female; D- Scores in Sigma 3 reading test; E- Thorndike McCall; F- Miller; G- Delta II; H- Terman; I- Army Alpha; J- Mentimeter; K- Average of five intelligence tests just mentioned; L- Mental Age in months derived by means of Stanford Revision of "The Binet Simon Intelligence Scale"; M- Intelligence Quotient by same method as Mental Age; N- School Marks; O- Sigma 3 according to parts, x= Vocabulary, y= Sentence Reading, z= Paragraph Reading.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	x	y	z
	Yr., Mo.																
1	14.5	m	39	60	50	91	70	89	100	90	167	92	34.5	4	11	14	
2	13.11	f	43		33	113	91	89	88	89			13	12	17	14	
3	13.7	m	60	62	43	117	99	101	91	99	207	122	59.2	11	19	30	
4	14.1	f	62		66	132	118	95	106	115				12	21	26	
5	12.7	f	62	60	49	115	109	121	96	108	226	142	50	15	17	24	
6	14.2	m	72	62	42	105	84	84	104	92	178	101	36	16	21	32	
7	14.11	f	72	62	46	118	88	96	83	95	149	81	23	14	24	34	
8	14.4	m	73	70	51	107	131	120	108	114			37.5	29	25	38	
9	16.9	m	74	58	51	115	91	70	98	95	171	89	45.5	16	25	32	
10	14.2	f	74	60	64	131	105	114	88	113	187	105	84.2	22	26	26	
11	14.	f	75	75	71	142	135	137	124	136	195	111	19	14	29	32	
12	13.10	f	78	66	53	124	121	120	104	113	173	99	59.5	18	26	34	
13	13.8	m	81	56	66	140	124	125	113	123	225	131	47	16	27	38	
14	14.6	m	83	66	89	141	149	134	124	145	199	109	100	16	19	48	
15	13.11	f	83	70	61	133	113	113	104	117	153	88	47.5	13	31	36	
16	12.11	f	85	62	63	136	143	118	110	127	177	109	64.5	18	29	38	
17	14.	m	87	60	64	136	129	106	109	122	196	112	34.2	28	29	30	
18	13.4	f	87	70	81	142	150	123	113	138	192	115	88.4	16	26	44	
19	14.1	f	87	70	69	136	154	114	110	130	210	118	78	17	30	40	
20	13.5	f	88	62	66	114	105	115	104	114	193	114	47.5	26	32	30	
21	13.2	m	88	66	60	120	93	105	109	109	197	120	44	19	27	42	
22	13.5	f	89	75	65	146	124	136	114	130	172	103	72	20	31	38	
23	12.3	f	90		60	132	113	112	107	117	186	111	50	26"	32	32	
24	14.	m	90	66	64	126	130	126	121	126	195	111	81	20	30	40	
25	13.2	m	90	78	73	153	149	130	123	140	234	141	100	18	28	44	
26	14.5	m	91	78	80	149	147	133	117	141	195	107	87	28	27	36	
27	13.11	m	97	66	77	143	154	132	114	139	234	133	51.2	31	26	40	
28	13.7	f	100	70	55	135	114	107	102	114	200	117	19	32	28	40	
29	15.2	m	101	70	76	148	154	143	110	141	198	105	79.2	27	32	42	
30	13.4	f	106	62	63	139	109	121	112	121	193	109	81	30	36	40	
31	14.11	m	106	70	72	156	188	146	123	151	234	125	93	31	31	44	
32	12.7	f	110	75	76	125	158	136	111	136	186	109	78	28	34	48	
33	13.10	f	111	62	71	151	168	155	114	146	192	111	90	37	30	44	
34	15.	m	114	78	88	152	173	166	134	159	217	116	45.5	32	34	48	
35	13.5	f		62	84	151	159	137	125	148	193	119	93.5				

Continued.

Table 13- Continued.

Grade IX- Continued.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	x	y	z
Yr. Mo.																	
36	13.9	f		62	77	140	124	108	113	127	210	126	70.5				
37	14.1	f		62	30	142	148	121		118	184	108	76				
38	13.5	f		66	66	128	136	124	101	124	195	121	92				
39	14.9	m		66	67	139	163	135	116	137	217	122	87				
40	14.7	m		70	86	163	165	166	118	156	219	125	98.2				
41	14.1	m		58	66	131	120	135	116	126	201	118	37.5				
42	13.7	f		60	67	120	107	125	103	137	209	122	54.7				
43	16.1	m		66				189	104	146			75				
44	14.7	f		75	71	150	155	131	126	140			78				
45	13.6	m		66	69	141	154	131	118	136	192	117	70.2				
46	14.5	m		66	66	140	132	128	116	129	202	116	44				
47	14.11	m		76	79	147	165	158	124	150	225	125	67				
48	14.7	f		78	74	145	114	128	112	129	173	98	75				
49	14.7	m		62	74	150	156	133	121	141	194	111	36.5				
50	14.5	f		60	69	114	95	100	103	110	195	112	19				
51	15.11	m		70	89			201	119	136			75				
52	14.5	m		62	68	143	145	130	110	132	178	114	19				
53	14.5	m		66	77	147	148	137	121	141	225	130	78.5				
54	15.11	m		70	71	135	128	121	78	120	216	112	40.7				
55	13.10	m		66	66	133	96	123	118	120	225	135	47				
56	14.1	m		60	90			170		130	201	118					
57	14.2	f		60	142	131	123	97	122	201	118	75					

Continued



Table 13-Continued.

## Original Scores, Group C, GRADE TEN.

Terminology: A- Number of pupil; B- Age; C- Sex, m= male, f= female;  
 D- Scores on Sigma 3 reading test; E- Thorndike-McCall; F- Miller;  
 G- Army Alpha; H- Intelligence Quotient; I- Average School Marks;  
 J- Marks in English.

A	B	C	D	E	F	G	H	I	J
Yr. Mo.									
1	16.	f	56	62	56			C	C
2	15.9	f	72	60	54	142	88	C	D
3	15.1	f	78	62	66		91	C	D
4	16.10	f	79	75	61		115	C	C
5	16.	m			86	201		D	F
6	15.	m	84		62	222	118	D	D
7	15.4	f	88	58	75	205	120	C	C
8	13.10	m	89	78	91	186	123	C	C
9	16.11	m	92	62	57	175	105	D	D
10	15.6	f	96	62	78		120	B	C
11	15.5	f			91		115	B	B
12	17.3	m	99	75	52			C	D
13	15.8	m	99	70	69			C	B
14	15.1	m	99	62	84	181		D	C
15	15.10	f	100	58	79	235	107	B	C
16	15.7	f	100	66	96	222	120	C	C
17	14.3	f	100	70	80	183	93	C	C
18	14.	m	101	75	83	191	133	B	C
19	15.4	f	102	66	95	239	105	A	A
20	15.8	m	102	66	91	183	111	C-	C
21	15.3	f	102	66	57	206	111	D	C
22	15.1	f		66	62	166	105	B	D
23	15.8	f	104	66	96	201	104	C	C
24	16.3	f	104	61		186	96	C	B
25	16.11	f	107		78	226	91	D	D
26	15.8	f	108		83	214	99	C	C-
27	14.5	m	109		77	209	122	C	C
28	13.4	f	109	75	95	230	114	B	B
29	15.8	m	109	70		218	114	C	C
30	15.11	f	110	66	94	186	116	C	C+
31	14.8	f	111	75	96	204	120	C	B
32	13.1	m	111	78	90	223		B	A
33	15.5	m	112	70	93	135	124	C	B
34	15.	m	113	70	72	173	104	D	D
35	15.3	f	115	70	82	175	84	B	B
36	15.5	f	117	78	90	250	114	B	A
37	15.	m	117	62	97	266	112	C	C
38	15.4	m	119	62	98	266	112	C	B
39	15.10	m	122	75	92	270		C	C-
40	13.7	m	124	70	103	258	142	B	B
41	15.8	m	128	78	99	296	126	A	B
42	14.5	f	129	78	98	221	134	C	A
43	20.3	m		56	76	205		D	F
44	16.6	f		62	88	191	109	C	C
45	15.	f		78		198	89	B	A
46	14.11	m		66	96	258	125	B	B



Table 13. Continued.  
Original Scores, Group C, GRADE ELEVEN.

Terminology: A- Number of pupil; B- Age; C- Sex, m= male, f= female;  
D- Score on Sigma 3 reading test; E- Thorndike-McCall; F- Miller;  
G- Trabue B Language Scale; H- I.Q.; I- School Mark; J- English Mark.

A	B Yr. Mo.	C	D	E	F	G	H	I	J
1	17.	f	84	66	75	15	90	C	C+
2	16.4	f	86	58	70	13		C	D
3	16.2	m	92	78	82	17	94	D	F
4	18.1	m	92	62	70	15	104	C	D
5	15.10	m	99	66		11	134	C-	C
6	16.5	m	102	62	95	17	91	D	D
7	16.2	f	102	75	73	18	88	B	B
8	16.7	f	105	75	82	17		B	B
9	17.2	f	103			14	81		
10	16.4	f	106	75	91				
11	15.11	f	107	70	74	14	100	D	D
12	14.11	f	108	70	88	12	118	D	C-
13	17.4	f	108	75	91	16	99	C	C
14	16.3	f	109	78	89	17	105	A-	A
15	16.11	f	110	66"	93	16	102	B	B
16	16.4	f	111	75		14	101	B	C-
17	14.4	m	111	81	104			A	A
18	16.4	m	112			11	112		
19	15.11	m	113	66	85	14		D	D
20	15.11	f	113	75	98			C+	B
21	16.11	f	114	75	67	20	104	C	C
22	16.	m	115	78	84	18		D	D
23	15.8	f	115	70	74	14	108	C	C
24	15.	f	117		104			B-	B
25	16.7	f	117	78	86	14	96	B	C+
26	15.4	m	120	75	91	19	121	A-	B
27	15.8	f	121	78	102	16	109	B	B
28	16.9	m	123		93	17		C	C-
29	16.3	m	123	75	74	16	98	C	C
30	15.4	f	124	70	98	19	114	C+	C+
31	15.5	f	125	75	91	14	110	B	C+
32	17.3	f	125	75	65			C	D
33	16.	m	125	75	98			C+	C+
34	15.8	f	126	81	107	18	124	B	B
35	14.11	m	126	78	96			B	D
36	15.5	m	127	75	108			B	C-
37	15.5	m	128	70	99	18	109	D+	C-
38	16.1	f	129	78	101	16	128		
39	14.8	m	133	75	90			C	C-
40	15.10	m	135	81	99	14		B+	B
41	15.10	f	137	75	100	17	105	C	C-
42	16.11	f		78	92			C+	C
43	16.4	f		70	75	12	95	C	C-
44	16.9	f		78	96			C	C
45	16.4	f		78		14		C	C

Table 13. Continued.  
Original Scores, Group C, GRADE TWELVE.

Terminology: A- Number of pupil; B- Age; C- Sex, m= male, f= female;  
D- Score on Sigma 3; E- Thorndike-McCall; F- Miller; G- Army Alpha;  
H- Intelligence Quotient; I- Average School Mark; J-English Mark.

A	B Yr. Mo.	C	D	E	F	G	H	I	J
1	17.2	f	85	60	63	180	95	C	B
2	19.1	m	92	60	64	293	110	D	D
3	17.8	m	99	66		199		D+	D
4	17.3	f	95	78	82			B	B
5	17.	f	95	66	73	229	104	B-	B
6	19.1	f	97	70	80	194		C	C
7	18.	f	101	60	62	195	84	C	C-
8	17.4	f	101	78	91	179	97	C	C
9	16.4	m	104	75	98	204	121	B	C+
10	18.1	m	104	78	60	261		D	D
11	16.6	m	104	66	69	263	102	C	D
12	17.3	f	105	78	82			C	C-
13	17.3	f	105	78	96			C+	C
14	17.4	f	108	75	94	197	120	C	B
15	16.11	f	110	62	81			C+	C+
16	16.4	f	110	66	93			B-	C+
17	19.11	f	111	66	78			C	C
18	16.8	f	112	70	92			B	C+
19	16.1	f	113	70	77			C	C
20	17.2	m	115	75	81	133	105	C-	C-
21	17.8	m	115	60	85	226	105	C-	C
22	17.11	f		81	89	148	113	B	B
23	16.2	m	115	70	100	247		C	C-
24	18.6	m	116			265		C	D
25	17.11	m	116	62	80	248	109	C	C
26	17.1	f	117	90	89	223	116	B	B
27	16.11	f	118	78	85			C+	C+
28	16.7	f	118	78	83	251		C+	B
29	17.3	f	118	75	84	200		C	C-
30	17.	f	119	70	81	256	109	C	C+
31	17.10	f	121	78	93	257	109	C+	C-
32	16.3	f	122		92			C	D
33	16.10	f	123	78	90	231	108	A	A
34	17.4	f	123	70	90	254	121	C	D
35	17.4	m	125	81	97	238	115	B	C+
36	17.8	f	125	78	95	298	118	A-	A
37	16.4	m	126	75	97	280		D	C-
38	17.8	m	127	78	98	244	114	C+	C+
39	17.7	m	127	78	96	290	109	B	C+
40	17.4	m	128	75	104	267	103	C+	C+
41	17.1	m	133	75	98	286		B	A
42	17.7	m	133	75	91	269	120	B	B
43	17.7	f	133	60	95	278	101	C+	B
44	18.	m	138	70		325	116	C+	C
45	17.4	m	138	78	88	285	115	B	C+
46	16.8	f		70	74	197	87	B	B
47	15.11	f	148	81	112		122	B	C+

Group C.  
Continued.

b- A consideration of the correlated abilities:

The significance of the correlations which one gets when correlating the performance of pupils on various tests is dependent upon certain conditions. This is especially true if one has to deal with select or abnormal groups. Hence, the writer deems it expedient to enumerate some of these conditions as they were found before considering the correlations in the case of Group C, the University High School group.

As already noted above in the preceding sub-section and in Table 18, the range of distribution of the scores on the different tests was fairly wide for the group as a whole. The range for Sigma 3 was from 39 to 148, for the Miller test from 33 to 112, and for the Intelligence Quotients from 81 to 142. Even though the extreme scores are widely separated there is a tendency for the mode to be abnormally high for the results on most of the tests. This is clearly noted in the case of the Miller group test. Figures 22 and 23 show that, on this test, forty-nine pupils out of a total of one hundred and sixty-five got scores ranging from 91 to 100, whereas the entire range extended from 33 to 112. All other conditions being equal, this narrowing of the distribution will tend to lessen the size of the coefficients of correlation.

Because of the difficulty of measuring the same and also because of lack of data with which to compare it, the writer can not make any assertion as to the modification of the correlations because of a possible abnormal amount of individual variability on the part of the pupils. Yet, if one observes the

scores made by each of the 197 pupils in the various tests of mental and of reading ability, as reported in Table 13, he is aware of the fact that, in general, a pupil scoring high in a test of one ability very likely makes a correspondingly high score on another standard test of the same ability. If it should be deduced that the individual variability of these pupils is less than normal, the correlations to be considered here might appear large, but this the writer can not scientifically determine at the present time.

Regarding the possibility that the unreliability of the testing media was a significant factor in determining whether or not the correlations are abnormally high, the writer offers no explanation either, except to state that use was made only of tests that have been prepared and standardized in accordance with specifications laid down by the most widely recognized educational psychologists. Hence, one would assume that the reliability of each of the tests used is fairly high and consequently the correlations also would tend to be high.

Tables 19 and 20 present thirty different coefficients of correlation between the performances of the pupils of group C on the tests of the different abilities. These correlations determine, in a measure, the relationship which exists between abilities, especially that relationship existing between the performance of the pupils on tests of reading ability and their performance on tests of general mental ability. The same relationship is graphically shown in Figures 27 to 31. The correlations and the graphic distribution of the scores would suggest that there exists a very high degree of relationship between the ability of these pupils to perform on tests of reading ability and on tests of mental ability.

*Handwritten note:* not satisfactory



Before considering these correlated abilities, mention will be made of some correlations bearing only indirectly on this study.

Table 20 gives in a comprehensive way an idea of the high correlation existing between the ability of these high school pupils to perform on various tests of mental ability. When correlating the results of the fifty-five pupils of grade IX in the Miller, Delta 2, and Terman group tests of mental ability with the average scores on the same tests, Dr. Miller, the Principal of University High School, got correlations of .891, .909, and .931 respectively. These correlations would suggest that any one of these tests may be considered a fair measure of the intelligence of these high school pupils which the tests have been purposely designed to measure. There is also an indication that there exists a high degree of relationship between scholastic attainment and the ability of these pupils to perform on the group mental tests, for; the correlation of the average scores on the three tests with the pupils' average school marks gives .72 .

What has been mentioned above regarding the reliability of the group mental tests can be said relative to the standardized silent reading tests. Table 19 shows that the writer found a correlation of <sup>.847</sup>~~.947~~ when correlating the results of one hundred and six pupils of grades IX, X, XI, and XII on Sigma 3 reading test with the results of the same pupils on the Thorndike- McCall reading test. Of course, the grouping together of pupils of all four grades tend to widen the distribution and consequently also to increase the size of the correlation.

In the case of this group the correlations between school marks and the ability of the pupils to perform on the tests

of reading ability is somewhat less than that found in the case of either the elementary school children or the pupils of Breck Private High School. For thirty-five freshmen, Table 19 shows, the correlation between the scores on Sigma 3 reading test and the average school marks is .527, whereas for the other groups similar correlations were .722 and .637. This relation between performance on reading tests and scholastic attainment is graphically presented in Table 21 and in Figure 31 for one hundred and eighteen unselected pupils of grades X, XI, and XII of this group. It is also suggested here that, on the basis of their reading ability, the girls of this group get higher marks in English than the boys. It is observed that the seven poorest as well as the best of the pupils to perform on the reading tests were girls and that in the upper part of the range the scores on Sigma 3 reading test are more often made by the boys than by the girls. Further, it is noticed that the median mark in English is C+ for the girls and C for the boys. The median score on Sigma 3 is 110 for the girls and 115 for the boys, with the scores ranging from 72 to 148 for the girls and from 89 to 138 for the boys. From the facts mentioned above one is led to conclude that these boys are better silent readers, according to the reading tests, and that they get lower marks in their English courses than the girls. The writer believes that certain other factors must be present causing the girls to get the higher marks.

It has already been intimated that the intelligence quotients of these high school pupils are not important in determining grade location. Table 19 also shows that the IQ is a much less important factor in determining how well these high school pupils can read than some other factors such as grade location,

school marks, and mental ability as that is measured by means of the standardized group tests of mental ability. When correlating the results on Sigma 3 with the IQs of the pupils of grades X, XI, and XII, correlations of .343, .558, and .706 respectively were derived. For one hundred and six unselected pupils of grades IX-XII the correlation between the same factors is .652 and for the same pupils the correlation between the Thorndike-McCall reading test and the IQs is .459.

Thirteen of the correlations given in Table 19 were computed for the sole purpose of getting as concrete an idea of the existing relationship between pupils' performance on reading tests and their performance on group tests of mental ability as is possible by means of the statistical methods employed in this study. Figures 27, 28, and 30 show in a graphical way the same relationship. It is observed that, in general, those pupils who read well also make the higher scores on the group tests of mental ability and vice versa.

The correlations mentioned above range from .558 to .861. Both of the extreme correlations were between the results in Sigma 3 and Army Alpha tests. The most significant results, it seems, are those found in the case of the scores of the one hundred and six unselected pupils of grades IX to XII on the reading tests and on the Miller group mental test. Here the correlation of .758 was found between the results on Haggerty's "Sigma 3 Achievement Examination in Reading" and the results on "The Miller Group Test of Mental Ability. Between the results on "The Thorndike-McCall Reading Scale" and the Miller test the correlation of .750 was gotten. These relatively high correlations and the graphic distribution of

the cases as illustrated in Figures 27, 28, 30, leads to the suggestion that there exists a very high and significant positive relationship between the ability of these high school pupils to perform on standardized group tests of reading ability and their ability to perform on the group tests of mental ability.

This consideration of the correlations would be quite incomplete if a statement were not given relative to the correlations numbered 16, 17, and 18 in Table 19. Here an attempt is made to show the relation between parts of Sigma 3 and performance on group mental tests. Between the "Vocabulary", "Sentence Reading", and "Paragraph Reading" tests of Sigma 3 and the average scores made on five standard group tests of mental ability, the writer computed correlations of .588, .608, and .794 respectively. It is obviously indicated that the more sentence material and especially the more paragraph reading material a silent reading test contains, the more reliable it is as a measure of the ability of the pupils under consideration to perform on the group tests of mental ability.



Group C.  
Continued.

c- The significance of the results:

The statistical data and criteria that have been collected and considered in the case of group C causes the writer to believe that the following suggestions are highly indicative of present conditions among high school groups of the type represented.

In general, it may be stated that standardized tests of reading ability or of mental ability determine grade location of these pupils with a fair degree of accuracy. The array of scores begin and end higher as advance is made from grade to grade. However, the spread of the scores is decidedly narrowed with advance in grade location and the median scores of grades IX and X are more removed than the medians for the higher grades.

Tables 19 and 20 and Figure 29 would suggest that no decided advantage is gained by giving several of the latest standardized group tests of the same ability to the same pupils at the same time. This holds true only in so far as the results are to be used for general educational purposes and not if a scientific and final prognosis of a certain ability is wanted.

In the case of these high school pupils, standardized group tests of mental ability seem to indicate scholastic ability more accurately than standardized group tests of silent reading ability.

Reading tests like Haggerty's "Sigma 3 Achievement Examination in Reading" and "The Thorndike-McCall Reading Scale" may be relied upon to measure mental ability, as that is measured

by means of group mental tests like "The Miller Group Test of Mental Ability" and "The Terman Group Test of Mental Ability", with a fair degree of accuracy. Likewise it may be stated that the pupils who get high scores on the group mental tests usually get high scores on the group silent reading tests.

It has already been suggested that silent reading tests appear to become more and more reliable measures of the ability of these high school pupils to perform on group tests of mental ability in proportion to the amount of paragraph reading material the same reading tests contain.

Table 14.

Sigma 3 Distribution of Scores by Grades, University High School.

GRADE:	31-	41-	51-	61-	71-	81-	91-	101-	111-	121-	131-	141-	Total.	Median.
:	40	50	60	70	80	90	100	110	120	130	140	150		
IX	1	1	1	2	7	13	3	4	2	0	0	0	= 34	87
X	0	0	1	0	3	3	8	12	8	4	0	0	= 39	102
XI	0	0	0	0	0	2	3	10	11	12	3	0	= 41	114
XII	0	0	0	0	0	1	5	9	14	10	5	1	= 45	115
Total=:	1	1	2	2	10	19	19	35	35	26	8	1	= 159	108

Table 15.

Miller Group Test Distribution of Scores, University High School.

GRADE :	31-	41-	51-	61-	71-	81-	91-	101-	111-	Total.	Median.
:	40	50	60	70	80	90	100	110	120		
IX	1	5	6	11	8	3	0	0	0	= 34	64
X	0	1	6	6	8	7	17	1	0	= 46	82
XI	0	0	0	4	6	8	15	7	0	= 40	91
XII	0	0	1	4	6	15	17	1	1	= 45	88
Total=:	1	6	13	25	28	33	49	9	1	= 165	83

Table 16.

Thorndike-McCall Distribution of Scores, Univ. High School.

GRADE.:	56	58	60	62	66	70	75	78	81	85	90	Total.	Median
IX :	1	2	5	12	12	11	4	4	0	0	0	=51	68
X :	1	2	1	8	7	9	6	6	0	0	0	=40	70
XI :	0	1	0	2	4	6	15	10	3	0	0	=41	77
XII :	1	0	4	2	4	7	8	12	3	0	1	=42	76
Total =:	3	5	10	24	27	33	33	32	6	0	1	=174	73

Table 17.

Intelligence Quotients .

A Distribution of Scores by Grades, University High School.

GRADE:	81-	86-	91-	96-	101-	106-	111-	116-	121-	126-	131-	136-	141-	Total.	Median.
:	85	90	95	100	105	110	115	120	125	130	135	140	145		
IX :	1	2	1	2	4	7	11	10	7	2	3	0	2	= 52	114
X :	1	1	3	1	4	2	10	6	4	1	2	0	1	= 36	115
XI :	1	2	3	4	6	4	2	1	2	1	1	0	0	= 27	104
XII :	1	1	1	1	6	6	4	5	3	0	0	0	0	= 28	109
Total =:	4	6	8	8	20	19	27	23	16	4	5	0	3	=143	112



Table 18.

Distribution Table of Extreme, Median, and Average Scores of the University High School Pupils by Grades on various Testing Media.

"Sigma 3 Achievement Examination in Reading".

GRADE	No. of cases.	Lowest Score.	Highest Score.	Median.	Average.
IX	34	39	114	87	
X	39	72	129	102	
XI	41	84	137	114	
XII	45	85	148	115	
IX-XII	159	39	148	108	97.03

"The Miller Group Test of Mental Ability".

IX	34	33	89	64	
X	46	45	103	82	
XI	40	65	108	91	
XII	45	60	112	88	
IX-XII	165	33	112	83	75.57

"Intelligence Quotients".

IX	52	81	142	114	
X	36	84	142	115	
XI	27	81	134	104	
XII	28	84	122	109	
IX-XII	143	81	142	112	109.97

"Thorndike-McCall Reading Scale, Form I."

IX	51	56	78	68	
X	40	56	78	70	
XI	41	58	81	77	
XII	42	56	90	76	
IX-XII	174	56	90	73	69.97

Table 19.

Table of Correlations for University High School  
Pupils in Various Tests.

Correlated Tests	Grade No.	No. of cases	Correlation	P.E.*
1. Sigma 3 & Thorndike-McCall	IX-XII	106	.847	02
2. " & Miller	IX-XII	106	.758	03
3. " "	IX	34	.687	06
4. " & Army Alpha	IX	34	.677	07
5. " " "	X	30	.558	09
6. " " "	XII	24	.861	04
7. " & Terman	IX	34	.707	06
8. " & I.Q.	X	30	.343	11
9. " " "	XI	28	.558	09
10. " " "	XII	24	.706	07
11. " " "	IX-XII	106	.652	04
12. " & Trabue B.	XI	28	.405	10
13. " & Mentimeter	IX	34	.687	06
14. " & Average of 5 Tests	IX	55	.775	04
15. " " "	IX-XII	36	.768	05
16. "-Ex.1* & "	IX	34	.588	07
17. "-Ex.2 & "	IX	34	.608	07
18. "-Ex.3 & "	IX	34	.794	04
19. " & School Marks	IX	34	.527	09
20. Thorndike McCall & Sigma 3	IX-XII	106	.847	02
21. " & Miller	IX-XII	106	.750	03
22. " & I.Q.	IX-XII	106	.459	05

\*- These probable errors were taken from "Statistical Methods Applied to Education", Rugg, H. O., Houghton Mifflin Co. 1917, p.80

\*- Ex.1 means Vocabulary Test of Sigma 3.  
Ex.2 " Sentence Reading " " " "  
Ex.3 " Paragraph " " " " "

Table 20.\*

Table of Correlations for various Intelligence Tests given to fifty-five pupils of Grade IX of Univ. High School.

	Delta 2.	Terman.	School Marks.	Average of 3 Intell. Tests
Miller	.712	.747	.61	.891
Delta 2		.76		.909
Terman				.931
School Marks				.72

*Where are the other tests?*

Table 21.

Correlation table for 51 boys and 67 girls or 118 unselected pupils of grades 10, 11, and 12 in Univ. High School, for "Sigma 3 Achievement Exam. in Reading" and English Marks.

Marks in English.	"Sigma 3 Examination in Reading".								Total	
	71-80	81-90	91-100	101-110	111-120	121-130	131-140	141-150	Girls.	Boys.
A Girls			1	1	1	3			6	
A Boys					2		1			3
B Girls		1	2	6	6	2	1		18	
B Boys			1		3	2	2			8
C+ Girls		1		2	5	2		1	11	
C+ Boys				1		5	1			7
C Girls		1	5	5	4				15	
C Boys		1	2	4	3	1	1			12
C- Girls	1			4	2	1	1		9	
C- Boys					2	4	1			7
D Girls	2	1		2		3			8	
D Boys			5	3	4	1				13
F Girls										
F Boys			1							1
Tot-Girls	3	4	8	20	18	11	2	1	67	67
al. Boys		1	9	8	14	13	6			51
										118

Median Marks in English, Girls = C+ . Boys = C.  
 " score on Sigma 3 , " = 110. " = 115.

\* - This table 20 is presented as worked out by W.S. Miller, the Principal of University High School.



## MENTAL ABILITY-"The Miller Group Test of Mental Ability."

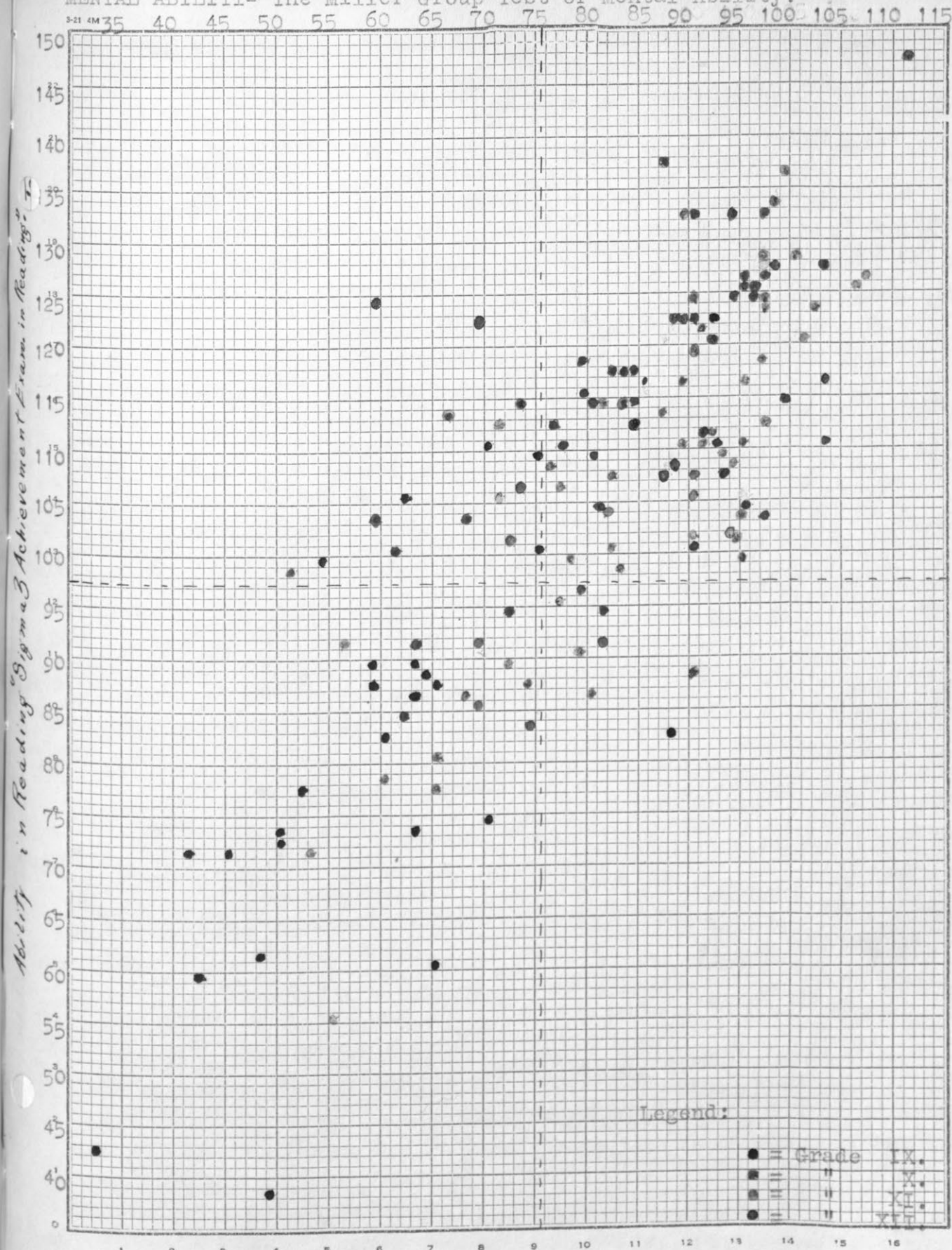


Figure 27. Distribution of Correlated Abilities in Reading and in Mental Ability, Grades IX-XII,  $r = .758$ , Average  $x = 75.57$ ,  $y = 97.03$ .



## INTELLIGENCE QUOTIENT.

85 90 95 100 105 110 115 120 125 130 135 140 145 150

Ability in Reading "Sigma Achievement Exam. in Reading"

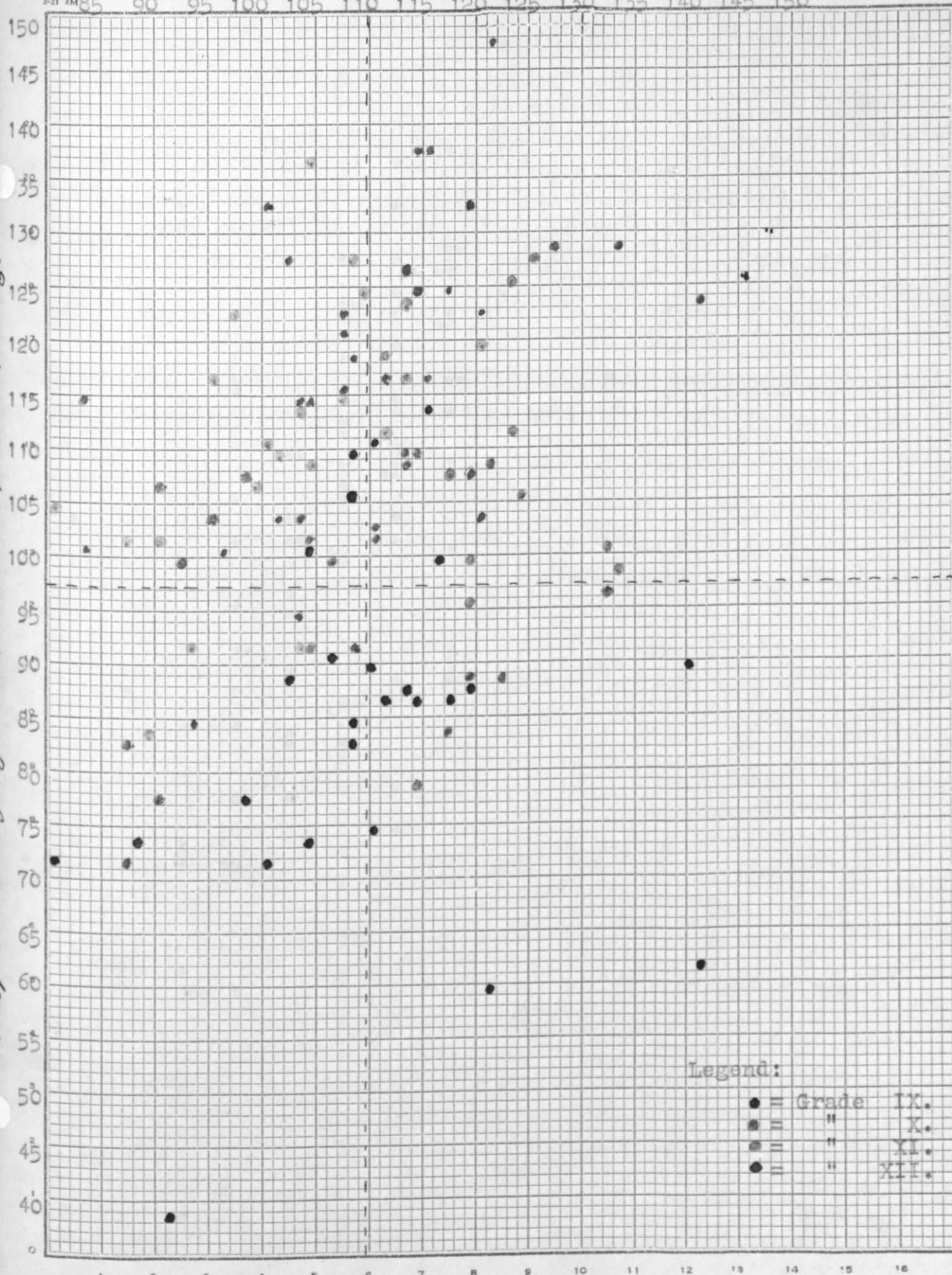


Figure 28. Distribution of Correlated Abilities in Reading and in Mental Ability, Grades IX-XII,  $r = .652$ , Average  $x = 109.97$ ,  $y = 97.03$ .

ABILITY IN READING- "Thorndike- McCall Reading Scale, Form I."

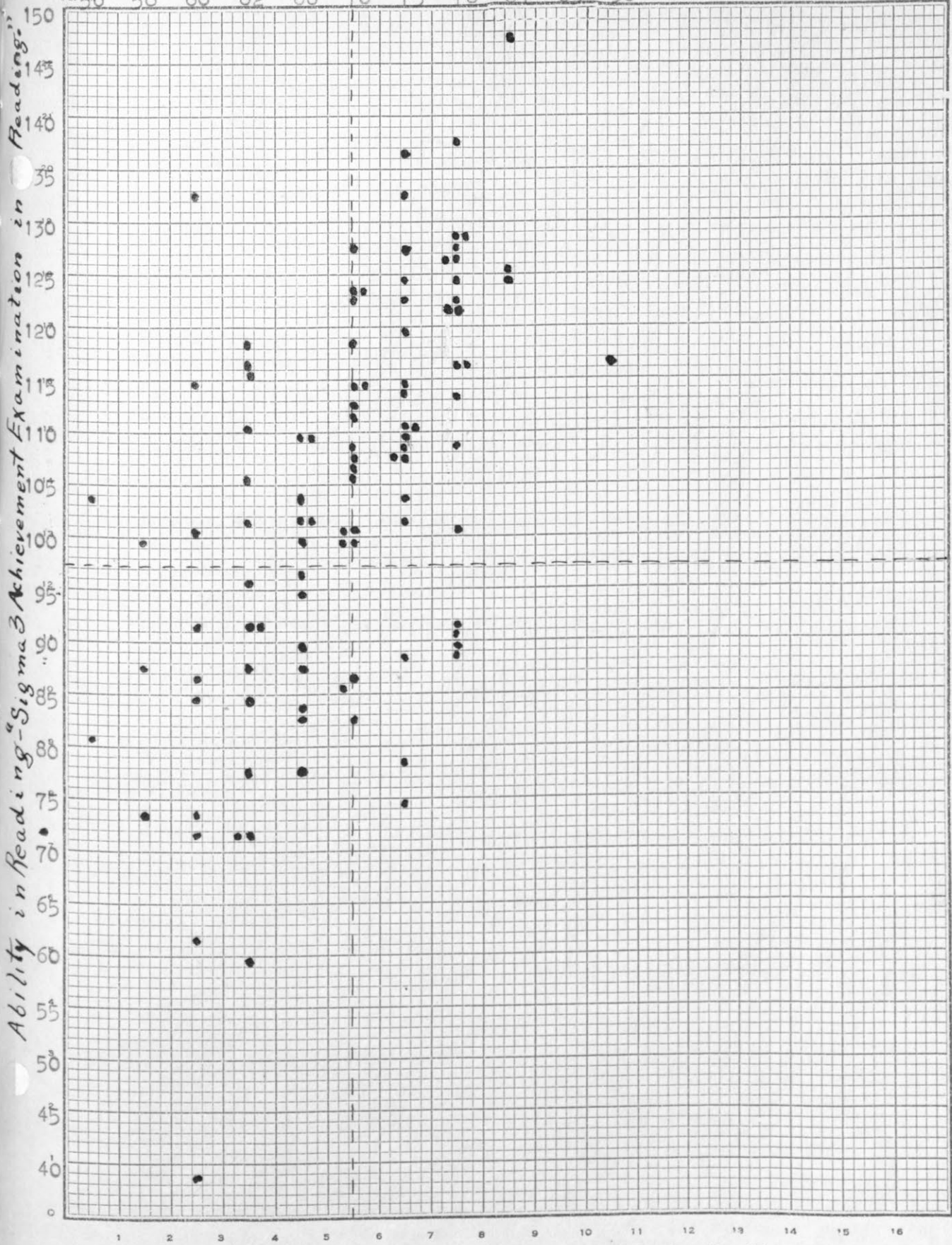


Figure 29. Distribution of Correlated Ability in Reading-Sigma 3 and Thorndike-McCall reading tests, Univ.H.S., 106 cases,  $r = .847$ .



Mental Ability - Average of 5 Tests.

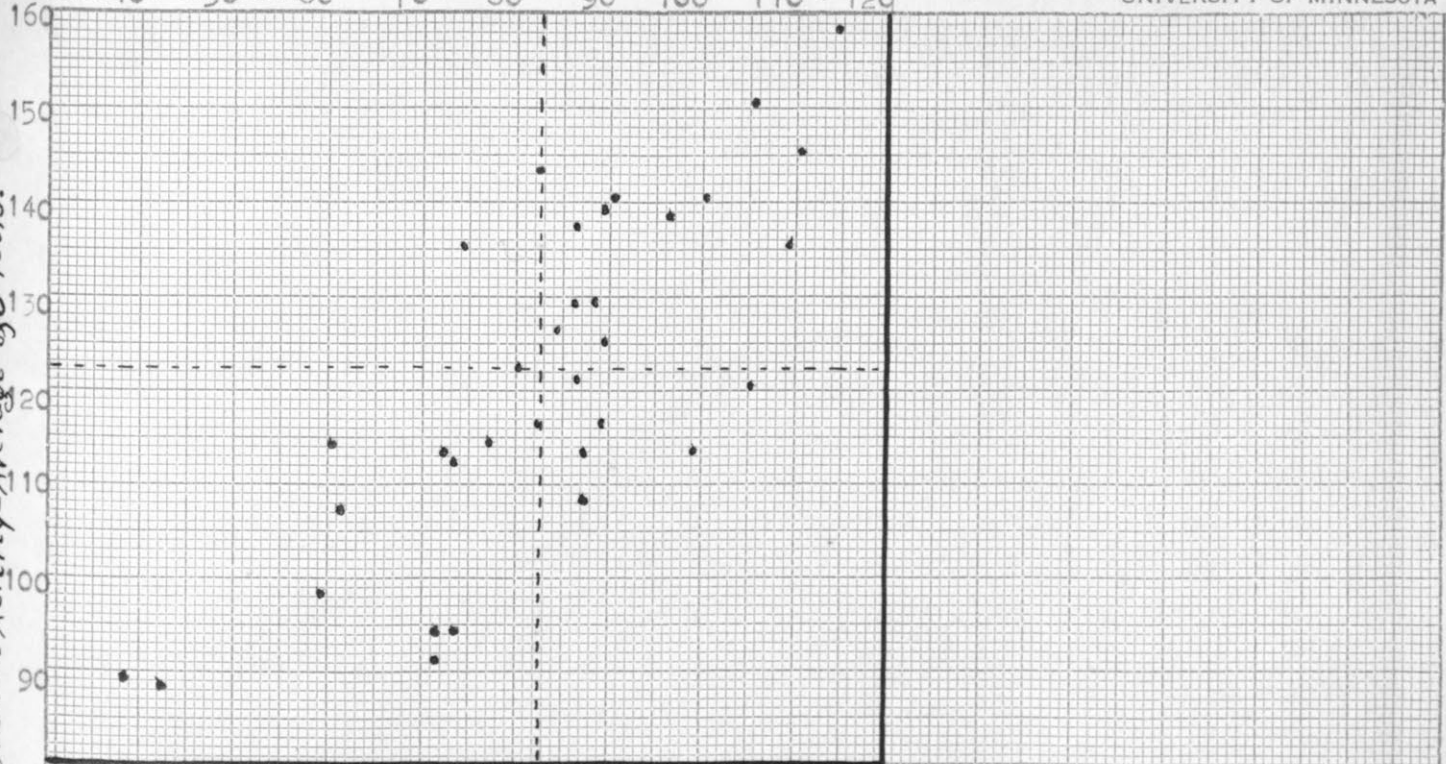
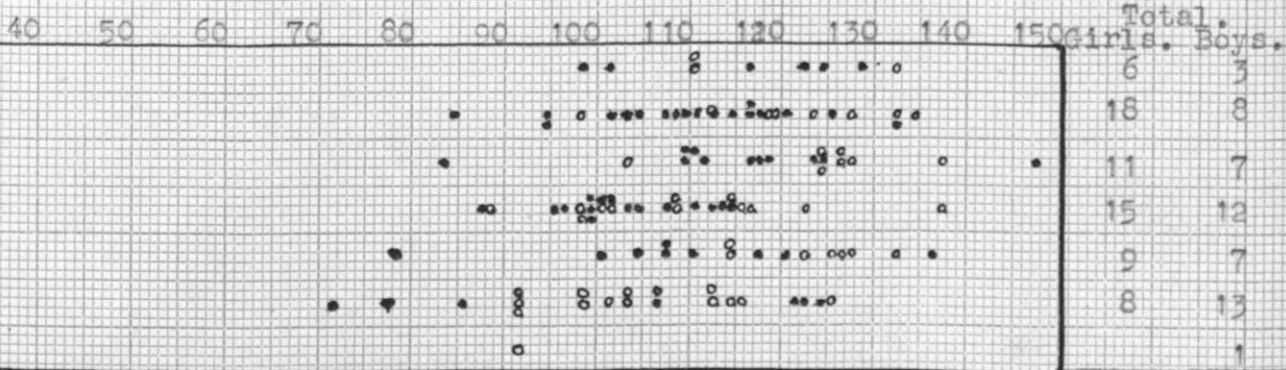


Figure 30. Distribution of Correlated Abilities in Reading and in Intelligence- Miller, Delta 2, Terman, Army Alpha, and Mentimeter Group Mental Tests, 34 pupils of grade IX in University High School, Minneapolis.  $r = .768 \pm .050$ .

ABILITY IN READING- "Sigma 3 Achievement Examination in Reading."



Total Girls =		1	2	2	2	6	10	10	10	8	9	2	1	1	1	67			
Total Boys =							1	4	5	6	2	9	5	5	8	4	2	51	118

Figure 31. Distribution of Correlated Ability in Reading and Mark in English, Fall 1920, for 118 pupils in Grades X- XII of University High School, Minneapolis.

Median Marks for Girls = C+, Median Score on Sigma 3-Girls = 110, Range 72-148  
 " " " Boys = C, " " " " Boys = 115, " 89-138

SECTION VII

SUMMARY AND CONCLUSIONS



## SECTION VII.

## SUMMARY AND CONCLUSIONS.

The following are the important conclusions of this thesis.

(1) For both elementary and high school pupils, the writer found a gradual advance or increase in the performance of reading according to the advance of grade location. For example, the scores on Sigma 1 for grades I B, II B, and III B were found to give medians of 3, 16, and 25 respectively and the medians on Sigma 3 for grades IX, X, XI, and XII of University High School were 87, 102, 114, and 115 respectively.

(2) The upper part of the arrays of the elementary pupils' scores on the achievement or on the mental group tests was most widely scattered, while the lower part of the arrays of the high school pupils' scores was most widely scattered. In the case of the elementary grades the median scores were less than the average scores on nearly all of the tests. On Sigma 1 the writer found a median of 10 and an average of 12.4 for one hundred unselected pupils of grades I, II, and III. For the high school pupils the opposite was clearly noted. On Sigma 3 the pupils of University High School made a median score of 108 and an average score of 97.03. These facts and the graphical distribution of the scores on the various tests, as plotted in the figures, anticipate the conclusion that, in general, on the basis of their performance on tests of reading ability or of mental ability, the elementary pupils under consideration cluster more closely in the lower quartile than in the upper quartile and that the opposite obtains for the high school pupils of Groups B and C.

(3) A pupil's ability in reading can be measured fairly accurately by means of standardized group tests of mental ability. In the lower grades the present study reveals high positive correlations ranging from .495 to .800 between the performance of pupils on tests of READING ABILITY and their performance on group tests of general MENTAL ABILITY. In the high schools the correlations between the performance on the tests of silent reading ability and the performance on the tests of mental ability were less. There the correlations were found to range from .375 to .775.

(4) There is no indication that the non-verbal group tests of mental ability measure reading ability, as that is measured by means of the reading tests, any less accurately than those mental tests that are made up almost entirely of reading material. In the lower grades it was obvious that some pupils, who got very high scores on any one of the group tests of mental ability, were among the poorest readers, but the poor readers were invariably poor in their performance on the group mental tests. In the high schools a pupil found poor in the performance on the standard group tests of silent READING ABILITY was also found to rank low in the performance on the standard group tests of MENTAL ABILITY and vice versa.

(5) The present study suggests that there is a closer relation between the performance, of the pupils under consideration, on tests of silent reading ability and their performance on group tests of mental ability, than between the average of school marks and either the performance on tests of reading ability or the performance on group tests of mental ability. This condition was found in the case of both the elementary and high school pupils.

(6) The Intelligence Quotients of the University High School pupils do not constitute an important factor in the determination of grade location. For grades IX, X, XI, and XII the median IQs were 114, 115, 104, and 109 respectively.

(7) Foreign children in the elementary grades appear to be more intelligent, in so far as their intelligence is measured by means of the group tests of mental ability, than the standardized silent reading tests would indicate. The pupils in one of the schools of group A, nearly all of whom were foreigners, made relatively higher scores on the verbal and on the non-verbal group tests of mental ability than on the silent reading test. On the Pressey Mental Survey test these pupils made a median score of 55 with a range from 15 to 75 and on the Sigma 1 reading test the same pupils made a median of 3 and the range of the scores was from 0 to 14.

(8) Results of the standardized silent reading tests correlate very highly with the size of the vocabulary of the private high school pupils considered in this study. The positive correlations of <sup>.687</sup>.954 was gotten between the Sigma 3 reading test and the Vocabulary test, and the positive correlation of <sup>.697</sup>.943 was found between the Thorndike- McCall reading test and the Vocabulary test. In each case the vocabulary was that estimated by the use of the Vocabulary test in The Stanford Revision of "The Binet Simon Intelligence Scale."

(9) The results indicate that the more sentence reading material and especially the more paragraph reading material a silent reading test contains, the more reliable it is as a measuring instrument of the ability of high school pupils to perform



on the standardized group tests of mental ability. The writer derived the following correlations:

Vocabulary test of Sigma 3	and the average of 5 mental tests	$r=.588$ .
Sentence Reading test	" " " " " "	$r=.608$ .
Paragraph	" " " " " "	$r=.794$ .

(10) Finally, note should be made that the standardized silent reading tests correlate highly with grade location and with school marks, also that these two criteria have generally been accepted as fair indices of intelligence and have been used by modern educators in predicting the future success of pupils in school. Hence, in as much as high positive correlations have been found between these criteria and the achievements of pupils in the standardized silent reading tests, it may be assumed that these reading tests also constitute fairly reliable measures or instruments for the prediction of future scholastic attainment.



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# STANFORD-BINET EXAMINATION

Name..... Age..... Race.....  
 Company..... Regiment..... Arm..... Division..... Station.....  
 Where born..... Years in U. S. ....  
 Previous occupation..... Weekly wages.....  
 Education: grade reached..... High School..... College.....  
 Where educated..... Years in school.....  
 Disease history, personal and family.....

Report

Yr.	Credit	Yr.	Credit	Yr.	Credit
3	.....	8	.....	14	.....
4	.....	9	.....	16	.....
5	.....	10	.....	18	.....
6	.....	11	.....	M. Age	.....
7	.....	12	.....	Rating	.....

Examiner..... Date.....

### Year III

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- Credits
- \*1. "Show me your": nose..... eyes..... mouth..... hair..... (3 of 4).
  - \*2. Names key..... penny..... closed knife..... watch..... pencil.....  
(3 of 5).
  - \*3. Three objects in one picture: Dutch Home  
Canoe Post Office
  - 4. Gives sex.
  - \*5. Gives last name.
  - 6. Repeats (1 of 3): (a) I have a little dog; (b) The dog runs after  
the cat; (c) In summer the sun is hot.
  - Alt. Repeats (1 of 3): 641..... 352..... 837

### Year IV

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- \*1. Compares lines (3 of 3, or 5 of 6).
- 2. Discriminates (7 of 10): Circle..... square..... triangle.....  
other errors.....
- \*3. Counts 4 pennies (no error).
- \*4. Copies square (pencil, 1 of 3): a..... b..... c.....
- \*5. Comprehends (2 of 3): What must you do when you are  
(a) sleepy. (b) cold. (c) hungry.
- 6. Repeats (1 of 3): 4739..... 2854..... 7261.....
- Alt. Repeats (1 of 3 correct, or 2 with 1 error each):  
a. The boy's name is John. He is a very good boy.  
b. When the train passes you will hear the whistle blow.  
c. We are going to have a good time in the country.

### Year V

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- \*1. Compares weights (2 of 3): 3—15..... 15—3..... 3—15.....
- 2. Colors (no error): red..... yellow..... blue..... green.....
- \*3. Aesthetic comparison (no error): a..... b..... c.....
- \*4. Definitions (use or better, 4 of 6):  
chair doll  
horse pencil  
fork table
- \*5. Patience (2 of 3, 1 minute each): a..... b..... c.....
- 6. Three commissions. Key on chair..... brings box..... shuts door.....
- Alt. "How old are you?"

### Year VI

Credits (6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- ..... \*1. "Show me your": R. Hand..... L. Ear..... R. Eye..... L. Hand.....  
R. Ear..... L. Eye.....  
(3 of 3, or 5 of 6).
- ..... \*2. Missing parts (3 of 4, 25 sec. each): eye..... mouth..... nose.....  
arms.....
- ..... \*3. Counts 13 pennies (1 of 2 trials. No error).
- ..... \*4. Comprehends (2 of 3): a Raining. b House on fire. c Missed car.
- ..... 5. "What is that?" (3 of 4): nickel..... penny..... quarter..... dime.....
- ..... 6. Repeats (1 correct, or 2 with 1 error each):  
a. We are having a fine time. We found a little mouse in the  
trap.  
b. Walter had a fine time on his vacation. He went fishing  
every day.  
c. We will go out for a long walk. Please give me my pretty  
straw hat.
- ..... Alt. Morning or afternoon?

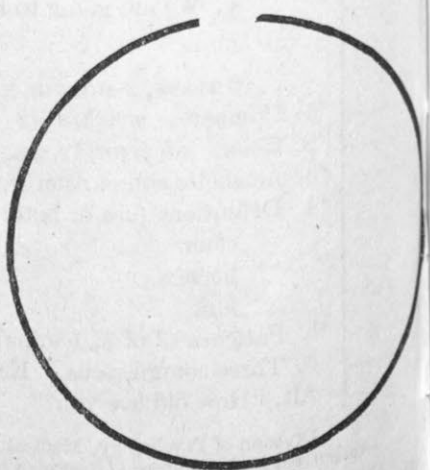
### Year VII

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- ..... 1. Fingers (no error): R..... L..... Both.....
- ..... \*2. "What is this picture about?" (2 of 3 description).  
a. Dutch Home.  
b. Canoe.  
c. Post Office.
- ..... 3. Repeats (1 of 3): 31759..... 42835..... 98176.....
- ..... 4. Ties bow-knot (single bow half credit, 1 minute). Time.....  
method.....
- ..... \*5. Gives differences (2 of 3): fly and butterfly  
stone and egg wood and glass
- ..... \*6. Copies diamond (pen, 2 of 3): a..... b..... c.....  
Alt. 1. Days of week (15 sec.)..... Day before Tues..... Thurs.....  
Fri..... (2 checks of 3)
- ..... \*Alt. 2. Repeats backwards (1 of 3): 283..... 427..... 958.....

### Year VIII

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- ..... \*1. Ball and field (inferior plan or better).
- ..... \*2. Counts 20-1. (40 seconds. 1 error allowed). Time..... Errors.....
- ..... \*3. Comprehends (2 of 3): What's the thing for you to do:  
a. Broken something.  
b. Danger of being late.  
c. Someone hits you.
- ..... \*4. "In what way are..... alike?" (2 of 4)  
wood and coal iron and silver  
apple and peach ship and automobile
- ..... 5. "What is a....." (Superior to use. 2 of 4):  
balloon football  
tiger soldier
- ..... 6. Vocabulary, 20 words.  
Alt. 1. Coins (no errors) .05..... .01..... .25..... .10..... 1.00.....  
.50.....
- ..... Alt. 2. Dictation: "See the little boy." (1 minute) Time..... Score.....
- 

### Year IX

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

- \*1. Date (error of 3 days in *c*, none in *a*, *b*, *d*):  
 day of week..... month..... day of month..... year.....
- \*2. Arranges weights (2 of 3): *a*..... *b*..... *c*..... Method.....
- \*3. Makes change (2 of 3, 15 sec. each): 10-4..... 15-12..... 25-4.....
- \*4. Repeats backwards (1 of 3): 6528..... 4937..... 8629.....
5. Three words (2 of 3, 1 min. each: 1 sentence of not over 2 coordinate clauses):  
*a*. Boy, river, ball.  
*b*. Work, money, men.  
*c*. Desert, rivers, lakes.
6. Rhymes (3 for each, 1 minute, each part) day  
 mill..... spring
- Alt. 1. Months (15 seconds. 1 error)..... Before Apr..... July.....  
 Nov..... (2 checks of 3)
- Alt. 2. Stamps. Total value. 2d trial if values known.

### Year X

(6 TESTS, 2 MONTHS EACH, OR 4 \*TESTS, 3 MONTHS EACH).

1. Vocabulary, 30 words.
- \*2. Absurdities (4 of 5, 30 sec. each): *a*. Road to city.  
*b*. More cars on train *d*. R. R. accident.  
*c*. Body of girl. *e*. Bicycle rider.
- \*3. Designs from memory. Expose 10 sec. (1 correct, 1 half correct):  
*a*..... *b*.....
4. Reading and report (8 memories, 35 seconds, 2 mistakes in reading) Memories..... Time for reading..... Mistakes.....
- \*5. Comprehends (2 of 3): *a*. Opinion of some one.  
*b*. Undertaking something.  
*c*. Actions *vs.* words.
- \*6. 60 words: 1..... 2..... 3.....  
 4..... 5..... 6.....
- Alt. 1. Repeats (1 of 2): 374859..... 521746.....
- Alt. 2. Repeats (1 of 3 correct or 2 with 1 error each):  
*a*. The apple tree makes a cool pleasant shade on the ground where the children are playing..... *b*. It is nearly half-past one o'clock; the house is very quiet and the cat has gone to sleep..... *c*. In summer the days are very warm and fine; in winter it snows and I am cold.....
- Alt. 3. Healy-Fernald puzzle A (3 times in 5 minutes): *a*..... *b*.....  
*c*..... Method.....

### Year XII

(8 TESTS, 3 MONTHS EACH, OR 5 \*TESTS, 5 MONTHS EACH).

1. Vocabulary, 40 words.
2. Defines (3 of 5): pity..... revenge..... charity  
 envy..... justice
- \*3. Ball and field (superior plan).
4. Dissected sentences (2 of 3, 1 min. each): *a*.  
*b*.  
*c*.
- \*5. Fables (Score 4): Hercules..... Eggs  
 Fox..... Stork..... Donkey
- \*6. Repeats backwards (1 of 3): 31879..... 69482..... 52961.....
- \*7. "Explain this picture" (3 of 4): Dutch Home  
 Canoe..... P. O..... Col. Home
- \*8. "In what way are..... alike?" (3 of 5) Snake, cow, sparrow.  
 Book, teacher, newspaper..... Wool, cotton, leather.  
 Knife-blade, penny, piece of wire..... Rose, potato, tree.



### Year XIV

(6 TESTS, 4 MONTHS EACH, OR 4 \*TESTS, 6 MONTHS EACH).

1. Vocabulary, 50 words. (Follow this by XVIII 2 if latter is to be given).
- \*2. Induction (gets rule by 6th). 1..... 2..... 3..... 4..... 5..... 6.....
3. President and king (2 of 3): Power, accession, tenure.
- \*4. Problems (2 of 3): Hanging  
    Queer visitors                                  Indian
- \*5. Arithmetical reasoning (2 of 3, 1 min. each) a..... b..... c.....
- \*6. Clock (2 of 3): 6:22..... 8:10..... 2:46.....
- Alt. Repeats (1 of 2): 2183439..... 9728475.....

### Year XVI

(6 TESTS, 5 MONTHS EACH, OR 4 \*TESTS, 7½ MONTHS EACH).

1. Vocabulary, 65 words.
- \*2. Fables (score 8). See yr. XII.
3. Differences (3 of 4): Laziness and idleness  
    evolution and revolution  
    poverty and misery  
    character and reputation
- \*4. Boxes (3 of 4): a. 2 smaller, 1 inside.....  
    b. 2, 2..... c. 3, 3..... d. 4, 4.....
- \*5. Repeats backwards (1 of 3): 471952..... 583294..... 752638.....
6. Code (2 errors, 6 min.): errors..... time..... method.....
- Alt. 1. Repeats (1 of 2): a. Walter likes very much to go on visits to his grandmother, because she always tells him many funny stories.....  
    b. Yesterday I saw a pretty little dog in the street. It had curly brown hair, short legs, and a long tail.....
- \*Alt. 2. Comprehends physical relations (2 of 3):  
    a. Path of cannon ball.  
    b. Weight of fish in water.  
    c. Hitting distant mark.

### Year XVIII

(6 TESTS, 6 MONTHS EACH, OR 4 \*TESTS, 9 MONTHS EACH).

1. Vocabulary, 75 words.
- \*2. Binet's paper cutting test. (If given must come before XIV<sub>2</sub>)
3. Repeats (1 of 3) : 72534896..... 49853762..... 83795482.....
- \*4. Repeats thought of passage (1 of 2):  
    a.  
    b.
- \*5. Repeats backwards (1 of 3): 4162593..... 3826475..... 9452837.....
- \*6. Ingenuity (2 of 3, 5 minutes each):  
    a. Given 3 and 5, get 7 "Begin with 5" (Explain if not solved.)  
    b. Given 5 and 7, get 8 "Begin with 5"  
    c. Given 4 and 9, get 7 "Begin with 4"

#### Vocabulary:

- |         |         |         |         |         |         |         |         |         |          |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1.....  | 2.....  | 3.....  | 4.....  | 5.....  | 6.....  | 7.....  | 8.....  | 9.....  | 10.....  |
| 11..... | 12..... | 13..... | 14..... | 15..... | 16..... | 17..... | 18..... | 19..... | 20.....  |
| 21..... | 22..... | 23..... | 24..... | 25..... | 26..... | 27..... | 28..... | 29..... | 30.....  |
| 31..... | 32..... | 33..... | 34..... | 35..... | 36..... | 37..... | 38..... | 39..... | 40.....  |
| 41..... | 42..... | 43..... | 44..... | 45..... | 46..... | 47..... | 48..... | 49..... | 50.....  |
| 51..... | 52..... | 53..... | 54..... | 55..... | 56..... | 57..... | 58..... | 59..... | 60.....  |
| 61..... | 62..... | 63..... | 64..... | 65..... | 66..... | 67..... | 68..... | 69..... | 70.....  |
| 71..... | 72..... | 73..... | 74..... | 75..... | 76..... | 77..... | 78..... | 79..... | 80.....  |
| 81..... | 82..... | 83..... | 84..... | 85..... | 86..... | 87..... | 88..... | 89..... | 90.....  |
| 91..... | 92..... | 93..... | 94..... | 95..... | 96..... | 97..... | 98..... | 99..... | 100..... |

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

.....

## MENTIMETER No. 2

# PICTORIAL ABSURDITIES

*(From "Measure Your Mind" by Stockbridge and Trabue.)  
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### DIRECTIONS

Notice the check mark (✓) which has been made with a soft black pencil in each of the two sample pictures shown below.

**Mark (✓) the thing that is wrong**

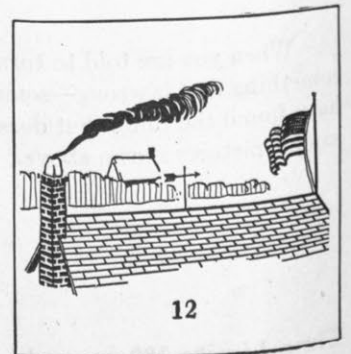
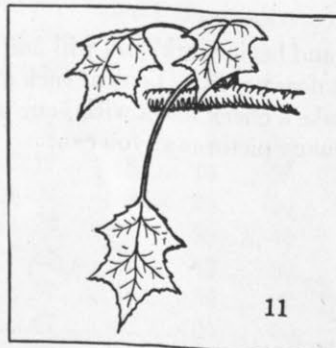
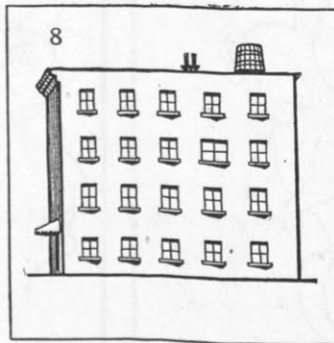
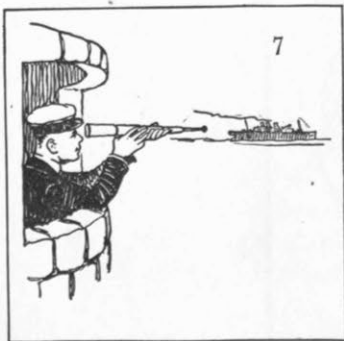
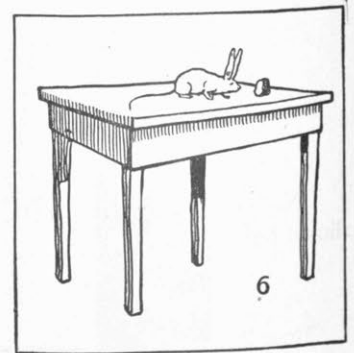
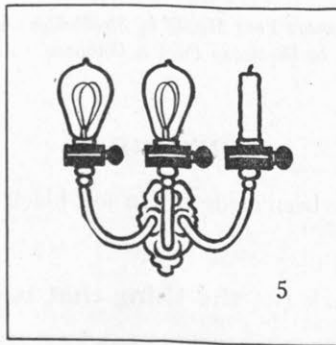
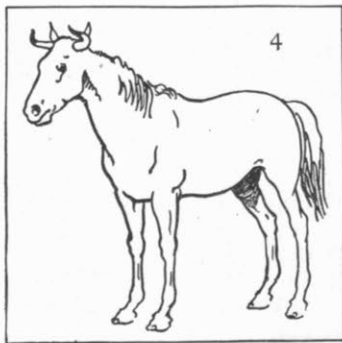
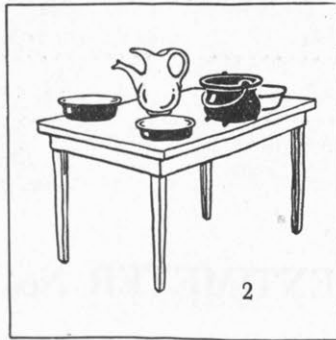
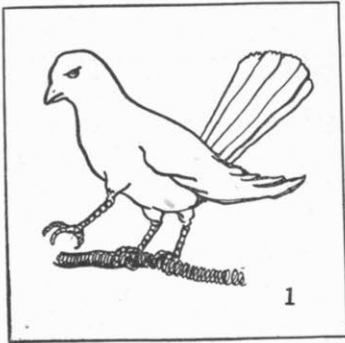


When you are told to turn the page and begin work, you will find two pages of pictures, each picture with something that is wrong—something that does not fit. Look at each picture to find what is wrong. When you have found the thing that does not fit, make a check mark with your pencil to show which thing it is, as in the sample pictures shown above. Mark as many pictures as you can.

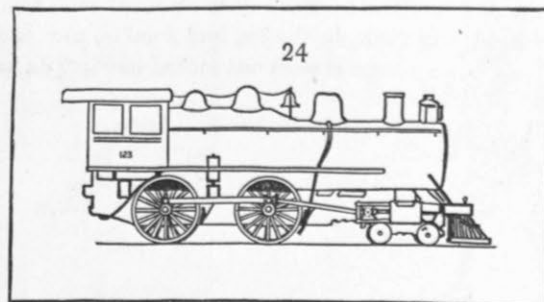
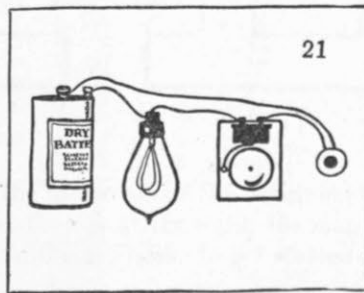
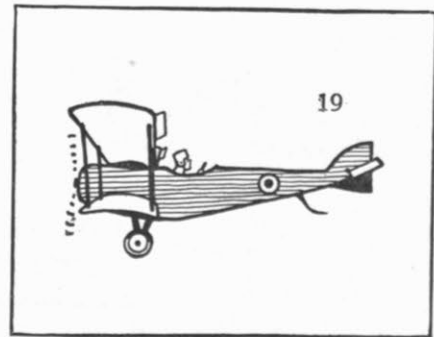
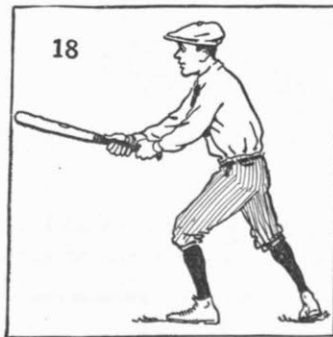
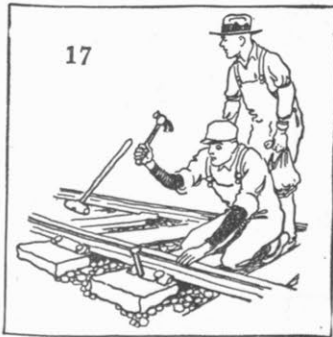
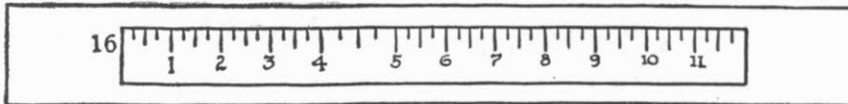
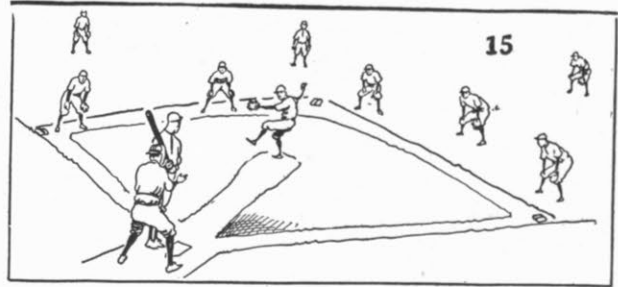
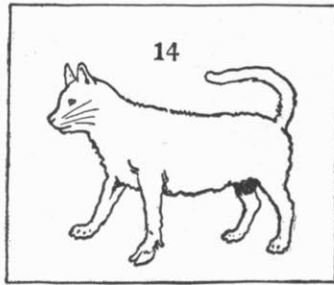
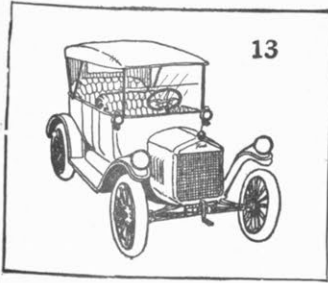
Time Limit: 180 seconds

SCORE.....

Mark (✓) the thing that is wrong



Mark (✓) the thing that is wrong





NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION .....

.....

# MENTIMETER No. 3

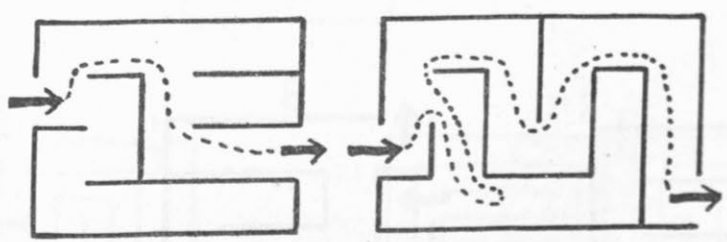
## MAZE THREADING

*(From "Measure Your Mind" by Stockbridge and Trabue).  
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### DIRECTIONS

Notice the dotted line that has been drawn between the two arrows in each of the two samples shown below.

**Show by a line how you would pass through the drawings below without touching any line**



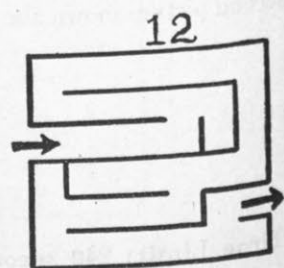
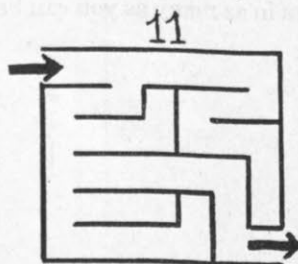
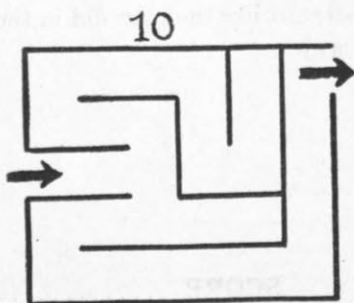
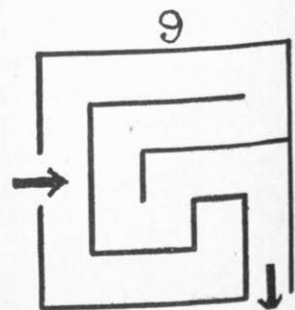
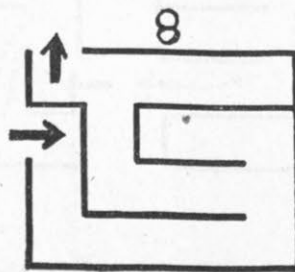
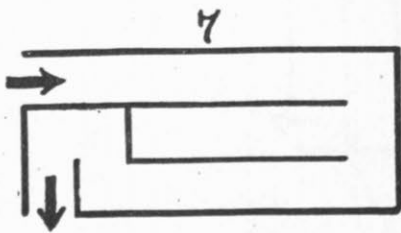
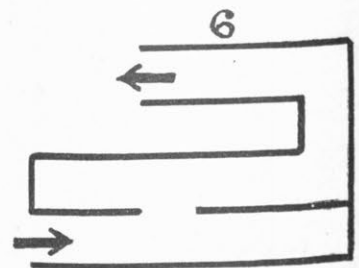
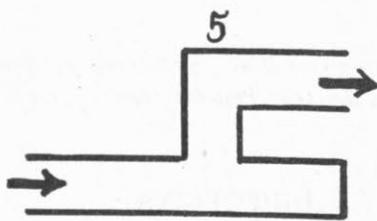
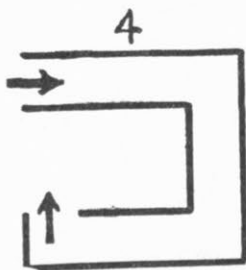
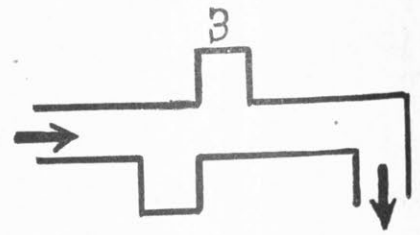
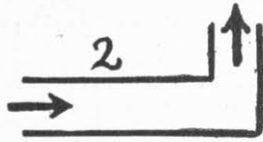
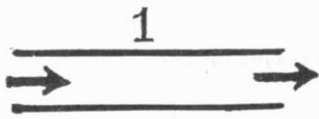
The dotted lines show how to get from the first arrow at the beginning to the last arrow at the end of each drawing. Notice that in the second sample, the one at the right, the man who made the dotted line got into the wrong place and had to go back almost to the beginning to get started again.

When you are told to turn the page and begin work, you will find two pages of drawings. Look at each drawing very carefully to see if you can find your way from the arrow at the beginning to the arrow at the end. Make a line with your pencil to show how you would pass through each drawing without touching the black printed lines. If you get lost, do not rub out your line, but go back and get a fresh start like the man did in the second picture shown above. Draw lines in as many as you can before the time is up.

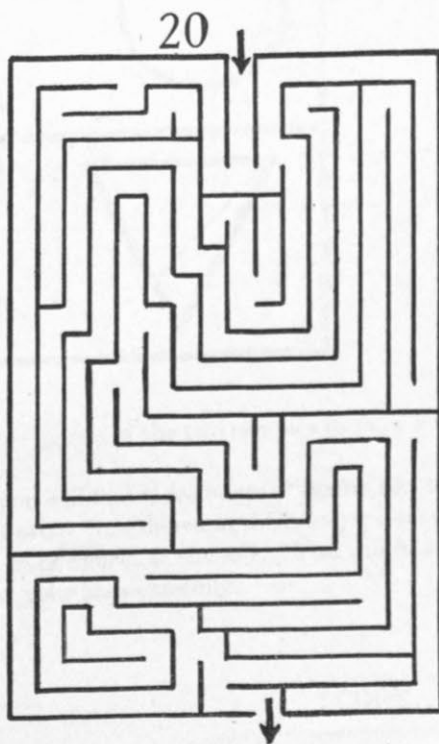
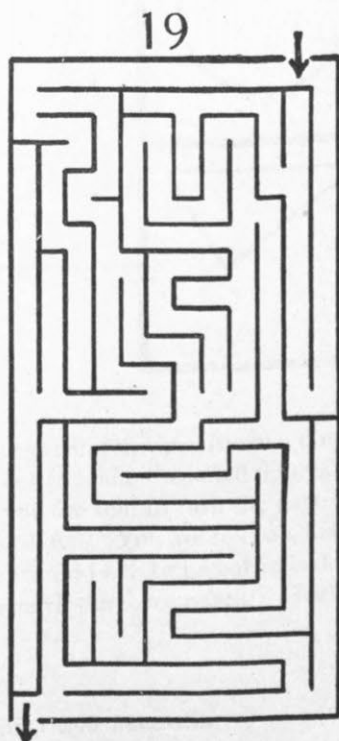
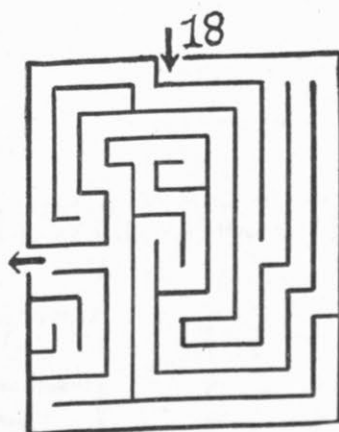
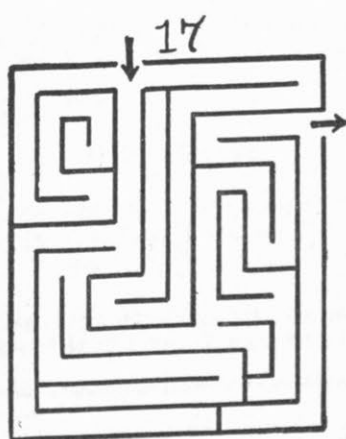
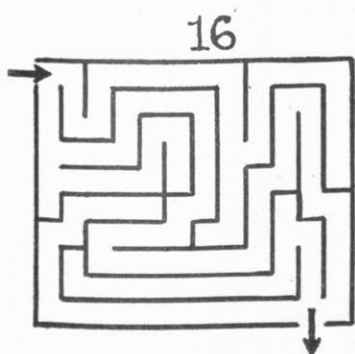
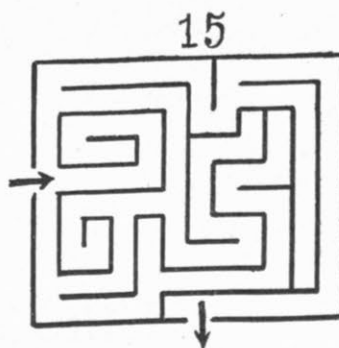
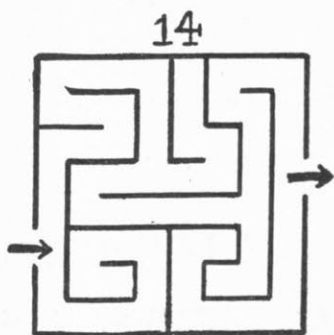
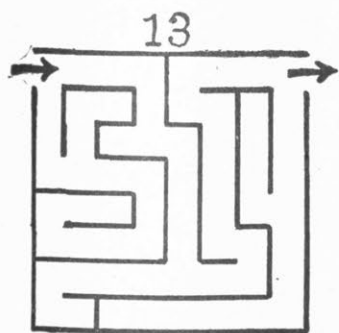
**Time Limit: 240 seconds**

**SCORE.....**

Show by a line how you would pass through the drawings below without touching any line



Show by a line how you would pass through the drawings below without touching any line



NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

## MENTIMETER No. 5

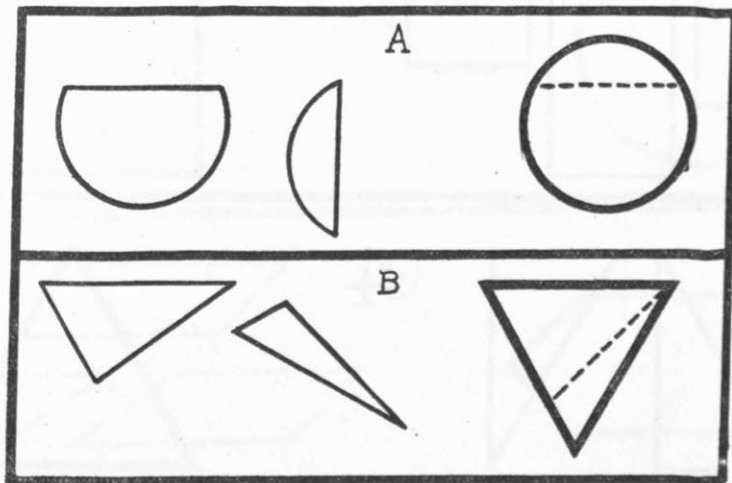
# DIVIDING GEOMETRICAL FIGURES

(From "Measure Your Mind" by Stockbridge and Trabue).  
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### DIRECTIONS

Notice the two samples, A and B, shown below. Each sample has a large figure at the right and two or three small ones at the left. When properly put together the small figures would make the large figure. You

**Draw lines in the large figure at the right in such a way as to make of it the small figures at the left.**



will notice that someone has drawn a dotted line in the large figures of the two samples to show how they would have to be cut to make the small figures at the left.

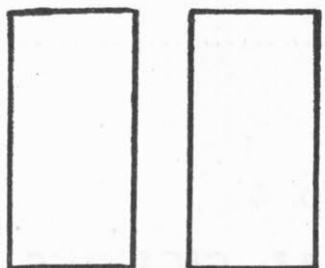

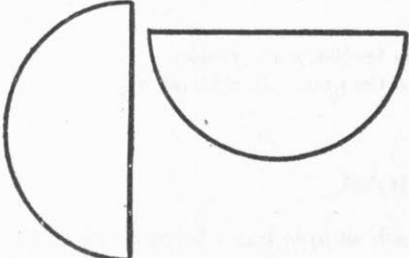
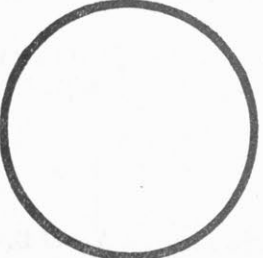
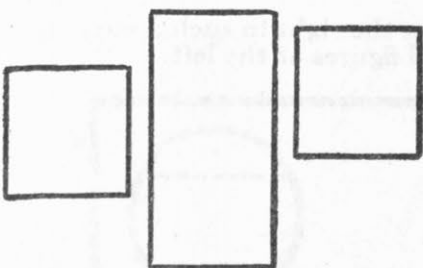
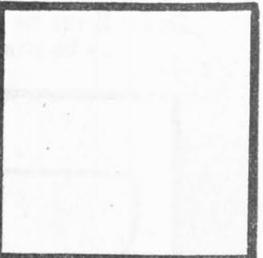
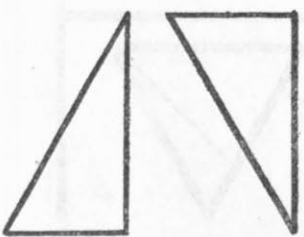
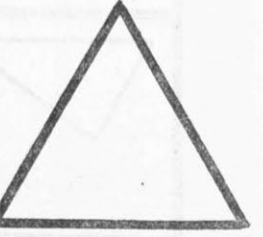
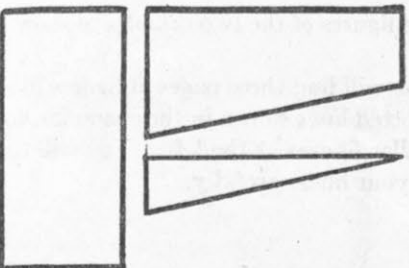
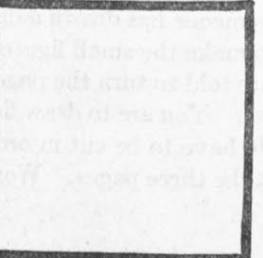
When you are told to turn the page and begin work, you will find three pages of figures like those shown in the samples above. You are to draw lines, similar to the dotted lines shown in the examples, to show how each large figure would have to be cut in order to make the smaller figures at the left. You will have four minutes in which to mark the three pages. Work rapidly but draw your lines carefully.

Time Limit: 240 seconds

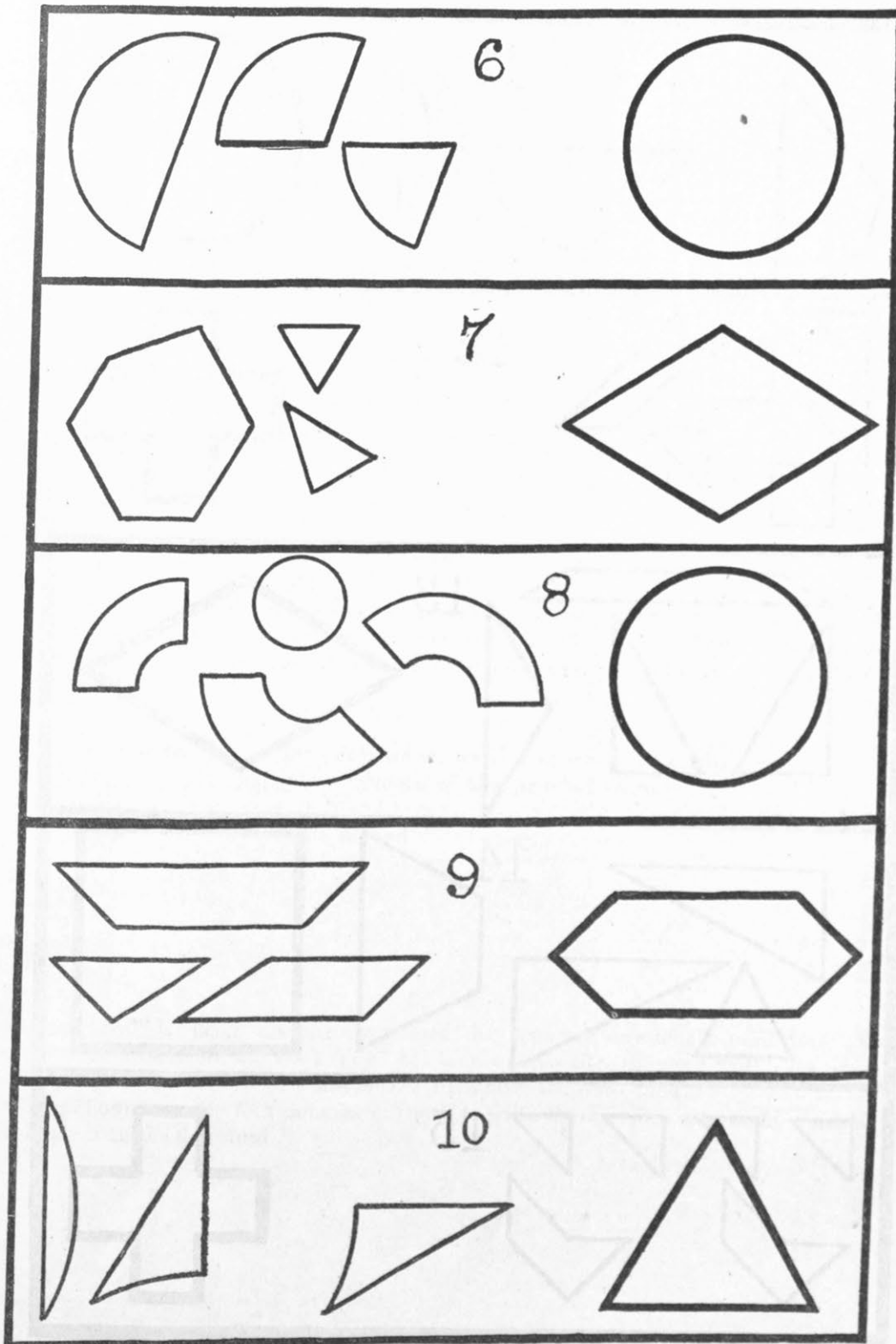
SCORE.....



Draw lines in the large figure at the right in such a way as to make of it the small figures at the left.

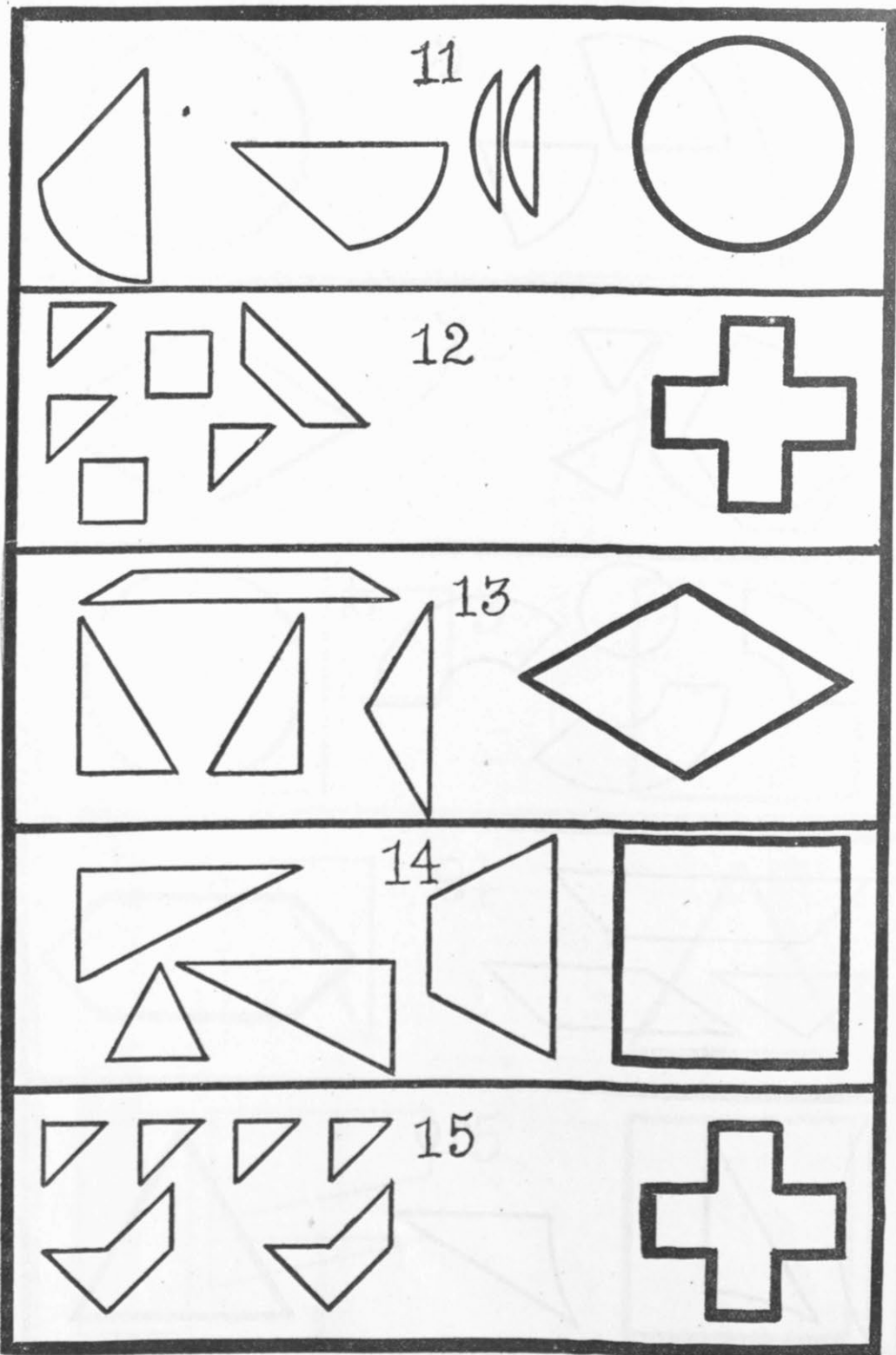
	1	
	2	
	3	
	4	
	5	

Draw lines in the large figure at the right in such a way as to make of it the small figures at the left.



OVER

Draw lines in the large figure at the right in such a way as to make of it the small figures at the left



NAME.....CLASS.....  
AGE (at last birthday).....NO.....  
LOCATION.....  
.....

## MENTIMETER No. 16

# NAMING OPPOSITES

(From "Measure Your Mind" by Stockbridge and Trabue).  
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### DIRECTIONS

When you are told to turn the page and go to work, you will find on the opposite side a list of forty words, each followed by a dotted line. You are to write a corresponding list of forty words. You are to write after each word the word which in your mind means just the opposite to the word that is printed. Notice the three samples printed below:

**On the line after each word, write the word which means just the opposite of the printed word.**

(SAMPLES) A. bad ..... *good*  
B. girl ..... *boy*  
C. down ..... *up*

The opposite of "bad" is "good" and therefore "good" has been written after the word "bad"; the opposite of "girl" is "boy" and therefore the word "boy" has been written after the word "girl"; the opposite of the word "down" is "up" and therefore "up" has been written after the word "down."

You will be allowed exactly four minutes in which to write the opposites of as many words as you know in the list. Begin with the first word.

Time Limit: 240 seconds

SCORE.....



On the line after each word, write the word which means just the opposite of the printed word.

- |                    |                      |
|--------------------|----------------------|
| 1. good.....       | 21. wild.....        |
| 2. rich.....       | 22. strength.....    |
| 3. little.....     | 23. innocent.....    |
| 4. new.....        | 24. wisdom.....      |
| 5. hard.....       | 25. positive.....    |
| 6. dark.....       | 26. inferior.....    |
| 7. dirty.....      | 27. ancient.....     |
| 8. sick.....       | 28. result.....      |
| 9. north.....      | 29. stingy.....      |
| 10. empty.....     | 30. abstract.....    |
| 11. push.....      | 31. partiality.....  |
| 12. wrong.....     | 32. diligent.....    |
| 13. beginning..... | 33. frugal.....      |
| 14. narrow.....    | 34. spurious.....    |
| 15. morning.....   | 35. elation.....     |
| 16. nowhere.....   | 36. expedite.....    |
| 17. stale.....     | 37. diffident.....   |
| 18. busy.....      | 38. homogeneous..... |
| 19. to float.....  | 39. intrepid.....    |
| 20. smooth.....    | 40. sycophantic..... |

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

.....

### MENTIMETER No. 20

## READING: DIRECTIONS

*(From "Measure Your Mind" by Stockbridge and Trabue)  
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### DIRECTIONS

When you are told to turn your leaflet and go to work, you will find on the other side very full directions as to what you are to do. This is a test to find out how well you can understand directions, so read them carefully and do exactly what they tell you to do.

**Do what it says**



Time Limit: 180 seconds

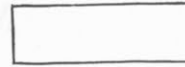
SCORE.....

## Do what it says

1. Write your name on this line .....

2. Make a cross in the square.

3. Make a cross in the circle and a dot in the square.



4. Make a figure 1 under the letter M and a figure 2 under the letter W.

A N W V H M Z U Y

5. If Decoration Day comes in the winter, write the word "No." If not, write the word "Yes." .....

6. Cross out the shortest word in this sentence and draw two lines around the ninth word.

7. Look at the three blanks printed below. On the first blank write the number of days in a week, on the second the number of months in a year, and on the third the number of years in a century.

\_\_\_\_\_

8. Write in the square on the left the right answer to the question: "How many dimes make a dollar?"  
In the second square make a small circle, and in the third triangle write the letter "C."



9. If a peck is a greater magnitude than a bushel, cross out the word "pint" unless a pint holds a smaller quantity than a quart, in which case draw a line under the first word after bushel.

QUART

BUSHEL

PECK

PINT

10. If a centimeter is more than half as long as an inch, write in the square the number of inches in a yard.  
If a meter is more than three feet, then write in the circle the number of meters in a kilometer.



11. If the oscillations of a pendulum were not facilitated by any other force than gravity, what would be the effect upon their amplitude? Check the best reply:

It would gradually be

flagellated.

augmented.

swaged.

diminished.

12. If ontogeny invariably ingeminates phylogeny, circumscribe the word giving the location of the OURCQ; if not, underscore the word that locates the MANDIBLE.

England

Foot

Utah

Face

Peru

France

Arm

India

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

.....

## MENTIMETER No. 23

# COMPLETION OF SENTENCES

*(From "Measure Your Mind" by Stockbridge and Trabue).  
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### DIRECTIONS

*Notice the two sample sentences printed below.*

#### WRITE ONE WORD ON EACH BLANK

- A. There are.....days in a week.
- B. Snow and ice are very.....

To make good sense one would have to write the word "seven" in the blank of the first sample, and the word "cold" in the second sample, for "There are *seven* days in a week," and "Snow and ice are very *cold*."

When you are told to turn the page and begin work, you will find on the other side of the sheet twenty sentences, from each of which one or more words have been left out. You are to guess what words were left out and to write them on the dotted lines which show where these words should be. Be very careful to write the best word you can think of on each blank. Write only *one* word on each of the blanks. Make each sentence sound just as sensible as you can. You will have ten minutes in which to write. Work rapidly and carefully.

Time Limit: 600 seconds

SCORE.....



WRITE ONLY ONE WORD ON EACH BLANK.

Choose in each case the best word you can think of to make the whole sentence sound right.

1. The dog's name.....Jack.
2. Little children go.....bed early.
3. The boy.....two dollars to the Red Cross.
4. The little.....likes.....play with her dolls.
5. Puppies.....kittens grow to be.....and cats.
6. The best children.....the most friends.
7. One should.....be rude to his.....
8. The poor.....was hurt when he slipped and.....on the street.
9. It.....amusing.....watch men chasing their hats on a.....day.
10. Almost any man.....if he really tries.
11. The elephant is a favourite.....with children because of.....and shape.
12. The.....who.....a club and.....a uniform was a policeman.
13. ....a hot day nothing.....thirst so well as a.....of.....water.
14. ....is more than merely.....a flag and cheering when the soldiers.....  
.....home.
15. Anything.....is not.....doing.....is hardly worth.....at all.
16. One.....not.....money to.....worthy charity.
17. ....learning a new operation it is sometimes.....not to.....  
all than to practise the.....way of.....it.
18. Those things.....no fear.....sometimes.....harmful.
19. ....drink.....one is.....is a.....pleasure.
20. ....one.....their presence.....not,.....does  
.....a rule,.....one's guests.

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

.....

## MENTIMETER No. 28

# ARITHMETIC REASONING

*(From "Measure Your Mind" by Stockbridge and Trabue).*

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### DIRECTIONS

When you are told to turn the page and begin work, you will find on the other side of the sheet fourteen problems in arithmetic. The first problems are simple and easy and the last ones are more difficult. Begin with the first problem and solve as many as you can in the four minutes. Write your answer at the right hand side of the questions on the dotted lines provided for the answers. You may figure on the left hand side or on the back of the blank, if you wish. Solve as many problems as you can but be sure to get the answers right.

**Time Limit: 240 seconds**

**SCORE.....**

Write the answers to these problems on the blanks. Use the other side of the sheet to figure on

ANSWERS

1. How many are 5 men and 3 men? .....
2. If you earn 2 dollars each day, how much do you earn in 6 days? .....
3. If you have 10 nickels and lose 3 of them, how many would you have after you found 2 of those that were lost? .....
4. How many benches will be needed in order to seat 20 people at a picnic, if 4 people sit on each bench? .....
5. If James sold 3 Sunday papers for 5 cents each and then bought an apple for 3 cents and an orange for 4 cents, how much money had he left? .....
6. How much change should you get from a dollar bill after buying 39 cents' worth of potatoes, 12 cents' worth of celery, and 26 cents' worth of butter. ....
7. If the price of lemons is 2 for 5 cents, how many can you buy for 40 cents? .....
8. If 29 merchants each bought 34 quarts of canned peas at a wholesale house which had previously sold 2,387 quarts of the same brand, what was the total number of quarts of this brand sold? .....
9. If a wholesale merchant sold for \$50 sugar which he had purchased for \$45 and thereby gained 1 cent per pound, how many pounds of sugar were there? .....
10. If four and a half pounds of fancy onions cost 27 cents, how much will eight and a half pounds cost? .....
11. Half of the people in a certain city block were born of American parents, one eighth have American fathers and foreign-born mothers, one eighth have American mothers and foreign-born fathers, and both parents of the rest are foreign-born. Of the 1,200 people living in this block, how many have American fathers? .....
12. A factory used 1,288 tons of coal in 23 days. During the first ten days after a new addition to the factory was opened, the average daily coal consumption was 78 tons. How many more tons were burned per day than previously? .....
13. A man spent for cigars and tobacco one sixteenth of his wages for one day. He spent five times as much for food, and half of what remained for repairs on his watch, which left him a dollar and a half. How much did he receive per day? .....
14. At the middle of the month a merchant had \$1,200 in the bank. He deposited \$30 each day for six days and on Monday morning wrote checks for two thirds as much as his deposits for the week. Tuesday afternoon he deposited a check one fourth as large as his balance in the bank. What balance should his check-book show on Tuesday night? .....

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

.....

## MENTIMETER No. 18

# RANGE OF INFORMATION

*(From "Measure Your Mind" by Stockbridge and Trabue).  
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### DIRECTIONS

Notice the two examples printed below.

**Make a check (✓) in the square in front of that one of the four words which makes the best sentence and tells the most exact truth.**

A. APPLES are a kind of  ANIMAL  FRUIT  MINERAL  VEGETABLE

B. GRASS is  RED  BLUE  PURPLE  GREEN

The square in front of the word FRUIT should have a check mark in it, for "Apples are a kind of fruit" is the best and truest sentence that can be made in Sample A. In Sample B, the word GREEN should have a check in its square, for "Grass is green" is the truest sentence that can be made of the words printed.

On the inside of this booklet, when you are told to open it, you will find 40 different sentences, at the end of each one of which there is a list of words from which you are to choose the proper one to be the last word. When you are told to turn the page, begin with the first sentence and make a check mark (✓) in the little square in front of the best word to use as an ending. Choose the word which will make the truest sentence. Choose only one word for each ending. If you are not absolutely certain which is the most truthful, make a guess and try the next sentences.

Time Limit: 240 seconds

SCORE.....



Make a check mark (✓) in the square in front of that one of the four words which makes the best sentence and tells the most exact truth.

1. The JERSEY is a kind of  COW  DOG  CAT  HORSE
2. GOLF is played with  CARDS  DICE  CLUBS  BUTTONS
3. FATIMA is the name of a  CIGAR  CLOTH  PIPE  CIGARETTE
4. A SAW is used by a  PAINTER  PLUMBER  CARPENTER  PLASTERER
5. An EMERALD is  GREEN  RED  BLUE  BLACK
6. DETROIT is noted for its  BREWING  TEXTILES  AUTOMOBILES  PRINTING
7. A SPANIEL is a kind of  SHEEP  GOAT  DOG  MULE
8. MAUDE ADAMS is noted as a  DANCER  ACTRESS  NURSE  WRITER
9. CANDY is made by  FORD  HUYLER  COLGATE  MACMILLAN
10. The CIVIL WAR began in  1848  1860  1861  1865
11. The SHERIFF is an officer of the  CITY  COUNTY  STATE  NATION
12. RUBENS is famous as a  POET  SCIENTIST  CARTOONIST  PAINTER
13. The HARLEY DAVIDSON is an  AUTOMOBILE  AÉROPLANE  MOTORCYCLE  
 KITE
14. MEREDITH NICHOLSON is a  HUMORIST  NOVELIST  POET  MUSICIAN
15. BUILT LIKE A SKYSCRAPER is an "ad" for a  BED  TRUNK  FILING-CASE  STOVE
16. The KILOMETER measures  ELECTRICITY  DISTANCE  GAS  WATER
17. The TIBIA is in the  LEG  ARM  CHEST  HEAD
18. CORAL is found in  TREES  REEFS  MOLLUSKS  MINES
19. CLYSMIC is a kind of  WINE  CLOTH  WATER  METAL
20. UNCLE TOM'S CABIN was written by  POE  STOWE  HAWTHORNE  IRVING

Make a check mark (✓) in the square in front of that one of the four words which makes the best sentence and tells the most exact truth.

21. JOHN HAY was a  BANKER  ENGINEER  PREACHER  STATESMAN
22. VASSAR COLLEGE is at  POUGHKEEPSIE  ITHACA  BOSTON  CAMBRIDGE
23. A SUBPOENA is used in  INSURANCE  MEDICINE  LAW  WAR
24. The number of a BANTU'S legs is  ONE  TWO  FOUR  EIGHT
25. SAMPSON BRASS is a character in  SCOTT  POE  DICKENS  BURNS
26. The HANDLEY-PAGE plane is made in  FRANCE  JAPAN  ENGLAND  AMERICA
27. The FALCON is an  INSECT  BIRD  TOOL  STONE
28. DRIBBLE is a term used in  HUNTING  THEOLOGY  LAW  ATHLETICS
29. PHEZ is a  FABRIC  DANCE  GAME  DRINK
30. HIGGINS manufactures  FURNITURE  BOOKS  GLASSWARE  INK
31. GUAVA is a kind of  FISH  BIRD  ANIMAL  FRUIT
32. An EQUILATERAL TRIANGLE is also  RIGHT  ISOSCELES  SCALENE  ACUTE
33. The BATTLE OF HASTINGS was in  1066  1215  1453  1607
34. The AORTA originates in the  HEAD  FEET  ALPS  HEART
35. ENDIVE is a kind of  STONE  TOOL  PLANT  ANIMAL
36. SEOUL is in  PERSIA  KOREA  INDIA  SYRIA
37. JOSEPH PRIESTLEY discovered  PONGEE  AUSTRALIA  OXYGEN  PRINTING
38. An OBOE is used in  MUSIC  MEDICINE  GEOLOGY  RELIGION
39. CHALLIS is a kind of  DISH  DRINK  DANCE  CLOTH
40. A RHESUS is a kind of  FISH  BIRD  ANIMAL  REPTILE

NAME.....CLASS.....

AGE (at last birthday).....NO.....

LOCATION.....

(The above items, which are called for on the title page of each Mentimeter, need not be recorded on subsequent pages if obtained accurately on the above blanks.)

## MENTIMETERS

# SCHOOL GROUP 2a

### SUMMARY OF RESULTS

*Do not write here. The examiner will record the results of your tests in the spaces left below.*

MENTIMETER NO.	NAME	SCORE	PERCENTAGE LOWER	RANK
.....2.....	Pictorial Absurdities..	.....	.....	.....
.....3.....	Maze Threading .....	.....	.....	.....
.....5.....	Geometric Figures....	.....	.....	.....
.....16.....	Naming Opposites....	.....	.....	.....
.....20.....	Directions: Reading..	.....	.....	.....
.....23.....	Sentences: Completion	.....	.....	.....
.....28.....	Arithmetic Reasoning.	.....	.....	.....
.....18.....	Range of Information.	.....	.....	.....
School Group 2a.....	Composite Total.	.....	.....	.....

### DIRECTIONS

*(To be read aloud by the examiner.)*

Do not look inside this booklet or turn from one page to another until you are told by the examiner to do so.

The following pages contain eight different tests, each test having a page of special printed directions just before it. The examiner will read the directions for each test in a loud voice while you read them silently.

Do not ask any questions. Listen closely to the Directions and look carefully at the examples printed on each page of Directions. If you do not then understand what to do, guess at it and make some kind of marks on each test. Do not look to see what any other person is doing.

When the examiner has finished reading the Directions for a test, he will say "Pencils up!" At this command hold your pencil high enough in one hand that the examiner can see it. At the command "Turn the page!" you should turn one page with the other hand, without lowering your pencil. Do not lower your pencil to the page until the examiner has called "Ready! Go!"

When the examiner calls "Stop" you must raise your pencil again immediately, even if you are in the very middle of writing a word. Each test has a definite time limit and it is unfair for any one to work after "Time" is called. No writing may be done while the Directions for the next test are being given.

FORM 8

GROUP EXAMINATION ALPHA

GROUP NO.....

Name..... Rank..... Age.....

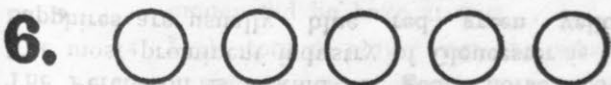
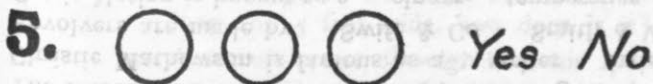
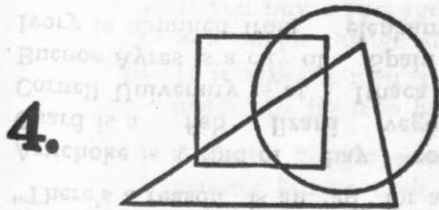
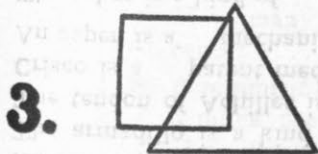
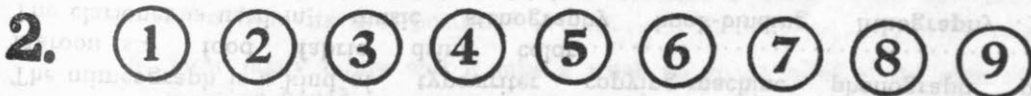
Company..... Regiment..... Arm..... Division.....

In what country or state born?..... Years in U. S.?..... Race.....

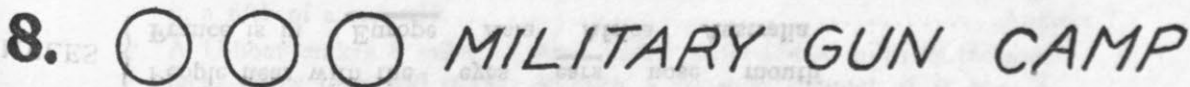
Occupation..... Weekly Wages.....

Schooling: Grades, 1. 2. 3. 4. 5. 6. 7. 8: High or Prep. School, Year 1. 2. 3. 4: College, Year 1. 2. 3. 4.

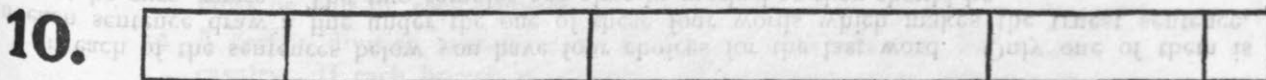
TEST 1



7. **A B C D E F G H I J K L M N O P**



9. **34-79-56-87-68-25-82-47-27-31-64-93-71-41-52-99**



12. 1 2 3 4 5 6 7 8 9



# TEST 8

Notice the sample sentence:

People hear with the eyes ears nose mouth

The correct word is ears, because it makes the truest sentence.

In each of the sentences below you have four choices for the last word. Only one of them is correct. In each sentence draw a line under the one of these four words which makes the truest sentence. If you can not be sure, guess. The two samples are already marked as they should be.

- SAMPLES { People hear with the eyes ears nose mouth  
 France is in Europe Asia Africa Australia
- 1 The apple grows on a shrub vine bush tree..... 1
  - 2 Five hundred is played with rackets pins cards dice..... 2
  - 3 The Percheron is a kind of goat horse cow sheep..... 3
  - 4 The most prominent industry of Gloucester is fishing packing brewing automobiles..... 4
  - 5 Sapphires are usually blue red green yellow..... 5
  - 6 The Rhode Island Red is a kind of horse granite cattle fowl..... 6
  - 7 Christie Mathewson is famous as a writer artist baseball player comedian..... 7
  - 8 Revolvers are made by Swift & Co. Smith & Wesson W. L. Douglas B. T. Babbitt..... 8
  - 9 Carrie Nation is known as a singer temperance agitator suffragist nurse..... 9
  - 10 "There's a reason" is an "ad" for a drink revolver flour cleanser..... 10
  - 11 Artichoke is a kind of hay corn vegetable fodder..... 11
  - 12 Chard is a fish lizard vegetable snake..... 12
  - 13 Cornell University is at Ithaca Cambridge Annapolis New Haven..... 13
  - 14 Buenos Ayres is a city of Spain Brazil Portugal Argentina..... 14
  - 15 Ivory is obtained from elephants mines oysters reefs..... 15
  - 16 Alfred Noyes is famous as a painter poet musician sculptor..... 16
  - 17 The armadillo is a kind of ornamental shrub animal musical instrument dagger..... 17
  - 18 The tendon of Achilles is in the heel head shoulder abdomen..... 18
  - 19 Crisco is a patent medicine disinfectant tooth-paste food product..... 19
  - 20 An aspen is a mechanic fabric tree drink..... 20
  - 21 The sabre is a kind of musket sword cannon pistol..... 21
  - 22 The mimeograph is a kind of typewriter copying machine phonograph pencil..... 22
  - 23 Maroon is a food fabric drink color..... 23
  - 24 The clarinet is used in music stenography book-binding lithography..... 24
  - 25 Denim is a dance food fabric drink..... 25
  - 26 The author of "Huckleberry Finn" is Poe Mark Twain Stevenson Hawthorne..... 26
  - 27 Faraday was most famous in literature war religion science..... 27
  - 28 Air and gasolene are mixed in the accelerator carburetor gear case differential..... 28
  - 29 The Brooklyn Nationals are called the ..Giants Orioles Superbas Indians..... 29
  - 30 Pasteur is most famous in politics literature war science..... 30
  - 31 Becky harp appears in Vanity Fair Romola The Christmas Carol Henry IV..... 31
  - 32 The number of a Kaffir's legs is two four six eight..... 32
  - 33 Habeas corpus is a term used in medicine law theology pedagogy..... 33
  - 34 Ensilage is a term used in fishing athletics farming hunting..... 34
  - 35 The forward pass is used in tennis hockey football golf..... 35
  - 36 General Lee surrendered at Appomattox in 1812 1865 1886 1832..... 36
  - 37 The watt is used in measuring wind power rainfall water power electricity..... 37
  - 38 The Pierce Arrow car is made in Buffalo Detroit Toledo Flint..... 38
  - 39 Napoleon defeated the Austrians at Friedland Wagram Waterloo Leipzig..... 39
  - 40 An irregular four-sided figure is called a scholium triangle trapezium pentagon..... 40

## TEST 2

Get the answers to these examples as quickly as you can.

Use the side of this page to figure on if you need to.

- 
- SAMPLES { 1 How many are 5 men and 10 men? .....Answer ( 15 )
- 2 If you walk 4 miles an hour for 3 hours, how far do you walk? .....Answer ( 12 )
- 1 How many are 60 guns and 5 guns?.....Answer ( )
- 2 If you save \$9 a month for 3 months, how much will you save?....Answer ( )
- 3 If 48 men are divided into squads of 8, how many squads will there be? .....Answer ( )
- 4 Mike had 11 cigars. He bought 2 more and then smoked 7. How many cigars did he have left?.....Answer ( )
- 5 A company advanced 8 miles and retreated 2 miles. How far was it then from its first position?.....Answer ( )
- 6 How many hours will it take a truck to go 42 miles at the rate of 3 miles an hour?.....Answer ( )
- 7 How many pencils can you buy for 60 cents at the rate of 2 for 5 cents? .....Answer ( )
- 8 A regiment marched 40 miles in five days...The first day they marched 9 miles, the second day 6 miles, the third 10 miles, the fourth 6 miles. How many miles did they march the last day? .....Answer ( )
- 9 If you buy 2 packages of tobacco at 8 cents each and a pipe for 65 cents, how much change should you get from a two-dollar bill?.....Answer ( )
- 10 If it takes 4 men 3 days to dig a 120-foot drain, how many men are needed to dig it in half a day?.....Answer ( )
- 11 A dealer bought some mules for \$2,000. He sold them for \$2,400, making \$50 on each mule. How many mules were there?.....Answer ( )
- 12 A rectangular bin holds 200 cubic feet of lime. If the bin is 10 feet long and 5 feet wide, how deep is it?.....Answer ( )
- 13 A recruit spent one-eighth of his spare change for post cards and twice as much for a box of letter paper, and then had \$1.00 left. How much money did he have at first.....Answer ( )
- 14 I  $3\frac{1}{2}$  tons of clover cost \$14, what will  $6\frac{1}{2}$  tons cost?.....Answer ( )
- 15 A ship has provisions to last her crew of 700 men 2 months. How long would it last 400 men?.....Answer ( )
- 16 If an aeroplane goes 250 yards in 10 seconds, how many feet does it go in a fifth of a second?.....Answer ( )
- 17 A U-boat makes 8 miles an hour under water and 20 miles on the surface. How long will it take to cross a 100-mile channel, if it has to go two-fifths of the way under water?.....Answer ( )
- 18 If 134 squads of men are to dig 3,618 yards of trench, how many yards must be dug by each squad?.....Answer ( )
- 19 A certain division contains 5,000 artillery, 15,000 infantry, and 1,000 cavalry. If each branch is expanded proportionately until there are in all 23,100 men, how many will be added to the artillery?.....Answer ( )
- 20 A commission house which had already supplied 1,897 barrels of apples to a cantonment delivered the remainder of its stock to 37 mess halls. Of this remainder each mess hall received 54 barrels. What was the total number of barrels supplied?.....Answer ( )

## TEST 7

SAMPLE { sky—blue :: grass—table green warm big  
 fish—swims :: man—paper time walks girl  
 day—night :: white—red black clear pure

In each of the lines below, the first two words are related to each other in some way. What you are to do in each line is to see what the relation is between the first two words, and underline the word in heavy type that is related in the same way to the third word. Begin with No. 1 and mark as many sets as you can before time is called.

- 
- 1 shoe—foot :: hat—kitten head knife penny ..... 1
  - 2 pup—dog :: lamb—red door sheep book ..... 2
  - 3 spring—summer :: autumn—winter warm harvest rise ..... 3
  - 4 devil—angel :: bad—mean disobedient defamed good ..... 4
  - 5 finger—hand :: toe—body foot skin nail ..... 5
  
  - 6 legs—frog :: wings—eat swim bird nest ..... 6
  - 7 chew—teeth :: smell—sweet stink odor nose ..... 7
  - 8 lion—roar :: dog—drive pony bark harness ..... 8
  - 9 cat—tiger :: dog—wolf bark bite snap ..... 9
  - 10 good—bad :: long—tall big snake short ..... 10
  
  - 11 giant—large :: dwarf—Jungle small beard ugly ..... 11
  - 12 winter—season :: January—February day month Christmas ..... 12
  - 13 skating—winter :: swimming—diving floating hole summer ..... 13
  - 14 blonde—light :: brunette—dark hair brilliant blonde ..... 14
  - 15 love—friend :: hate—malice saint enemy dislike ..... 15
  
  - 16 egg—bird :: seed—grow plant crack germinate ..... 16
  - 17 dig—trench :: build—run house spade bullet ..... 17
  - 18 agree—quarrel :: friend—comrade need mother enemy ..... 18
  - 19 palace—king :: hut—peasant cottage farm city ..... 19
  - 20 cloud—burst—shower :: cyclone—bath breeze destroy West ..... 20
  
  - 21 Washington—Adams :: first—president second last Bryan ..... 21
  - 22 parents—command :: children—men shall women obey ..... 22
  - 23 diamond—rare :: iron—common silver ore steel ..... 23
  - 24 yes—affirmative :: no—think knowledge yes negative ..... 24
  - 25 hour—day :: day—night week hour noon ..... 25
  
  - 26 eve—head :: window—key floor room door ..... 26
  - 27 clothes—man :: hair—horse comb beard hat ..... 27
  - 28 draw—picture :: make—destroy table break hard ..... 28
  - 29 automobile—wagon :: motorcycle—ride speed bicycle car ..... 29
  - 30 granary—wheat :: library—read books paper chairs ..... 30
  
  - 31 Caucasian—English :: Mongolian—Chinese Indian negro yellow ..... 31
  - 32 Indiana—United States :: part—hair China Ohio whole ..... 32
  - 33 esteem—despise :: friends—Quakers enemies lovers men ..... 33
  - 34 abide—stay :: depart—come hence leave late ..... 34
  - 35 abundant—scarce :: cheap—buy costly bargain nasty ..... 35
  
  - 36 whale—large :: thunder—loud rain lightning kill ..... 36
  - 37 reward—hero :: punish—God everlasting pain traitor ..... 37
  - 38 music—soothing :: noise—hear distracting sound report ..... 38
  - 39 book—writer :: statue—sculptor liberty picture state ..... 39
  - 40 wound—paid :: health—sickness disease exhilaration doctor ..... 40



## TEST 3

This is a test of common sense. Below are sixteen questions. Three answers are given to each question. You are to look at the answers carefully; then make a cross in the square before the best answer to each question, as in the sample:

SAMPLE

- Why do we use stoves? Because
- they are black
  - they keep us warm
  - they look well

Here the second answer is the best one and is marked with a cross. Begin with No. 1 and keep on until time is called.

- 1 It is wiser to put some money aside and not spend it all, so that you may
  - prepare for old age or sickness
  - collect all the different kinds of money
  - gamble when you wish
- 2 Shoes are made of leather because
  - it is tanned
  - it is tough, pliable and warm
  - it can be blackened
- 3 Why do soldiers wear wrist watches rather than pocket watches? Because
  - they keep better time
  - they are harder to break
  - they are handier
- 4 The main reason why stone is used for building purposes is because
  - it makes a good appearance
  - it is strong and lasting
  - it is heavy
- 5 Why is beef better food than cabbage? Because
  - it tastes better
  - it is more nourishing
  - it is harder to obtain
- 6 If some one does you a favor, what should you do?
  - try to forget it
  - steal for him if he asks you to
  - return the favor
- 7 If you do not get a letter from home which you know was written, it may be because
  - it was lost in the mails
  - you forgot to tell your people to write
  - the postal service has been discontinued
- 8 The main thing the farmers do is to
  - supply luxuries
  - make work for the unemployed
  - feed the nation
- 9 If a man who can't swim should fall into a river, he should
  - yell for help and try to scramble out
  - dive to the bottom and crawl out
  - lie on his back and float
- 10 Glass insulators are used to fasten telegraph wires because
  - the glass keeps the pole from being burned
  - the glass keeps the current from escaping
  - the glass is cheap and attractive
- 11 If your load of coal gets stuck in the mud, what should you do?
  - leave it there
  - get more horses or men to pull it out
  - throw off the load
- 12 Why are criminals locked up?
  - to protect society
  - to get even with them
  - to make them work
- 13 Why should a married man have his life insured? Because
  - death may come at any time
  - insurance companies are usually honest
  - his family will not then suffer if he dies
- 14 In Leap Year February has 29 days because
  - February is a short month
  - some people are born on February 29th
  - otherwise the calendar would not come out right
- 15 If you are held up and robbed in a strange city, you should
  - apply to the police for help
  - ask the first man you meet for money to get home
  - borrow some money at a bank
- 16 Why should we have Congressmen? Because
  - the people must be ruled
  - it insures truly representative government
  - the people are too many to meet and make their laws

Go to No. 9 above



# TEST 6

SAMPLES

2	4	6	8	10	12	14	16
9	8	7	6	5	4	3	2
2	2	3	3	4	4	5	5
1	7	2	7	3	7	4	7

Look at each row of numbers below, and on the two dotted lines write the two numbers that should come next.

3 3 4 5 6 7 8

8 7 6 5 4 3

10 15 20 25 30 35

9 9 7 7 5 5

3 6 9 12 15 18

8 1 6 1 4 1

5 9 13 17 21 25

8 9 12 13 16 17

27 27 23 23 19 19

1 2 4 8 16 32

19 16 14 11 9 6

11 13 12 14 13 15

2 3 5 8 12 17

18 14 17 13 16 12

29 28 26 23 19 14

20 17 15 14 11 9

8 27 9 3 1 1/2

1 4 9 16 25 36

16 17 15 18 14 19

3 6 8 16 18 36

## TEST 4

If the two words of a pair mean the same or nearly the same, draw a line under *same*. If they mean the opposite or nearly the opposite, draw a line under *opposite*. If you cannot be sure, guess.

The two samples are already marked as they should be

SAMPLES	}	good—bad . . . . .	same— <u>opposite</u>
		little—small . . . . .	<u>same</u> —opposite
1	no—yes . . . . .	same—opposite	1
2	day—night . . . . .	same—opposite	2
3	go—leave . . . . .	same—opposite	3
4	begin—commence . . . . .	same—opposite	4
5	bitter—sweet . . . . .	same—opposite	5
6	assume—suppose . . . . .	same—opposite	6
7	command—obey . . . . .	same—opposite	7
8	tease—plague . . . . .	same—opposite	8
9	diligent—industrious . . . . .	same—opposite	9
10	corrupt—honest . . . . .	same—opposite	10
11	toward—from . . . . .	same—opposite	11
12	masculine—feminine . . . . .	same—opposite	12
13	complex—simple . . . . .	same—opposite	13
14	sacred—hallowed . . . . .	same—opposite	14
15	often—seldom . . . . .	same—opposite	15
16	ancient—modern . . . . .	same—opposite	16
17	enormous—gigantic . . . . .	same—opposite	17
18	confer—grant . . . . .	same—opposite	18
19	acquire—lose . . . . .	same—opposite	19
20	compute—calculate . . . . .	same—opposite	20
21	defile—purify . . . . .	same—opposite	21
22	apprehensive—fearful . . . . .	same—opposite	22
23	sterile—fertile . . . . .	same—opposite	23
24	chasm—abyss . . . . .	same—opposite	24
25	somber—gloomy . . . . .	same—opposite	25
26	vestige—trace . . . . .	same—opposite	26
27	vilify—praise . . . . .	same—opposite	27
28	finite—limited . . . . .	same—opposite	28
29	contradict—corroborate . . . . .	same—opposite	29
30	immune—susceptible . . . . .	same—opposite	30
31	credit—debit . . . . .	same—opposite	31
32	assiduous—diligent . . . . .	same—opposite	32
33	transient—permanent . . . . .	same—opposite	33
34	palliate—mitigate . . . . .	same—opposite	34
35	execrate—revile . . . . .	same—opposite	35
36	extinct—extant . . . . .	same—opposite	36
37	pertinent—relevant . . . . .	same—opposite	37
38	synchronous—simultaneous . . . . .	same—opposite	38
39	supercilious—disdainful . . . . .	same—opposite	39
40	abstruse—recondite . . . . .	same—opposite	40

## TEST 5

The words A EATS COW GRASS in that order are mixed up and don't make a sentence; but they would make a sentence if put in the right order: A COW EATS GRASS, and this statement is true.

Again, the words HORSES FEATHERS HAVE ALL would make a sentence if put in the order: ALL HORSES HAVE FEATHERS, but this statement is false.

Below are twenty-four mixed-up sentences. Some of them are true and some are false. When I say "go," take these sentences one at a time. Think what each **would** say if the words were straightened out, but don't write them yourself. Then, if what it **would** say is true, draw a line under the word "true"; if what it **would** say is false, draw a line under the word "false." If you can not be sure, guess. The two samples are already marked as they should be. Begin with No. 1 and work right down the page until time is called.

- |         |   |  |                |              |
|---------|---|--|----------------|--------------|
| SAMPLES | { | a eats cow grass.....                            | true..         | false        |
|         |   | horses feathers have all.....                    | <u>true</u> .. | <u>false</u> |
| 1       |   | oranges yellow are.....                          | true..         | false 1      |
| 2       |   | hear are with to ears.....                       | true..         | false 2      |
| 3       |   | noise cannon never make a.....                   | true..         | false 3      |
| 4       |   | trees in nests build birds.....                  | true..         | false 4      |
| 5       |   | oil water not and will mix.....                  | true..         | false 5      |
| 6       |   | bad are shots soldiers all.....                  | true..         | false 6      |
| 7       |   | fuel wood are coal and for used.....             | true..         | false 7      |
| 8       |   | moon earth the only from feet twenty the is..... | true..         | false 8      |
| 9       |   | to life water is necessary.....                  | true..         | false 9      |
| 10      |   | are clothes all made cotton of.....              | true..         | false 10     |
| 11      |   | horses automobile an are than slower.....        | true..         | false 11     |
| 12      |   | tropics is in the produced rubber.....           | true..         | false 12     |
| 13      |   | leaves the trees in lose their fall.....         | true..         | false 13     |
| 14      |   | place pole is north comfortable a the.....       | true..         | false 14     |
| 15      |   | sand of made bread powder and is.....            | true..         | false 15     |
| 16      |   | sails is steamboat usually by propelled a.....   | true..         | false 16     |
| 17      |   | is the salty in water all lakes.....             | true..         | false 17     |
| 18      |   | usually judge can we actions man his by a.....   | true..         | false 18     |
| 19      |   | men misfortune have good never.....              | true..         | false 19     |
| 20      |   | tools valuable is for sharp making steel.....    | true..         | false 20     |
| 21      |   | due sometimes calamities are accident to.....    | true..         | false 21     |
| 22      |   | forget trifling friends grievances never.....    | true..         | false 22     |
| 23      |   | feeling is of painful exaltation the.....        | true..         | false 23     |
| 24      |   | begin a and apple acorn ant words with the.....  | true..         | false 24     |



Write only one word on each blank  
Time Limit: Seven Minutes

NAME .....

## TRABUE LANGUAGE SCALE B

1. We like good boys ..... girls.
6. The ..... is barking at the cat.
8. The stars and the ..... will shine tonight.
22. Time ..... often more valuable ..... money.
23. The poor baby ..... as if it were ..... sick.
31. She ..... if she will.
35. Brothers and sisters ..... always ..... to help .....  
other and should ..... quarrel.
38. .... weather usually ..... a good effect ..... one's  
spirits.
48. It is very annoying to ..... tooth-ache, .....  
often comes at the most ..... time imaginable.
54. To ..... friends is always ..... the ..... it takes.



# TERMAN GROUP TEST OF MENTAL ABILITY

For Grades 7 to 12

Prepared by Lewis M. Terman, Stanford University, California

EDITION I

## EXAMINATION: FORM A

1. Name .....  
First name Last name
2. Boy or girl ..... Grade ..... High or Low .....
3. Age last birthday ..... Date of birthday .....  
Month Day
4. Name of city (or county) .....
5. Name of school .....
6. Name of teacher .....
7. Date of this examination ..... 19 .....  
Month Day Year

Do not turn the page until you are told to.

TEST	SCORE	REMARKS OR FURTHER DATA
1. Information		
2. Best Answer		
3. Word Meaning		
4. Logical Selection		
5. Arithmetic		
6. Sentence Meaning		
7. Analogies		
8. Mixed Sentences		
9. Classification		
10. Number Series		
Total		

TEST 1. INFORMATION

Draw a line under the ONE word that makes the sentence true, as shown in the sample.

SAMPLE. Our first President was Adams Jefferson Lincoln Washington

- 1 Coffee is a kind of bark berry leaf root
2 Sirloin is a cut of beef mutton pork veal
3 Gasoline comes from grains petroleum turpentine seeds
4 Most exports go from Boston San Francisco New Orleans New York
5 The number of pounds in a ton is 1000 2000 3000 4000
6 Napoleon was defeated at Leipzig Paris Verdun Waterloo
7 Emeralds are usually blue green red yellow
8 The optic nerve is for seeing hearing tasting feeling
9 Larceny is a term used in medicine theology law pedagogy
10 Sponges come from animals farms forests mines
11 Confucius founded the religion of the Persians Italians Chinese Indians
12 The larynx is in the abdomen head throat shoulder
13 The piccolo is used in farming music photography typewriting
14 The kilowatt measures rainfall wind-power electricity water-power
15 The guillotine causes death disease fever sickness
16 A character in "David Copperfield" is Sindbad Uriah Heep Rebecca Hamlet
17 A windlass is used for boring cutting lifting squeezing
18 A great law-giver of the Hebrews was Abraham David Moses Saul
19 A six-sided figure is called a scholium parallelogram hexagon trapezium
20 A meter is nearest in length to the inch foot yard rod

Right.....

TEST 2. BEST ANSWER

Read each question or statement and make a cross before the BEST answer, as shown in the sample.

SAMPLE Why do we buy clocks? Because
1 We like to hear them strike.
2 They have hands.
X 3 They tell us the time.

- 1 Spokes of a wheel are often made of hickory because
1 Hickory is tough.
2 It cuts easily.
3 It takes paint nicely.
2 The saying, "A watched pot never boils," means
1 We should never watch a pot on the fire.
2 Boiling takes a long time.
3 Time passes slowly when we are waiting for something.
3 A train is harder to stop than an automobile because
1 It has more wheels.
2 It is heavier.
3 Its brakes are not so good.
4 The saying, "Make hay while the sun shines," means
1 Hay is made in summer.
2 We should make the most of our opportunities.
3 Hay should not be cut at night.
5 If the earth were nearer the sun
1 The stars would disappear.
2 Our months would be longer.
3 The earth would be warmer.
6 The saying, "If wishes were horses, beggars would ride," means
1 Wishing doesn't get us very far.
2 Beggars often wish for horses to ride.
3 Beggars are always asking for something.
7 The saying, "Little strokes fell great oaks," means
1 Oak trees are weak.
2 Little strokes are best.
3 Continued effort brings results.
8 A steel battleship floats because
1 The engines hold it up.
2 It has much air space inside.
3 It contains some wood.
9 The feathers on a bird's wings help him to fly because
1 They make a wide, light surface.
2 They keep the air off his body.
3 They decrease the bird's weight.
10 The saying, "A carpenter should stick to his bench," means
1 Carpenters should not work without benches.
2 Carpenters should not be idle.
3 One should work at the thing he can do best.
11 The saying, "One swallow does not make a summer," means
1 Swallows come back for the summer.
2 A single sign is not sufficient proof.
3 Many birds add to the pleasures of summer.

Right..... X 2 = Score.....



TEST 3. WORD MEANING

FORM A

When two words mean the SAME, draw a line under "SAME."  
When they mean the OPPOSITE, draw a line under "OPPOSITE."

SAMPLES	fall — drop	same — opposite	
	north — south	same — <u>opposite</u>	
1	expel — retain	same — opposite	1
2	comfort — console	same — opposite	2
3	waste — conserve	same — opposite	3
4	monotony — variety	same — opposite	4
5	quell — subdue	same — opposite	5
6	major — minor	same — opposite	6
7	boldness — audacity	same — opposite	7
8	exult — rejoice	same — opposite	8
9	prohibit — allow	same — opposite	9
10	debase — degrade	same — opposite	10
11	recline — stand	same — opposite	11
12	approve — veto	same — opposite	12
13	amateur — expert	same — opposite	13
14	evade — shun	same — opposite	14
15	tart — acid	same — opposite	15
16	concede — deny	same — opposite	16
17	tonic — stimulant	same — opposite	17
18	incite — quell	same — opposite	18
19	economy — frugality	same — opposite	19
20	rash — prudent	same — opposite	20
21	obtuse — acute	same — opposite	21
22	transient — permanent	same — opposite	22
23	expel — eject	same — opposite	23
24	hoax — deception	same — opposite	24
25	docile — submissive	same — opposite	25
26	wax — wane	same — opposite	26
27	incite — instigate	same — opposite	27
28	reverence — veneration	same — opposite	28
29	asset — liability	same — opposite	29
30	appease — placate	same — opposite	30

Right.....Wrong.....Score.....

TEST 4. LOGICAL SELECTION

FORM A

In each sentence draw a line under the TWO words that tell what the thing ALWAYS has. Underline TWO, and ONLY TWO, in each line.

SAMPLE.	A man always has	
	<u>body</u> cap gloves <u>mouth</u> money	
1	A horse always has	1
	harness hoofs shoes stable tail	
2	A circle always has	2
	altitude circumference latitude longitude radius	
3	A bird always has	3
	bones eggs beak nest song	
4	Music always has	4
	listener piano rhythm sound violin	
5	An object always has	5
	smell size taste value weight	
6	Conversation always has	6
	agreement persons questions wit speech	
7	A banquet always has	7
	food music persons speeches toastmaster	
8	A pistol always has	8
	barrel bullet cartridge sights trigger	
9	A ship always has	9
	engine guns keel rudder sails	
10	A debt always involves	10
	creditor debtor interest mortgage payment	
11	A game always has	11
	cards contestants forfeits penalties rules	
12	A magazine always has	12
	advertisements paper pictures print stories	
13	A museum always has	13
	animals arrangement collections minerals visitors	
14	A forest always has	14
	animals flowers shade underbrush trees	
15	A citizen always has	15
	country occupation privileges property vote	
16	Controversy always involves	16
	claims disagreement dislike enmity hatred	
17	War always has	17
	airplanes cannons combat rifles soldiers	
18	Obstacles always bring	18
	difficulty discouragement failure hindrance stimulation	
19	Abhorrence always involves	19
	aversion dislike fear rage timidity	
20	Compromise always involves	20
	adjustment agreement friendship respect satisfaction	

Right.....



TEST 5. ARITHMETIC

Find the answers as quickly as you can.  
Write the answers on the dotted lines.  
Use the bottom of the page to figure on.

- 1 How many hours will it take a person to go 66 miles at the rate of 6 miles an hour? *Answer* .....
- 2 At the rate of 2 for 5 cents, how many pencils can you buy for 50 cents? *Answer* .....
- 3 If a man earns \$20 a week and spends \$14, how long will it take him to save \$300? *Answer* .....
- 4  $2 \times 3 \times 4 \times 6$  is how many times as much as  $3 \times 4$ ? *Answer* .....
- 5 If two pies cost 66 cents, what does a sixth of a pie cost? *Answer* .....
- 6 What is  $16\frac{2}{3}$  per cent of \$120? *Answer* .....
- 7 4 per cent of \$1000 is the same as 8 per cent of what amount? *Answer* .....
- 8 A has \$180, B has  $\frac{2}{3}$  as much as A, and C has  $\frac{1}{2}$  as much as B. How much have all together? *Answer* .....
- 9 The capacity of a rectangular bin is 48 cubic feet. If the bin is 6 feet long and 4 feet wide, how deep is it? *Answer* .....
- 10 If it takes 7 men 2 days to dig a 140-foot ditch, how many men are needed to dig it in half a day? *Answer* .....
- 11 A man spends  $\frac{1}{4}$  of his salary for board and room, and  $\frac{3}{8}$  for all other expenses. What per cent of his salary does he save? *Answer* .....
- 12 If a man runs 100 yards in 10 seconds, how many feet does he run in  $\frac{1}{5}$  of a second? *Answer* .....

Right .....  $\times 2 =$  Score .....

TEST 6. SENTENCE MEANING

Draw a line under the right answer, as shown in the samples.

- |         |   |                                    |            |           |  |
|---------|---|------------------------------------|------------|-----------|--|
| SAMPLES | { | Is coal obtained from mines? ..... | <u>Yes</u> | No        |  |
|         |   | Are all men six feet tall? .....   | Yes        | <u>No</u> |  |
- 
- 1 Does a conscientious person ever make mistakes? ..... Yes No 1
  - 2 Is an alloy a kind of musical instrument? ..... Yes No 2
  - 3 Is scurvy a kind of medicine? ..... Yes No 3
  - 4 Are mysterious things often uncanny? ..... Yes No 4
  - 5 Are destitute persons often subjects of charity? ..... Yes No 5
  - 6 Are anonymous letters ever properly signed? ..... Yes No 6
  - 7 Is the mimeograph sometimes used by stenographers? ..... Yes No 7
  - 8 Is a curriculum intended for horses? ..... Yes No 8
  - 9 Are proteids essential to health? ..... Yes No 9
  - 10 Does "perfunctory" mean the same as "careful"? ..... Yes No 10
  - 11 Are premeditated deeds always wicked? ..... Yes No 11
  - 12 Do alleged facts often require verification? ..... Yes No 12
  - 13 Are sheep carnivorous? ..... Yes No 13
  - 14 Are aristocrats subservient to their inferiors? ..... Yes No 14
  - 15 Are venerable people usually respected? ..... Yes No 15
  - 16 Is clematis sometimes cultivated? ..... Yes No 16
  - 17 Are ultimate results the last to appear? ..... Yes No 17
  - 18 Are cerebral hemorrhages helpful to thinking? ..... Yes No 18
  - 19 Are all people religious who have hallucinations? ..... Yes No 19
  - 20 Are intermittent sounds discontinuous? ..... Yes No 20
  - 21 Are sable colors preferred for nations' flags? ..... Yes No 21
  - 22 Does social contact tend to reduce eccentricities? ..... Yes No 22
  - 23 Are tentative decisions usually final? ..... Yes No 23
  - 24 Is rancor usually characterized by persistence? ..... Yes No 24

Right ..... Wrong ..... Score .....



TEST 7. ANALOGIES

SAMPLES { Ear is to hear as eye is to  
 table see hand play  
 Hat is to head as shoe is to  
 arm coat foot leg

Do them all like samples.

- 1 Coat is to wear as bread is to  
eat starve water cook ..... 1
- 2 Week is to month as month is to  
year hour minute century ..... 2
- 3 Monday is to Tuesday as Friday is to  
week Thursday day Saturday ..... 3
- 4 Tell is to told as speak is to  
sing spoke speaking sang ..... 4
- 5 Lion is to animal as rose is to  
smell leaf plant thorn ..... 5
- 6 Cat is to tiger as dog is to  
wolf bark bite snap ..... 6
- 7 Success is to joy as failure is to  
sadness luck fail work ..... 7
- 8 Liberty is to freedom as bondage is to  
negro slavery free suffer ..... 8
- 9 Cry is to laugh as sadness is to  
death joy coffin doctor ..... 9
- 10 Tiger is to hair as trout is to  
water fish scales swims ..... 10
- 11 1 is to 3 as 9 is to  
18 27 36 45 ..... 11
- 12 Lead is to heavy as cork is to  
bottle weight light float ..... 12
- 13 Poison is to death as food is to  
eat bird life bad ..... 13
- 14 4 is to 16 as 5 is to  
7 45 35 25 ..... 14
- 15 Food is to hunger as water is to  
drink clear thirst pure ..... 15
- 16 b is to d as second is to  
third later fourth last ..... 16
- 17 City is to mayor as army is to  
navy soldier general private ..... 17
- 18 Here is to there as this is to  
these those that then ..... 18
- 19 Subject is to predicate as noun is to  
pronoun adverb verb adjective ..... 19
- 20 Corrupt is to depraved as sacred is to  
Bible hallowed prayer Sunday ..... 20

Right .....

TEST 8. MIXED SENTENCES

The words in each sentence below are mixed up. If what a sentence means is TRUE, draw a line under "TRUE." If what it means is FALSE, draw a line under "FALSE."

- SAMPLES { hear are with to ears ..... true false  
 eat gunpowder to good is ..... true false
- 1 true bought cannot friendship be ..... true false 1
  - 2 good sea drink to is water ..... true false 2
  - 3 of is the peace war opposite ..... true false 3
  - 4 get grow they as children taller older ..... true false 4
  - 5 horses automobile an are than slower ..... true false 5
  - 6 never deeds rewarded be should good ..... true false 6
  - 7 four hundred all pages contain books ..... true false 7
  - 8 to advice sometimes is good follow hard ..... true false 8
  - 9 envy bad greed traits are and ..... true false 9
  - 10 grow an than strawberries oak tree higher ..... true false 10
  - 11 external deceive never appearances us ..... true false 11
  - 12 never is man what show a deeds ..... true false 12
  - 13 hatred bad unfriendliness traits are and ..... true false 13
  - 14 often judge can we actions man his by a ..... true false 14
  - 15 in are always American cities born presidents ..... true false 15
  - 16 certain always death of cause kinds sickness ..... true false 16
  - 17 are sheet blankets as as a never warm ..... true false 17
  - 18 never who heedless those stumble are ..... true false 18

Right ..... Wrong ..... Score .....

TEST 9. CLASSIFICATION

FORM A

- SAMPLES { 1 bullet cannon gun sword pencil  
2 Canada Chicago China India France

In each line cross out the word that does not belong there.  
Cross-out JUST ONE WORD in each line.

- 1 Frank James John Sarah William ..... 1
- 2 Baptist Catholic Methodist Presbyterian Republican .. 2
- 3 automobile bicycle buggy telegraph train ..... 3
- 4 Collie Holstein Shepherd Spitz Terrier ..... 4
- 5 hop run skip stand walk ..... 5
- 6 death grief picnic poverty sadness ..... 6
- 7 bed chair dish sofa table ..... 7
- 8 hard rough smooth soft sweet ..... 8
- 9 mechanic doctor lawyer preacher teacher ..... 9
- 10 Christ Confucius Mohammed Moses Cæsar ..... 10
- 11 butterfly hawk ostrich robin swallow ..... 11
- 12 cloth cotton flax hemp wool ..... 12
- 13 digestion hearing sight smell touch ..... 13
- 14 down hither recent up yonder ..... 14
- 15 anger hatred joy pity reasoning ..... 15
- 16 Australia Cuba Iceland Ireland Spain ..... 16
- 17 Dewey Farragut Grant Paul Jones Schley ..... 17
- 18 give lend lose keep waste ..... 18

Right .....

TEST 10. NUMBER SERIES

FORM A

- SAMPLES { 5 10 15 20 25 .30. .35.  
20 18 16 14 12 .10. .8.

In each row try to find out how the numbers are made up,  
then on the two dotted lines write the TWO numbers that  
should come next.

- 1st Row 8 7 6 5 4 3 ..... ..
- 2d Row 3 8 13 18 23 28 ..... ..
- 3d Row  $11\frac{3}{4}$  12  $12\frac{1}{4}$   $12\frac{1}{2}$   $12\frac{3}{4}$  ..... ..
- 4th Row 8 8 6 6 4 4 ..... ..
- 5th Row 1 2 4 8 16 32 ..... ..
- 6th Row 4 3 5 4 6 5 7 ..... ..
- 7th Row 16 8 4 2 1  $\frac{1}{2}$  ..... ..
- 8th Row 8 9 12 13 16 17 ..... ..
- 9th Row 7 11 15 16 20 24 25 29 ..... ..
- 10th Row 31.3 40.3 49.3 58.3 67.3 76.3 ..... ..
- 11th Row  $\frac{1}{25}$   $\frac{1}{5}$  1 5 ..... ..
- 12th Row 3 4 6 9 13 18 ..... ..

Right .....  $\times 2 =$  Score .....



# Haggerty Intelligence Examination

## DELTA 2

FOR GRADES 3-9

Arranged and standardized by M. E. HAGGERTY, University of Minnesota

*An adaptation of the Army Intelligence Examinations. Used in the Virginia School Survey*

---

My name is \_\_\_\_\_ I am a \_\_\_\_\_  
First name Last name Write boy or girl

This is the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_ I am \_\_\_\_\_ years old.

My next birthday will be \_\_\_\_\_ 19\_\_\_\_ I am in \_\_\_\_\_ half of Grade \_\_\_\_\_

The name of my school is \_\_\_\_\_ The name of my city (county) is \_\_\_\_\_

The name of my state is \_\_\_\_\_

---

**Do not turn this page until you are told to do so.**

---

(To be read silently by pupils while examiner reads aloud)

This little book contains some exercises which will show how well you can do certain things. Some of the things are very easy and some are very hard. There are six exercises in all. You will be shown them one at a time and will finish each one before you see the next one. Do not turn any page until you are told to do so. As soon as you turn the page, lift your pencil, with your elbow on your desk, and do not put your pencil down until we have read the instructions and until I say, GO!

Now turn the page to Exercise 1.

## EXERCISE 6

Look at this sentence: People hear with the eyes — ears — nose — mouth.  
 The correct word is "ears," because it makes the truest sentence. In each of the sentences below you have four choices for the last word. Only one of them is correct. In each sentence draw a line under the one of these four words that makes the truest sentence. If you cannot be sure, guess. The first one is already marked as it should be.

France is in Europe Asia Africa Australia.

- |    |   |    |
|----|---|----|
| 1  | The apple grows on a shrub vine tree bush.....  | 1  |
| 2  | The day before Thursday is Tuesday Wednesday Friday Saturday.....                           | 2  |
| 3  | America was discovered by Drake Hudson Cabot Columbus.....                                  | 3  |
| 4  | The first President of the United States was Lincoln Washington Jackson Garfield.....       | 4  |
| 5  | The capital of the United States is New York Chicago Washington New Orleans.....            | 5  |
| 6  | Wool is obtained from the ocean the ground a plant an animal.....                           | 6  |
| 7  | The Amazon is a river city mountain country.....  | 7  |
| 8  | Boston is in Connecticut Rhode Island Maine Massachusetts.....                              | 8  |
| 9  | The capital of France is London Rome Paris Berlin.....                                      | 9  |
| 10 | The second month before July is August May June April.....                                  | 10 |
| 11 | The number of days in a year is 144 287 365 412.....  | 11 |
| 12 | The Leghorn is a kind of cow horse granite fowl.....  | 12 |
| 13 | Charlie Chaplin is noted as an actor soldier preacher physician.....                        | 13 |
| 14 | The commander of the allied armies was Wilson Foch Lloyd George Hindenburg.....             | 14 |
| 15 | Moses was a great Greek Roman Japanese Jew.....   | 15 |
| 16 | Shakespeare is noted as a soldier statesman writer scientist.....                           | 16 |
| 17 | A pound of tea usually costs about 10 cts. 5 cts. \$2.00 50 cts.....                        | 17 |
| 18 | Ivory is obtained from elephants oysters mines reefs.....                                   | 18 |
| 19 | The Durham is a kind of horse cow goat sheep.....   | 19 |
| 20 | Indigo is a food drink color fabric.....  | 20 |
| 21 | It is usually coldest at sunrise sunset noon midnight.....                                  | 21 |
| 22 | The U. S. School for army officers is at Annapolis West Point New Haven St. Paul.....       | 22 |
| 23 | Leap year comes every two years four years six years eight years.....                       | 23 |
| 24 | Rubber is obtained from ore petroleum trees hides.....                                      | 24 |
| 25 | Darwin was most famous in literature politics war science.....                              | 25 |
| 26 | The battle of Lexington was fought in 1620 1775 1812 1864.....                              | 26 |
| 27 | Combustible things will rip fight burn break.....   | 27 |
| 28 | Emeralds are usually red blue yellow green.....   | 28 |
| 29 | Diamonds are obtained from mines reefs elephants oysters.....                               | 29 |
| 30 | Turpentine is obtained from rivers rocks trees animals.....                                 | 30 |
| 31 | The saber is a kind of musket sword cannon pistol.....                                      | 31 |
| 32 | The larynx is in the head neck shoulder abdomen.....  | 32 |
| 33 | Larceny is a term used in medicine theology law pedagogy.....                               | 33 |
| 34 | Alfalfa is a kind of corn hay print rice.....   | 34 |
| 35 | Maroon is a kind of food fabric drink color.....  | 35 |
| 36 | The clarinet is used in music stenography lithography drawing.....                          | 36 |
| 37 | The mimeograph is a kind of typewriter copying machine phonograph pencil.....               | 37 |
| 38 | The constitution of the league of nations was written in France Russia England Germany..... | 38 |
| 39 | Monogamy is a term relating to electricity business the family manufacture.....             | 39 |
| 40 | A five-sided figure is called a scholium pentagon parallelogram trapezium.....              | 40 |

Score.....



## EXERCISE 1

### DIRECTIONS.

1. Read this question: Do cats see?    NO    YES  
 The right answer is Yes; so a line is drawn under Yes.

2. Read the next question: Is coal white?    NO    YES  
 The right answer is No; so a line is drawn under No.

Below are a great many more questions. Read them carefully, one at a time, and draw a line under the right answer. When you are not sure, guess.

- |     |  |     |    |
|-----|--|-----|----|
| 1.  | Do dogs run?.....                                      | YES | NO |
| 2.  | Can a doll sing?.....                                  | YES | NO |
| 3.  | Does the sun shine?.....                               | YES | NO |
| 4.  | Do men drink water?.....                               | YES | NO |
| 5.  | Are all apples red?.....                               | YES | NO |
| 6.  | Does a table have legs?.....                           | YES | NO |
| 7.  | Are eggs good to eat?.....                             | YES | NO |
| 8.  | Are two more than four?.....                           | YES | NO |
| 9.  | Are children's dresses always blue?.....               | YES | NO |
| 10. | Are houses sometimes made of bricks?.....              | YES | NO |
| 11. | Do soldiers ever live in camps?.....                   | YES | NO |
| 12. | Does it rain every morning?.....                       | YES | NO |
| 13. | Do all travelers have companions?.....                 | YES | NO |
| 14. | Is south different from north?.....                    | YES | NO |
| 15. | Do pupils attend school at midnight?.....              | YES | NO |
| 16. | Does lightning sometimes occur at night?.....          | YES | NO |
| 17. | Do guards ever take captives?.....                     | YES | NO |
| 18. | Are all barbers wealthy persons?.....                  | YES | NO |
| 19. | Does the country need patriotic citizens?.....         | YES | NO |
| 20. | Should school teachers be continually tardy?.....      | YES | NO |
| 21. | Are all swimming animals quadrupeds?.....              | YES | NO |
| 22. | Is the development of trees ever stunted?.....         | YES | NO |
| 23. | Is electricity used only for lighting?.....            | YES | NO |
| 24. | Do all foreigners make good citizens?.....             | YES | NO |
| 25. | Is the government of colonies important?.....          | YES | NO |
| 26. | Are future events definitely predictable?.....         | YES | NO |
| 27. | Is hospitality likely to be appreciated?.....          | YES | NO |
| 28. | Are missionaries ever persecuted by natives?.....      | YES | NO |
| 29. | Is a faithless commander deserving of reward?.....     | YES | NO |
| 30. | Do governors ever issue proclamations?.....            | YES | NO |
| 31. | Does the ascent of a mountain conduce to fatigue?..... | YES | NO |
| 32. | Do arguments arise over political questions?.....      | YES | NO |
| 33. | Should a sentinel's challenge be ignored?.....         | YES | NO |
| 34. | Are integrity and obedience virtues?.....              | YES | NO |
| 35. | Are historians infallible?.....                        | YES | NO |
| 36. | Are "patriotism" and "elocution" synonyms?.....        | YES | NO |
| 37. | Does allegiance imply loyalty?.....                    | YES | NO |
| 38. | Is surgery the vocation of diplomats?.....             | YES | NO |
| 39. | Are all lunatics in penitentiaries?.....               | YES | NO |
| 40. | Are judicial decisions ever enforced?.....             | YES | NO |
|     | <i>Score</i> .....                                     |     |    |

## EXERCISE 5

This is a test of common sense. Below are sixteen questions. Three answers are given to each question. You are to look at the answers carefully; then make a cross in the square before the best answer to each question, as in the sample:

SAMPLE { Why do we use stoves? Because  
 they look well  
 they keep us warm  
 they are black

Here the second answer is the best one and is marked with a cross. Begin with No. 1 and keep on until time is called.

- |  |  |
|--|--|
| <p>1 Cats are useful animals, because<br/> <input type="checkbox"/> they catch mice<br/> <input type="checkbox"/> they are gentle<br/> <input type="checkbox"/> they are afraid of dogs</p> <p>2 Why are chairs made of wood? Because<br/> <input type="checkbox"/> wood is cheap and light<br/> <input type="checkbox"/> wood burns<br/> <input type="checkbox"/> wood is easily broken</p> <p>3 A house is better than a tent, because<br/> <input type="checkbox"/> it costs more<br/> <input type="checkbox"/> it is more comfortable<br/> <input type="checkbox"/> it is made of wood</p> <p>4 Shoes are made of leather, because<br/> <input type="checkbox"/> it is tanned<br/> <input type="checkbox"/> it is tough, pliable, and warm<br/> <input type="checkbox"/> it can be blackened</p> <p>5 Why judge a man by what he does rather than by what he says? Because<br/> <input type="checkbox"/> what a man does shows what he really is<br/> <input type="checkbox"/> it is wrong to tell a lie<br/> <input type="checkbox"/> a deaf man cannot hear what is said</p> <p>6 If you were asked what you thought of a person whom you didn't know, what should you say?<br/> <input type="checkbox"/> I will go and get acquainted<br/> <input type="checkbox"/> I think he is all right<br/> <input type="checkbox"/> I don't know him and can't say</p> <p>7 Why does it pay to get a good education? Because<br/> <input type="checkbox"/> it makes a man more useful and happy<br/> <input type="checkbox"/> it makes work for teachers<br/> <input type="checkbox"/> it makes demand for buildings for schools and colleges</p> <p>8 If the grocer should give you too much money in making change, what is the right thing to do?<br/> <input type="checkbox"/> buy some candy from him with it<br/> <input type="checkbox"/> give it to the first poor man you meet<br/> <input type="checkbox"/> tell him of his mistake</p> | <p>9 If you are lost in a forest in the daytime, what is the thing to do?<br/> <input type="checkbox"/> hurry to the nearest house you know of<br/> <input type="checkbox"/> look for something to eat<br/> <input type="checkbox"/> use the sun or a compass for a guide</p> <p>10 The feathers on a bird's wings help him to fly, because they<br/> <input type="checkbox"/> make a wide, light surface<br/> <input type="checkbox"/> keep the air off his body<br/> <input type="checkbox"/> keep the wings from cooling off too fast</p> <p>11 Why are criminals locked up?<br/> <input type="checkbox"/> to protect society<br/> <input type="checkbox"/> to get even with them<br/> <input type="checkbox"/> to make them work</p> <p>12 Why should all parents be made to send their children to school? Because<br/> <input type="checkbox"/> it prepares them for later life<br/> <input type="checkbox"/> it keeps them out of mischief<br/> <input type="checkbox"/> they are too young to work</p> <p>13 Why do inventors patent their inventions? Because<br/> <input type="checkbox"/> it gives them control of their inventions<br/> <input type="checkbox"/> it creates a greater demand<br/> <input type="checkbox"/> it is the custom to get patents</p> <p>14 A train is harder to stop than an automobile, because<br/> <input type="checkbox"/> it is longer<br/> <input type="checkbox"/> it is heavier<br/> <input type="checkbox"/> the brakes are not so good</p> <p>15 We see no stars at noon, because<br/> <input type="checkbox"/> they have moved around to the other side of the earth<br/> <input type="checkbox"/> they are so much fainter than the sun<br/> <input type="checkbox"/> they are hidden by the sun</p> <p>16 Why is it colder nearer the poles than near the equator? Because<br/> <input type="checkbox"/> the poles are always farther from the sun<br/> <input type="checkbox"/> the sunshine falls obliquely at the poles<br/> <input type="checkbox"/> there is more ice at the poles</p> |
|--|--|

Go to No. 9 above

Score.....

## EXERCISE 2

Get the answers to these problems as quickly as you can. Use the side of this page to figure on if you need to.

- SAMPLES {
- 1 How many are 5 men and 10 men?..... Answer ( 15 )
  - 2 If one pencil costs 5 cents, what will 4 pencils cost?..... Answer ( 20 )
- 
- 1 How many are 30 men and 7 men?..... Answer ( )
  - 2 A boy had 10 cents and spent 4 cents. How many cents had he left?.. Answer ( )
  - 3 If you save \$7 a month for 4 months, how much will you save?..... Answer ( )
  - 4 If 24 men are divided into groups of 8, how many groups will there be?..... Answer ( )
  - 5 A boy had 12 marbles. He bought 3 more, and then lost 6. How many marbles did he have left?..... Answer ( )
  - 6 Mary was carrying a dozen eggs in her apron. Two eggs fell out and were broken. How many eggs had she left?..... Answer ( )
  - 7 An army advanced 5 miles and retreated 3 miles. How far was it then from its first position?..... Answer ( )
  - 8 How many hours will it take to drive a team 66 miles at the rate of 6 miles an hour?..... Answer ( )
  - 9 How many apples can you buy for 50 cents at the rate of 2 for 5 cents?..... Answer ( )
  - 10 A regiment marched 40 miles in five days. The first day it marched 9 miles, the second day 6 miles, the third 10 miles, the fourth 8 miles. How many miles did it march the last day?..... Answer ( )
  - 11 If you buy two writing tablets at 7 cents each and a book for 65 cents, how much change should you get from a two-dollar bill?..... Answer ( )
  - 12 If there are 5 school days in a week, 4 weeks in a month, and 9 months in a school year, how many school days are there in a school year?..... Answer ( )
  - 13 A dealer bought some mules for \$800. He sold them for \$1000, making \$40 on each mule. How many mules were there?..... Answer ( )
  - 14 A rectangular bin holds 400 cubic feet of corn. If the bin is 10 feet long and 5 feet wide, how deep is it?..... Answer ( )
  - 15 If it takes 6 men 3 days to dig a 180-foot drain, how many men are needed to dig it in half a day?..... Answer ( )
  - 16 A soldier spent one eighth of his money for post cards and four times as much for a box of letter paper, and then had 90 cents left. How much money did he have at first?..... Answer ( )
  - 17 If  $3\frac{1}{2}$  tons of coal cost \$21, what will  $5\frac{1}{2}$  tons cost?..... Answer ( )
  - 18 A ship has food to last her crew of 500 men 6 months. How long would it last 1200 men?..... Answer ( )
  - 19 If a man runs a hundred yards in 10 seconds, how many feet does he run in a fifth of a second?..... Answer ( )
  - 20 A submarine makes 8 miles an hour under water and 15 miles on the surface. How long will it take to cross a 100-mile channel, if it has to go two fifths of the way under water?..... Answer ( )

Score.....



## EXERCISE 4

Look at these two words:

little—small

same—opposite

They mean the same thing; so a line is drawn under same.

Now look at the next two words:

good—bad

same—opposite

These two words do not mean the same. They mean just the opposite; so a line is drawn under opposite.

Now look at all the other words on this page. If the words of a pair mean the same or nearly the same, draw a line under same. If they mean the opposite or nearly the opposite, draw a line under opposite. If you cannot be sure, guess.

1	no—yes	same—opposite	1
2	big—large	same—opposite	2
3	leap—jump	same—opposite	3
4	day—night	same—opposite	4
5	cold—hot	same—opposite	5
6	wet—dry	same—opposite	6
7	in—out	same—opposite	7
8	wide—broad	same—opposite	8
9	bitter—sweet	same—opposite	9
10	slim—slender	same—opposite	10
11	go—leave	same—opposite	11
12	begin—commence	same—opposite	12
13	take—accept	same—opposite	13
14	find—lose	same—opposite	14
15	joy—happiness	same—opposite	15
16	asleep—awake	same—opposite	16
17	command—obey	same—opposite	17
18	beg—entreat	same—opposite	18
19	appeal—beseech	same—opposite	19
20	legible—readable	same—opposite	20
21	ancient—modern	same—opposite	21
22	lax—strict	same—opposite	22
23	acquire—lose	same—opposite	23
24	sacred—hallowed	same—opposite	24
25	compute—calculate	same—opposite	25
26	repress—restrain	same—opposite	26
27	bestow—confer	same—opposite	27
28	amenable—tractable	same—opposite	28
29	avert—prevent	same—opposite	29
30	contradict—corroborate	same—opposite	30
31	dearth—scarcity	same—opposite	31
32	prefix—append	same—opposite	32
33	amiable—surly	same—opposite	33
34	docile—refractory	same—opposite	34
35	celibate—married	same—opposite	35
36	extinct—extant	same—opposite	36
37	pertinent—relevant	same—opposite	37
38	diatribe—invective	same—opposite	38
39	apathy—indifference	same—opposite	39
40	fallacy—verity	same—opposite	40

Score .....



### EXERCISE 3

Each of these pictures has something missing, and you are to put in with your pencil the missing part. Look at the first one. It is the picture of a boy's face, but it has no mouth. Now with your pencil mark in a mouth. The woman has no eye. Give her an eye. The other pictures are to be finished in the same way.



A

B



1



2



3



4



5



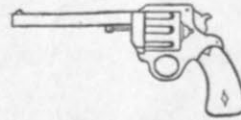
6



7



8



9



10



11



12



13



14



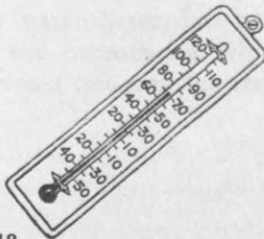
15



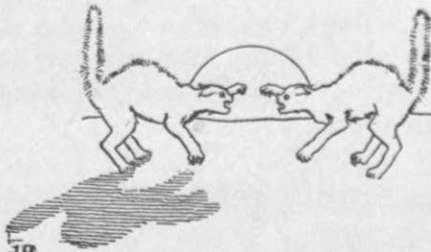
16



17



18



19



20

Score.....

TESTS FOR HIGH SCHOOL PUPILS

Arranged by W. S. Miller. Standardized by Administrative Section of High School Conference,  
University of Minnesota

DO NOT TURN ANY PAGES UNTIL YOU ARE TOLD TO DO SO

Name \_\_\_\_\_ School \_\_\_\_\_

Date of Birth \_\_\_\_\_ Age \_\_\_\_\_ years \_\_\_\_\_ months.

Underline the grade you are in: VII VIII IX X XI XII

Occupation of your father \_\_\_\_\_

What occupation do you expect to follow? \_\_\_\_\_

The examiner will allow ample time for the pupils to read the directions. (3 minutes to each set of directions, if necessary.)

SCORE

TEST	RIGHTS	DECILE
I		
II		
III		
Total		

DIRECTIONS FOR TEST I

On the next page are forty disarranged sentences. When the words are arranged in the right order, each sentence will tell you to do something. When the examiner says "Go," you will turn the page to Test I, look at the disarranged sentences, "think out" the right order for the words, and then do what each sentence tells you to do. Don't take time to locate every word separately. Just as soon as you think you know what the disarranged sentence tells you to do, do it. Below is a sample sentence. What does it tell you to do? Do it.

line draw around a sentence this

When the examiner says "Ready, Go," turn over the page, begin with No. 1 and work right down the page. Work rapidly. The examiner will say "Stop" at the end of 8 minutes.

If you don't understand what you are to do, ask the examiner now before he says "Go."

Wait for the signal, "Ready, Go." When the examiner says "Stop," turn back to this page immediately.

(Examiner will say "Stop" exactly 8 minutes after the signal, "Ready, Go.")

DIRECTIONS FOR TEST II

In Test II you will find 40 groups of words like the samples below. You are to think of the first word in each line as a cause, and draw a line under one noun in the parentheses that may be an effect of it. The first two samples are marked as they should be. Underline the third and fourth samples correctly.

- SAMPLES {
1. FIRE (hot, house, damage, melt)
  2. WATER (cold, flood, thirst, transparent)
  3. ELECTRICITY (wire, snow, light, hot)
  4. WORK (tired, honest, toil, wages)

When the examiner says "Ready, GO," turn over to Test II, begin with No. 1, and mark as many sets as you can in 5 minutes. If you can not be sure, guess. When the examiner says "Stop," turn back to this page immediately.

If you don't understand what you are to do, ask the examiner now before he says "Go."

Wait for the signal, "Ready, Go."

(Examiner will allow exactly 5 minutes for Test II.)

DIRECTIONS FOR TEST III

In Test III you will find 40 groups of words like the samples below. In each of the lines one pair of words, not in the parentheses, has a certain relation. Notice that relation and then draw a line under the one of the four words in the parentheses which has that particular relation with the other word not in the parentheses.

The first two samples are marked as they should be. Underline the right word in the third and fourth samples.

- SAMPLES {
1. SKY: BLUE:: GRASS: (grow, green, cut, dead)
  2. FISH: SWIM:: (man, boat, flower, tree): WALK.
  3. (hour, week, long, day) NIGHT:: WHITE: BLACK.
  4. TOE: (knee, foot, arm, nail):: FINGER: HAND.

When the examiner says "Ready, Go," turn over to Test III on the last page, begin with No. 1 and mark as many sets as you can in 6 minutes. If you can not be sure, guess.

When the examiner says "Stop," do not make any more marks on the paper. If you don't know what you are to do, tell the examiner now before he gives the signal to begin. Wait for the signal, "Ready, Go."

(Examiner will allow exactly 6 minutes for Test III.)

TESTS FOR HIGH SCHOOL PUPILS

TEST I

1. this underline sentence
2. in this enclose sentence parentheses
3. sentence underline this the in shortest word
4. sentence underline this in the verb
5. correct sentence this misspelled the worde in
6. the line on this United States of the name President write of the \_\_\_\_\_
7. period of a this close at the put sentence
8. write state the of name your line on this \_\_\_\_\_
9. triangle this a draw circle of inside **O**
10. comma the a place after word sentence longest this in
11. in noun sentence this underline one
12. write school-subject you best line like this on the \_\_\_\_\_
13. space this \_\_\_\_\_ write of number week in days in the a
14. if December Christmas "yes" in comes write line this on \_\_\_\_\_
15. that line write after on comes month this the April \_\_\_\_\_
16. town name write county or of the in the which you line this live on \_\_\_\_\_
17. most school-subject write dislike the name of you here the \_\_\_\_\_
18. connect word first last and the line a with in this sentence
19. figure 5 put a in this sentence under the letters contains five the word that
20. do sentence this in just did what in number 2 you
21. draw line a longest through in this sentence preposition the
22. put the the a beginning at and at this cross close of sentence
23. circle the number around put the this sentence of a beginning at
24. sentence the line a middle this vertical in divide by
25. two under draw word the lines last this in sentence
26. number of place the this sentence at its close
27. seven multiply line on and put by eight answer the this \_\_\_\_\_
28. that in underline "u" this word the contains a sentence
29. straightened out a get you put when this sentence cross the at of end it
30. and the words sentence in this put count number the close at on the line the \_\_\_\_\_
31. this on the years age write your line in birthday nearest at \_\_\_\_\_
32. this put sentence multiply and two the number of by answer your here \_\_\_\_\_
33. it occurring the in the letter a twice put "c" has above word that cross
34. put the at close this the of containing letters on line the of sentence number words two \_\_\_\_\_
35. sentence of this line close of the on write the year number in a at the months \_\_\_\_\_
36. above and line a word draw in the last below this sentence
37. letters of containing sentence this in word the around circle a draw the number largest
38. write the alphabet letter at in second the close of this the after "M" sentence
39. line write close on the at the of sentence word the missing \_\_\_\_\_
40. order sentence the write this with rearranged right words the in



## TEST II

The word you underline must be a NOUN that may be an EFFECT of the first word.

- |  |     |
|--|-----|
| 1. FALSEHOOD (lie, truth, child, punishment)                       | 1.  |
| 2. THAW (ice, melt, slush, sun)                                    | 2.  |
| 3. PROPOSAL (suggestion, acceptance, marry, love)                  | 3.  |
| 4. FALL (injury, tumble, descent, weight)                          | 4.  |
| 5. NOURISHMENT (food, milk, nutriment, strength)                   | 5.  |
| 6. QUARREL (disagreeable, family, progress, trouble)               | 6.  |
| 7. ABILITY (capable, success, youth, able)                         | 7.  |
| 8. IDLENESS (poverty, indolence, lazy, tired)                      | 8.  |
| 9. TREASON (death, celibacy, Burr, treacherous)                    | 9.  |
| 10. IGNORANCE (stupid, crime, civilization, prodigy)               | 10. |
| 11. EDUCATION (high-school, books, knowledge, study)               | 11. |
| 12. STORM (wet, ship, devastation, weather)                        | 12. |
| 13. ERROR (mistake, fatuity, confusion, brevity)                   | 13. |
| 14. FERTILITY (soil, growth, fertilizer, sterility)                | 14. |
| 15. DROUGHT (crops, dry, rain, poverty)                            | 15. |
| 16. SCIENCE (chemistry, stratagem, necromancy, progress)           | 16. |
| 17. FAMINE (hunger, plenty, starve, carnage)                       | 17. |
| 18. TYRANNY (revolution, adulation, cruel, king)                   | 18. |
| 19. EVIDENCE (guilty, court, conviction, witness)                  | 19. |
| 20. DILIGENCE (benevolence, prosperity, penury, somnolency)        | 20. |
| 21. VICE (wicked, unlawful, ignorance, woe)                        | 21. |
| 22. BACILLUS (disease, bacterium, crime, spoilation)               | 22. |
| 23. GENTILITY (esteem, austerity, subtlety, artifice)              | 23. |
| 24. HONESTY (policy, reward, integrity, aversion)                  | 24. |
| 25. JEALOUSY (caprice, animosity, bigamy, marriage)                | 25. |
| 26. CELERITY (scrutiny, celebrity, achievement, infamy)            | 26. |
| 27. DISOBEDIENCE (candor, admonition, calumny, perspicuity)        | 27. |
| 28. PRACTICE (improve, piano, facility, careful)                   | 28. |
| 29. HYPOCRISY (monotony, felony, distrust, sophistry)              | 29. |
| 30. IMPETUOSITY (seduction, sedulity, error, secularity)           | 30. |
| 31. GUILT (condemned, crooked, crime, censure)                     | 31. |
| 32. INCENDIARISM (armistice, incipience, depletion, conflagration) | 32. |
| 33. ARROGANCE (antipathy, ignorance, ferocity, felicity)           | 33. |
| 34. OBESITY (inconvenience, intrepidity, obligation, intrigue)     | 34. |
| 35. CATHOLICITY (religion, harmony, obduracy, stigma)              | 35. |
| 36. INEPTITUDE (senility, iniquity, simulation, elimination)       | 36. |
| 37. RECALCITRANCE (speciosity, surfeit, chastisement, garrulity)   | 37. |
| 38. ENERVATION (fidelity, failure, assiduity, fervency)            | 38. |
| 39. ESPIONAGE (incarceration, incineration, futility, fragrance)   | 39. |
| 40. TEMERITY (diffidence, commiseration, cupidity, reprehension)   | 40. |

Turn your paper end-for-end.



### TEST III

This sample is underlined correctly.

HEAD: HAT:: (sew, cloth, finger, hand): THIMBLE

- |     |  |     |
|-----|--|-----|
| 1.  | FLYING: BIRDS:: SWIMMING: (water, fish, sport, tank)                     | 1.  |
| 2.  | PRINCE: PRINCESS:: (king, president, country, man): QUEEN                | 2.  |
| 3.  | MOON: SUN:: (night, shine, heat, man): DAY                               | 3.  |
| 4.  | SEEING: (things, mouth, eyes, far):: HEARING: EARS                       | 4.  |
| 5.  | (snow, cold, ice, skating): WINTER:: BATHING: SUMMER                     | 5.  |
| 6.  | BOY: GIRL:: (dress, hat, he, little): SHE                                | 6.  |
| 7.  | TABLE: WOOD:: WINDOW-PANE: (house, glass, room, iron)                    | 7.  |
| 8.  | (Japanese, Tokio, island, Asia): JAPAN:: CHINESE: CHINA                  | 8.  |
| 9.  | AX: (handle, sharp, cut, wood):: SCISSORS: CLOTH                         | 9.  |
| 10. | (John, James, boy, girl): JIMMIE:: WILLIAM: WILLIE                       | 10. |
| 11. | (foot, arm, toe, finger): LEG:: HAND: ARM                                | 11. |
| 12. | FIRST: LAST:: BEGINNING: (commence, end, one, first)                     | 12. |
| 13. | BOOT: (strap, heel, leather, foot):: GLOVE: HAND                         | 13. |
| 14. | SKIRTS: GIRLS:: TROUSERS: (pants, boys, shoes, long)                     | 14. |
| 15. | MOWING: HAY:: REAPING: (grain, horse, machine, cut)                      | 15. |
| 16. | BANISH: SPANISH:: DANGLE: (German, spangle, Spain, language)             | 16. |
| 17. | TEARS: SORROW:: (weep, fun, cry, laughter): JOY                          | 17. |
| 18. | (eat, food, tea, taste): HUNGER:: WATER: THIRST                          | 18. |
| 19. | SAILOR :NAVY:: (war, officer, land, soldier): ARMY                       | 19. |
| 20. | BREAD: (loaf, white, flour, butter):: CANDY: SUGAR                       | 20. |
| 21. | (trunk, circus, large, ride): ELEPHANT:: HAND: MAN                       | 21. |
| 22. | GOOD: BAD:: (high, long, boy, thin): SHORT                               | 22. |
| 23. | SMALL: (little, child, large, short):: BOY: MAN                          | 23. |
| 24. | BALLOONS: (float, air, explode, rubber):: CORKS: WATER                   | 24. |
| 25. | KING: EMPEROR:: KINGDOM: (province, country, ruler, empire)              | 25. |
| 26. | (liquid, hard, iron, boat): SOLID:: WATER: ICE                           | 26. |
| 27. | (light, burn, electric, oil): LAMP:: TALLOW: CANDLE                      | 27. |
| 28. | D: (alphabet, letter, F, C):: I: K                                       | 28. |
| 29. | (midnight, day, dinner, sun): NOON:: NIGHT: DAY                          | 29. |
| 30. | (plenty, abundant, wealth, money): ABUNDANCE:: WISE: WISDOM              | 30. |
| 31. | FOREMAN: (boss, employer, workman, work):: CAPTAIN: PRIVATE              | 31. |
| 32. | BICYCLE: TRICYCLE:: TWO WHEELS: (wagon, motorcycle, three-wheels, cart)  | 32. |
| 33. | RIVERS: (boats, lakes, ocean, Amazon):: FRESH WATER: SALT WATER          | 33. |
| 34. | TODAY: TOMORROW:: (day-before-yesterday, tonight, yesterday, sun): TODAY | 34. |
| 35. | INFANTRY: CAVALRY:: WALKING: (running, horses, army, riding)             | 35. |
| 36. | SIX: NINE:: (eight, dozen, ten, fifteen): TWELVE                         | 36. |
| 37. | FLOAT: SINK:: CORK: (float, light, heavy, lead)                          | 37. |
| 38. | YARDSTICK: SPACE:: (minutes, hour, clock, measure): TIME                 | 38. |
| 39. | GULF: OCEAN:: (cape, bay, land, lake): CONTINENT                         | 39. |
| 40. | MOON: (light, night, star, earth):: EARTH: SUN                           | 40. |

	R	W	SCORE
Vocabulary			
Sentences			
Paragraphs			
TOTAL			

# Haggerty Reading Examination

## SIGMA 3

FOR GRADES 5-12

Arranged and standardized by M. E. HAGGERTY and LAURA C. HAGGERTY, University of Minnesota

My name is..... I am a.....  
First name Last name Write boy or girl

This is the.....day of.....19..... I am.....years old.

My next birthday will be.....19..... I am in.....half of Grade.....

The name of my school is..... The name of my city (county) is.....

The name of my state is.....

### Directions for Test 1

- On the following pages are some words — each word is written like the word *red* in the next line, with some other words and phrases in parentheses.  
*red* (apple, color, to shine, green)
- One of the words in the parentheses is a definition of the first word. You are to draw a line under the word or phrase which is the best definition, like this:  
*red* (apple, color, to shine, green)
- Here are some words for practice. Look at the first word and then look at the words and phrases in the parentheses and draw a line under the word or phrase which is the best definition of the first word. The first one is marked as it should be. Mark all the others.
  - orange (round, a fruit, sour, to eat)
  - coffee (black, liquid, drink, bitter)
  - soldier (man, man who fights, animal, gun)
  - pupil (school child, boy, school, teacher)
  - juggler (engineer, plowman, butcher, one who throws balls)
- Now turn to page 2 and mark all the definitions correctly. Mark the definitions in order.

# TEST 1

## VOCABULARY

Draw a line under the best definition for each word.

1	minister (servant, preacher, agent, to assist).....	1
2	student (one who seeks knowledge, teacher, paper, book).....	2
3	pardon (forgive, hinder, condemn, smile at).....	3
4	island (section, part of the ocean, land surrounded by water, peak).....	4
5	float (sail, sink, to fly, to stay on top of the water).....	5
6	cataract (rushing, a waterfall, a basin, a spray).....	6
7	aisles (houses, passages, churches, length).....	7
8	parliament (a conference, to propose, to palliate, foreigners).....	8
9	perilous (precious, dangerous, to spy, to invest).....	9
10	fleet (navy, engineer, group of vessels, effective).....	10
11	armor (metal, protective covering, soldiers, knights).....	11
12	wharf (person who has no parents, landing place for ships, edge, animal).....	12
13	brandy (wine, liquid, liquor, medicine).....	13
14	noose (midday, a loop with knot, a gallows, a moose).....	14
15	bristling (stubby, standing stiff, long, thin).....	15
16	descend (to move downwards, to fall, to speed, to climb).....	16
17	retort (a charge, to speak back, civility, to control).....	17
18	calm (quiet, sleepy, night, restful).....	18
19	cupola (church, high, schoolhouse, rounded dome).....	19
20	swain (a prince, a country lover, swing, a student).....	20
21	coast (shore line, outside, near the sea, boundary).....	21
22	value (prize, worth, cost, amount).....	22
23	deceitful (trustworthy, misleading, sincere, careful).....	23
24	lapwing (flapping, crest, a bird, to waver).....	24
25	dubious (certain, unsettled, determined, in danger).....	25
26	pallid (morose, darkness, pale, placid).....	26
27	dwindled (swindled, decreased, to consume, dwarflike).....	27
28	derision (amazement, mockery, decision, to succumb).....	28
29	navies (commerce, navigation, fleets of warships, canoes).....	29
30	crevice (tiny, a fissure, rocky, mountains).....	30
31	ardent (praise, passionate, relative, to wed).....	31
32	scrupulous (populous, scrappy, conscientious, sacred).....	32
33	steel (metal, mineral, hard substance, a kind of iron).....	33
34	revive (to remember, to call back, to have life again, to return).....	34
35	zinc (stove, to wash dishes in, soft lead, mineral).....	35

Go to top of next page.



36	hypothesis (a supposition, relation, provision, reflex).....	36
37	apathy (pathetic, cold, indifference, dislike).....	37
38	appreciate (lovely, to esteem duly, likable, to listen to).....	38
39	epaulets (dresses, boy's garments, shoulder ornaments, apparel).....	39
40	chalice (bowl, dew, a flower cup, vase).....	40
41	blithe (springlike, juicy, joyous, full of melody).....	41
42	accuracy (positive, necessary, mistakes, exactness).....	42
43	extricate (liberal, entangle, set free, to fasten to).....	43
44	primitive (forests, first, to postpone, to abolish).....	44
45	sagacious (lacking in judgment, improved, wise, a remark).....	45
46	phantom (a delight, like a phaeton, delusion, paltry).....	46
47	facetious (friendly, morose, witty, stupid).....	47
48	avidity (to vow, harshness, eagerness, to avoid).....	48
49	dispel (to expend, to distrust, to scatter, to relieve).....	49
50	delectable (eatable, expensive, delicious, fancy).....	50

Score.....

*Directions for Test 2*

1. In the following pages are some sentences. Each sentence asks a question which can be answered by YES or NO. The sentences are written like this :

Are all men soldiers ?.....YES NO

2. You are to draw a line under the right answer, like this :

Are all men soldiers ?.....YES NO  
 Are some men soldiers ?.....YES NO

3. Mark the right answer to these sentences by drawing a line under the YES or the NO. Do not mark both YES and NO. Mark only the right answer.

- a. Is snow white ?.....YES NO
- b. Are elephants plants ?.....YES NO
- c. Can a pupil respond to a question ?.....YES NO
- d. Are multitudinous defects desirable ?.....YES NO
- e. May a hamlet be located in a province ?.....YES NO

4. Now turn to page 4 and mark all the sentences correctly. Mark the sentences in order.



TEST 2

SENTENCE READING

Draw a line under the right answer to each question.

- 
- |     |  |     |    |
|-----|--|-----|----|
| 1.  | Can good children make promises ?.....                           | YES | NO |
| 2.  | Do all people rent houses ?.....                                 | YES | NO |
| 3.  | Do laborers ever become exhausted ?.....                         | YES | NO |
| 4.  | Are compasses used by mariners ?.....                            | YES | NO |
| 5.  | Can children act in a serviceable manner ?.....                  | YES | NO |
| 6.  | Do caravans always move with great speed ?.....                  | YES | NO |
| 7.  | Is day always preceded by night ?.....                           | YES | NO |
| 8.  | Can a boy be absorbed in a performance ?.....                    | YES | NO |
| 9.  | Do vicious men plan revenge ?.....                               | YES | NO |
| 10. | Are all experiences humiliating ?.....                           | YES | NO |
| 11. | Are all sources of information reliable ?.....                   | YES | NO |
| 12. | Do some people have bright prospects ?.....                      | YES | NO |
| 13. | Do histories consist chiefly of prophecies ?.....                | YES | NO |
| 14. | Are brazen persons the best companions ?.....                    | YES | NO |
| 15. | Can a man possess both valor and vigor ?.....                    | YES | NO |
| 16. | Are continuous sounds always harmonious ?.....                   | YES | NO |
| 17. | Are armed cruisers vessels of war ?.....                         | YES | NO |
| 18. | Is a battery a place where transports are made ?.....            | YES | NO |
| 19. | Are venerable people sometimes invincible ?.....                 | YES | NO |
| 20. | Do lunatics render great service to their country ?.....         | YES | NO |
| 21. | Are inquiring friends sometimes courteous ?.....                 | YES | NO |
| 22. | Should evildoers make amends ?.....                              | YES | NO |
| 23. | Do autumnal showers occur in the winter ?.....                   | YES | NO |
| 24. | Can prominent people administer relief ?.....                    | YES | NO |
| 25. | Are devices used in measuring time ?.....                        | YES | NO |
| 26. | Do ravenous monsters respond to persuasion ?.....                | YES | NO |
| 27. | Are arsenals primarily for civic meetings ?.....                 | YES | NO |
| 28. | Are stalactites parts of dwellings ?.....                        | YES | NO |
| 29. | Are the prospects of good crops always remote ?.....             | YES | NO |
| 30. | Do financial transactions involve monetary considerations ?..... | YES | NO |
| 31. | Are the adherents of law and order sometimes orthodox ?.....     | YES | NO |
| 32. | May popular distrust be evident to a sovereign ?.....            | YES | NO |
| 33. | Can a challenge to a duel be accepted ?.....                     | YES | NO |
| 34. | Is it mutinous to give succor to the helpless ?.....             | YES | NO |
| 35. | Can the confidence of a discouraged man be restored ?.....       | YES | NO |
| 36. | Are insidious people usually deceptive ?.....                    | YES | NO |
| 37. | May candidates live in hamlets ?.....                            | YES | NO |
| 38. | Does fidelity denote faithfulness ?.....                         | YES | NO |
| 39. | Do conciliating parties have pacific interests ?.....            | YES | NO |
| 40. | Are assiduity and frugality undesirable characteristics ?.....   | YES | NO |

Score.....

### Directions for Test 3

Read these directions in order and do what they say to do.

1. The following pages contain a series of paragraphs with directions. You are to read the paragraphs and do what the directions tell you to do.

2. There are two kinds of directions. The first direction is to "underline." Where this direction occurs, you are to draw a line under the correct word or phrase, as in this sample:

He was an old-fashioned scholar who made the boys learn the Latin grammar by heart, and who flogged them when they failed.

1. Underline the correct word to complete this sentence:

The "old-fashioned scholar" was  
young  
jolly  
severe  
ignorant

"Severe" is the correct word, and so you should draw a line under the word "severe." Do it before you read the next line.

3. The second direction is to "check." Where this direction occurs, you are to put a check like this  $\checkmark$  in front of the correct statement, as in this sample:

2. Check the true sentence:

- a. — The scholar was a boy.
- b. — The scholar taught history.
- c. — The scholar taught Latin.

4. The first and second statements are clearly false. The third one is true. So a check mark should be put in front of the third sentence. Put it on the line between the letter *c* and the first word of the sentence. Do it.

5. On the following pages read each paragraph as you come to it. Then read directions which follow the paragraph and do what the directions tell you to do. The correct answers to all questions are to be found by reading the paragraphs. Read the paragraphs as often as you need to.

6. Now turn the page. You will have about twenty minutes to work. Do all you can in that time, but work carefully. Make the correct mark for each direction.

## TEST 3

### PARAGRAPH READING

#### I

A carriage, drawn by four horses, dashed 'round the turn of the road. Within it, thrust partly out of the window, appeared the face of a little old man, with a skin as yellow as gold. He had a low forehead, small, sharp eyes puckered about with innumerable wrinkles, and very thin lips, which he made still thinner by pressing them forcibly together.

1. Underline the correct phrase :

two mules  
a fancy team  
four horses  
a gray mare

The carriage was drawn by

2. Check the sentence which is true :

- a. — The carriage was slowly drawn around the turn.
- b. — The carriage was turned over as it rounded the turn.
- c. — The carriage was hurried violently around the turn.

3. Check the false statements :

- a. — The man was large and bony.
- b. — The man was middle-aged.
- c. — The man was little and old.

#### II

There was the greatest interest throughout the ship, and not an eye was closed that night. As the evening advanced, Columbus took a position in the cabin of his vessel and kept up a continuous watch. About two o'clock he thought he beheld a light, glimmering at a great distance. Fearing his eager eyes might deceive him, he called a gentleman of the King's bedchamber, to inquire whether he saw such a light, and he admitted that he saw it.

1. Underline the word that shows what time

it was:      midday  
                 forenoon  
                 night  
                 afternoon

2. Underline the correct phrase :

riding on a train  
walking on land  
living in a house  
traveling in a boat

Columbus was

3. Check the statement which is true :

- a. — Columbus called the King.
- b. — The gentleman saw a light.
- c. — All were asleep except Columbus.

4. Check one statement which is not true :

- a. — Columbus watched continuously.
- b. — Columbus first saw the light.
- c. — No one except Columbus was interested.
- d. — Columbus saw the light after midnight.

#### III

In the anteroom he found his attendant Anwold, who, taking the torch from the hand of the waiting-maid, conducted him with more haste than ceremony to an exterior and ignoble part of the building, where a number of small apartments, or rather cells, served for sleeping places to the lower order of domestics and to strangers of mean degree.

1. Check the true sentences :

- a. — Anwold was in the basement.
- b. — Anwold was in a waiting-room.
- c. — Anwold was not to be found.

2. Check the true statements :

- a. — The attendant took the light from the maid.
- b. — The attendant led the way.
- c. — Anwold held high his torch.


3. Underline the phrase making this sentence true :

the downstairs  
apartments  
the worst part  
of the building  
the attic

The poorest servants had sleeping quarters in:

4. Underline the words which describe the strangers :

fashionable  
guests of high repute  
of low manner  
poorly clad

 Go to top of next page.



## IV

The great error in Rip's composition was an insuperable aversion to all kinds of profitable labor. It could not be for the want of assiduity or perseverance; for he would sit on a wet rock, with a rod as long and heavy as a Tartar's lance, and fish all day without a murmur, even though he should not be encouraged by a single nibble. He would carry a fowling-piece on his shoulder for hours together, trudging through woods and swamps, and up hill and down dale, to shoot a few squirrels or wild pigeons. He would never refuse to assist a neighbor, even in the roughest toil, and was a foremost man at all country frolics for husking Indian corn, or building stone-fences; the women of the village, too, used to employ him to run their errands, and to do such little odd jobs as their less obliging husbands would not do for them. In a word, Rip was ready to attend to anybody's business but his own; but as to doing family duty, and keeping his farm in order, he found it impossible.

1. Underline the one phrase which tells what Rip did not like to do:

run errands  
work at home  
hunt  
fish

2. Check the one of the following sentences which is true:

- a. — Rip never showed perseverance.  
b. — Rip's neighbors disliked him.  
c. — Rip was an obliging neighbor.

3. Check the one of the following sentences which is true:

- a. — Rip owned a well-kept farm.  
b. — Rip disliked profitable labor.  
c. — Rip always avoided rough work.

4. Underline the words which describe Rip's character:

careless  
good-natured  
thrifty

## V

Yet, unless I greatly deceive myself, the general effect of this chequered narrative will be to excite thankfulness in all religious minds, and hope in the breasts of all patriots. For the history of our country during the last hundred and sixty years is eminently the history of physical, of moral, and of intellectual improvement. Those who compare the age on which their lot is fallen with a golden age which exists only in their imagination may talk of degeneracy and decay; but no man who is correctly informed as to the past will be disposed to take a morose or desponding view of the present.

1. Underline the phrase necessary to complete this sentence:

The author believes \_\_\_\_\_ discourage the  
his narrative will: \_\_\_\_\_ people  
inspire hope in the  
people  
leave the people  
indifferent

2. Check all the true statements among the following:


- a. — By "chequered narrative" the author refers to a historical narrative.  
b. — The author believes his country has improved in the past century.  
c. — The author believes all persons will accept his conclusions.

3. Check all the true statements among the following:

- a. — The author believes there has been degeneracy and decay in his country.  
b. — Well-informed persons will take a hopeful view of the present.  
c. — The "golden age" exists in imaginative minds.

4. Check the true statement:

- a. — The country had improved physically but not morally.  
b. — Correctly informed persons will take a morose view of the present.  
c. — The history of "our country" is encouraging to religious minds.

 Go to top of next page.

The champions were therefore prohibited to thrust with the sword, and were confined to striking. A knight, it was announced, might use a mace or battle-ax at pleasure, but the dagger was a prohibited weapon. A knight unhorsed might renew the fight on foot with any other on the opposite side in the same predicament; but mounted horsemen were in that case forbidden to assail him. When any knight could force his antagonist to the extremity of the lists, so as to touch the palisade with his person or arms, such opponent was obliged to yield himself vanquished, and his armor and horse were placed at the disposal of the conqueror. A knight thus overcome was not permitted to take further share in the combat. If any combatant was struck down, and unable to recover his feet, his squire or page might enter the lists and drag his master out of the press; but in that case the knight was adjudged vanquished, and his arms and horse declared forfeited.

1. Underline the word which names the weapon that could not be used :
  - sword
  - mace
  - dagger
  - battle-ax
2. Check the one of these statements which is false :
  - a. — A knight could fight on foot.
  - b. — One knight could not injure another knight.
  - c. — Mounted horsemen could fight only mounted horsemen.
3. Check the false statements :
  - a. — A knight could be vanquished without being killed.
  - b. — A knight's page could fight.
  - c. — A vanquished knight retained his horse.
4. Check the true statements :
  - a. — Champions were prohibited to use the sword.
  - b. — An unhorsed knight could renew the fight.
  - c. — An opponent was vanquished if his arms touched the palisade.
  - d. — A knight dragged from the lists by his page was beaten.

The speech of Judge Hoar was perfect, and to that handful of people, who heartily applauded it. When a good man rises in the cold and malicious assembly, you think, "Well, it would be more prudent to be silent. Why not rest on a good past? Nobody doubts your talent and power; and, for the present business, we know all about it, and are tired of being pushed into patriotism by people who stay at home." But he, taking no counsel of past things, but only of the inspiration of his today's feelings, surprises them with his tidings, his better knowledge, his larger view, his steady gaze at the new and future event, whereof they had not thought, and they are interested like so many children, and carried off out of all recollection of their malignant nonsense, and he gains his victory by prophecy, where they expected repetition. He knew beforehand that they were looking behind, and that he was looking ahead, and therefore it was wise to speak. What a godsend are these people to a town! and the Judge, what a faculty! — he is put together like a Waltham watch, or like a locomotive just finished from the Tredegar Works.

1. Check all true statements, if any :
  - a. — The audience was inclined to look backward.
  - b. — At the end of the speech the audience was hostile.
  - c. — The speaker had a forward-looking mind.
2. Check all false statements, if any :
  - a. — The author admires Judge Hoar.
  - b. — The speaker surprised his audience.
  - c. — The audience changed its attitude.
  - d. — The speech was a failure.
3. Underline the words which best describe Judge Hoar :
  - talented
  - sagacious
  - retrospective
  - prophetic
4. Check the false statements :
  - a. — The Judge talked about an old subject in a new way.
  - b. — The audience was wiser than the Judge.
  - c. — The Judge was a burden to his community.

# Thorndike—McCall Reading Scale

FOR THE UNDERSTANDING OF SENTENCES

FORM 1

Write your name here.....  
First name Last name

School.....Grade.....Date.....

How old are you?.....When is your birthday?.....

This is to be a reading contest. You will read paragraphs like this one, and answer questions like those you see below. Answer every question you can. If you come to a question you can't answer skip it and go on. Go back to it later. If you finish before you are told to stop, go back and make sure you have made no mistakes. When possible the answers to the questions must be found in the paragraph. You may read the paragraph as many times as you need to. You will have enough time but don't waste it. Play fair. Don't look at anyone else's paper. You will be told your score later.

- I. Does it say you are to do your best?.....
- II. Does it say you may read the paragraph as often as you need to?.....
- III. Are you to look at anyone else's paper?.....
- IV. When possible, where must you find the answers?  
.....

As soon as you finish one page do the next. You are to start with the first page. Open paper! Begin!

---

*To the examiner:* Distribute test booklets. Read the above paragraph aloud while pupils read silently. Read the first question aloud. Have it answered orally and then in writing by pupils. Treat the other three questions similarly. Start pupils. Stop pupils thirty minutes after saying *Begin!* Give no further help.

---

No. of questions correct.....Scale score.....

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Teachers College, Columbia University  
New York City  
Copyright 1920 by Teachers College



Read this and then write the answers. Read it again if you need to.

Both before and after Christmas, Bob Adams worked harder than he did in the spring, summer or fall. Only very rarely did he reach home before eleven o'clock; and on every morning except Sunday he was up at six, dressed and done with breakfast by quarter of seven, left the house at ten minutes of seven and reached Mr. Clark's store at ten minutes of eight. In spite of the long hours and hard work, he was happy because his pay had been raised twice.

- 14. What was the cause of Bob's pleasant feeling?.....  
.....
- 15. What other person besides Bob is mentioned in the paragraph?.....
- 16. How often did Bob reach home before eleven o'clock?.....

Read this and then write the answers. Read it again if you need to.

Nell's mother went to the store on Water Street to buy ten pounds of sugar, a dozen eggs and a bag of salt. She paid a dollar in all. Nell and Joe went with her. On the way home on Pine Street, they saw a fire-engine with three horses.

- 17. Who paid for the sugar?.....
- 18. Where did Joe go?.....
- 19. Whose mother went shopping?.....

Do the next page.

Read this and then write the answers. Read it again if you need to.

There was once a merchant who was very, very rich. He had six children, three boys and three girls. His daughters were all beautiful, but the youngest one was the most beautiful of all. From the time she was a small child she had been spoken of as "Beauty." As she grew older this caused a great deal of jealousy on the part of her sisters. But the young girl was not only more beautiful than they were; she was also kinder and more lovable.

- 20. Were Beauty's sisters both beautiful?.....
- 21. What increased as Beauty's age increased?.....
- 22. Does the story say that there was a great deal of jealousy on the part of Beauty?.....

Read this and then write the answers. Read it again if you need to.

According to the Kansas City Star, the wheat farmers of Kansas are too prosperous to trouble themselves about careful harvesting. They do not cut the fields clean. A gleaner 80 years old, after the wheat harvest in Pawnee County last year, went over the wheat-fields with a wagon, a rake, a brush, and a shovel and swept up the wheat left on the ground by the threshers. He gathered nine hundred bushels in forty days, and sold it at a dollar a bushel.

- 23. Might a farmer be prosperous and still have wheat swept up after the threshers?.....
- 24. Is this story about the farmers of Arkansas?.....
- 25. Might a farmer be prosperous and still waste a hundred bushels of wheat?.....

Do the next page.

Read this and then write the answers. Read it again if you need to.

For nearly thirty years "Lewis Carroll" was a lecturer on mathematics at Oxford. He studied divinity and occasionally preached, but his shy and retiring nature, together with a tendency to stammer, kept him from the regular ministry. He gave many lectures to audiences made up mainly of children. These lectures were of various sorts, but consisted principally of narratives from his books illustrated by lantern pictures. He invented a number of mathematical games.

- 26. Write the word "book" as it would sound when spoken by a person who stammers.....
- 27. What study is mentioned in the paragraph which is a preparation for the regular ministry?.....
- 28. Write one word which could have been used in the last line of the paragraph instead of "a number of.".....

Do the next page.

Read this and then write the answers. Read it again if you need to.

There are two methods by which one might make himself acquainted with anything made up of related parts; as, for example, a watch. He might take the watch apart, piece by piece, and while doing so study the details of its structure and the relation of its parts one to another. An operation like this, which begins with the whole and descends to the parts which compose the whole, is called analysis. The word means a taking apart or separating. Or he might begin with the parts, and, after some experiment and study, get an excellent knowledge of the watch by putting its parts properly together. An operation of this kind is called synthesis.

- 29. Name in order the method which (a) is easiest, (b) requires most originality.....
- 30. Experimentation is more essential with which process?.....
- 31. Copy the words which tell what a mechanism is.  
.....  
.....

Do the next page.



Read this and then write the answers. Read it again if you need to.

COLERIDGE

I see thee pine like her in golden story  
 Who, in her prison, woke and saw, one day,  
 The gates thrown open—saw the sunbeams play  
 With only a web 'tween her and summer's glory;  
 Who, when the web—so frail, so transitory,  
 It broke before her breath—had fallen away,  
 Saw other webs and others rise for aye,  
 Which kept her prisoned till her hair was hoary.  
 Those songs half-sung that yet were all divine—  
 That woke Romance, the queen, to reign afresh—  
 Had been but preludes from that lyre of thine,  
 Could thy rare spirit's wings have pierced the mesh  
 Spun by the wizard who compels the flesh,  
 But lets the poet see how heav'n can shine.

- 32. What appeared after a similar thing disappeared?  
 .....
- 33. What word not in the last three lines although in  
 the last six lines, indicates a failure to attain  
 perfect poetic truth?.....
- 34. State in ordinary English just why the songs  
 lacked perfection?.....  
 .....
- 35. Whose songs were half-sung?.....

Johnson's Non Verbal.







6



7



8



9



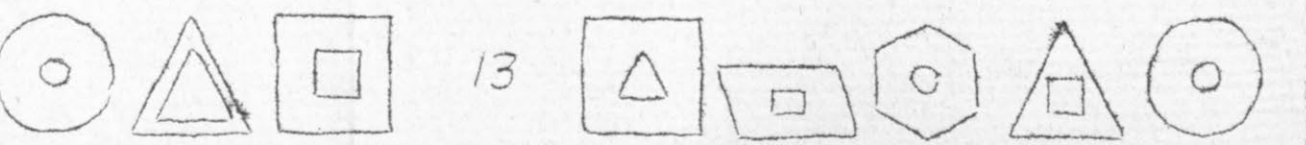
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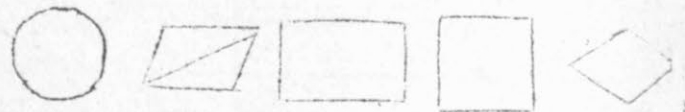
A



B



C



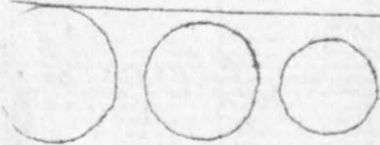
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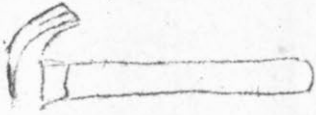
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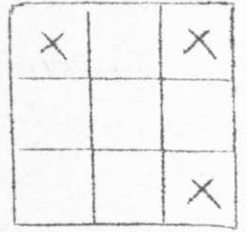
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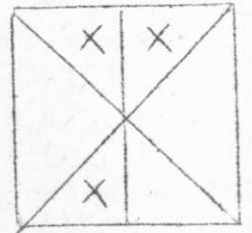
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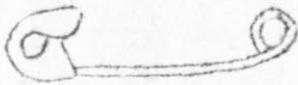
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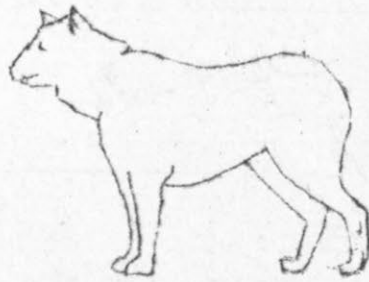
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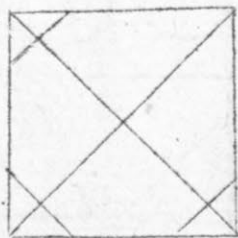
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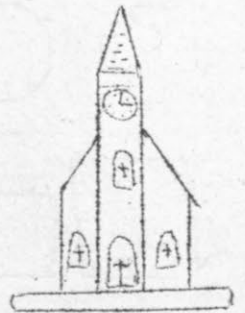
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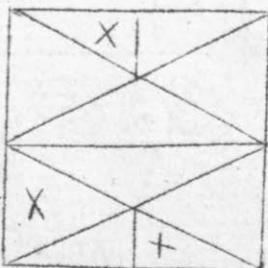
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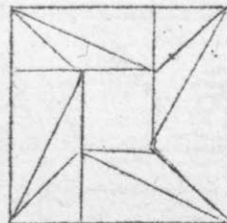
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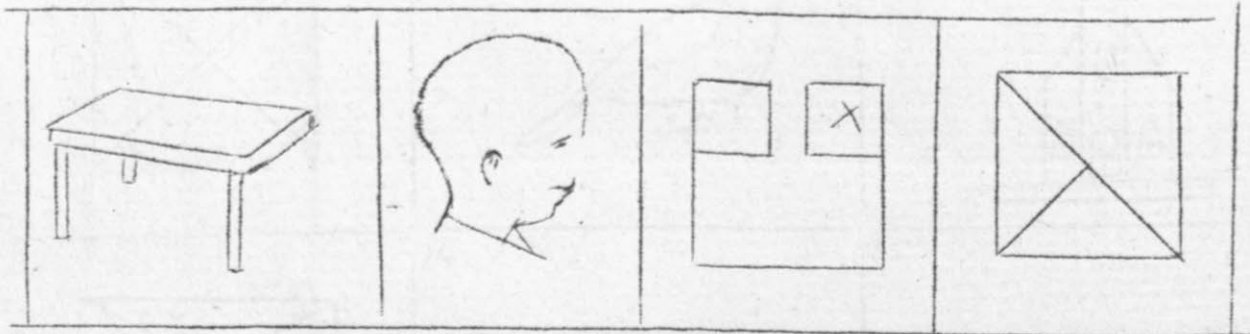
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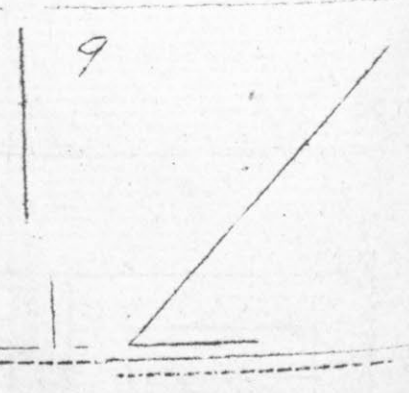
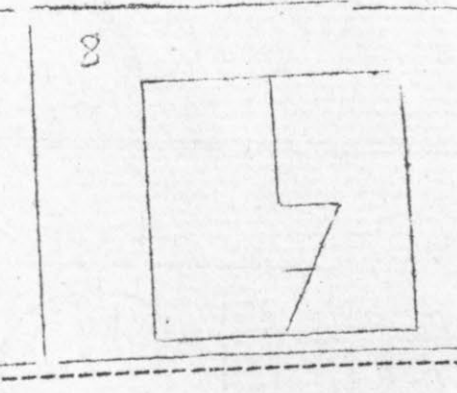
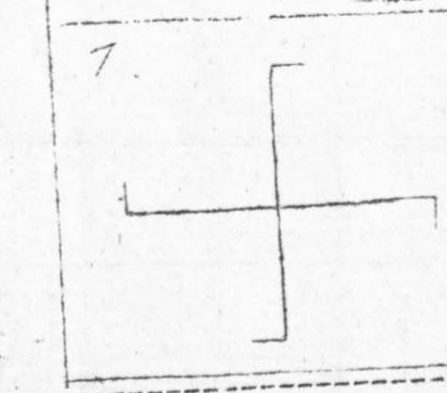
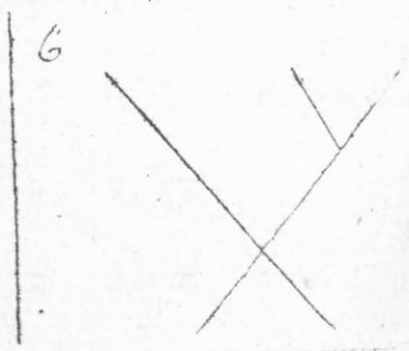
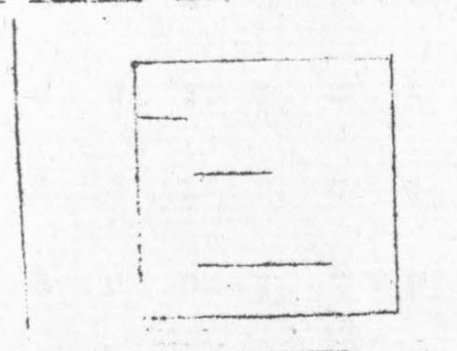
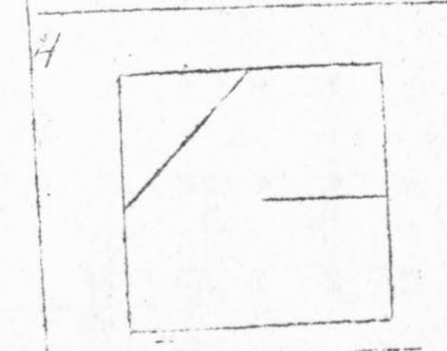
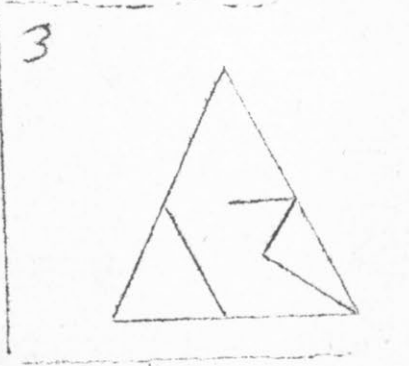
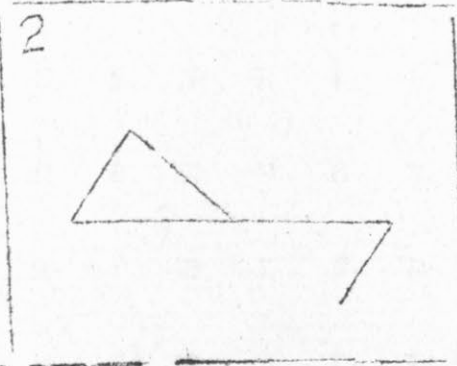
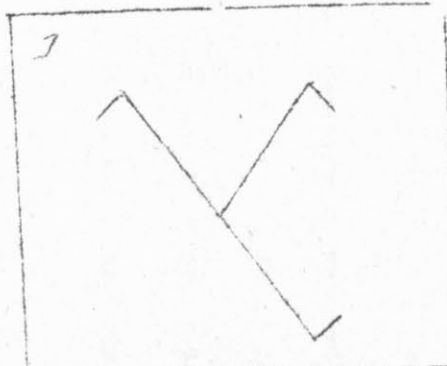
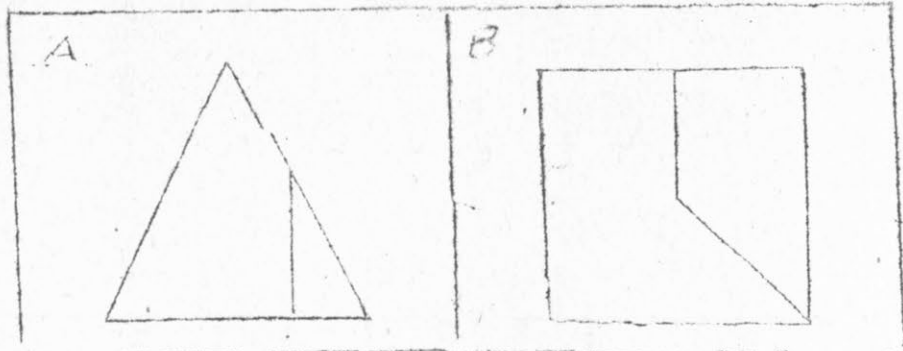




KEY: W P K B Y R G Z

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2.	K	W	Z	G	R	B	P	Y	R	K	B	P	Z	G	W
3.	Y	G	P	W	Z	R	B	K	P	G	K	B	W	Z	Y
4.	R	Y	W	K	Z	G	P	B	K	W	R	P	G	Y	B
5.	Z	P	W	G	K	R	Y	R	B	Z	B	W	Y	K	G
6.	P	B	Z	R	K	G	W	Y	K	W	R	Z	G	Y	P
7.	B	W	P	Y	R	Z	G	K	B	G	K	R	P	W	Z
8.	K	W	Y	Z	P	R	B	G	K	Y	P	Z	B	G	R

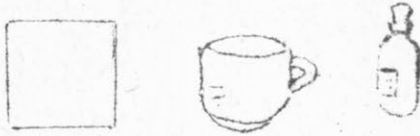




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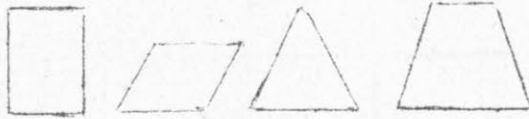
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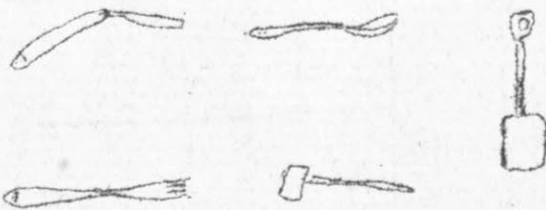
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2 4 7 2 5

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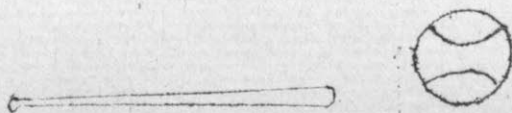
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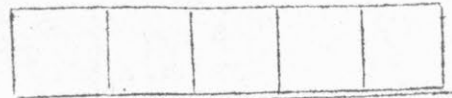
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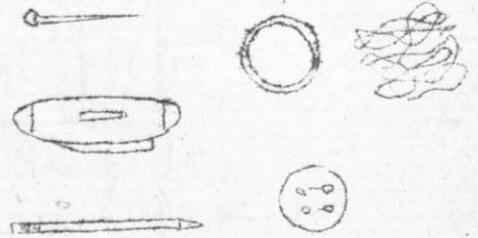
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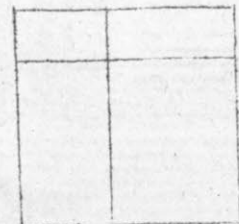
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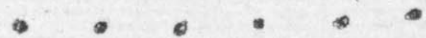
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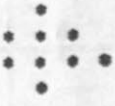
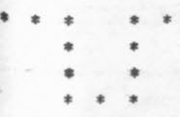









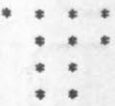
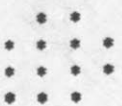


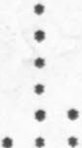
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# Mental Survey Tests—Primer Scale

Schedule 7

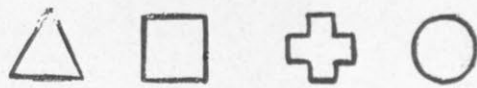
Name \_\_\_\_\_ Grade \_\_\_\_\_ Age \_\_\_\_\_

## I. DOT PATTERN TEST.

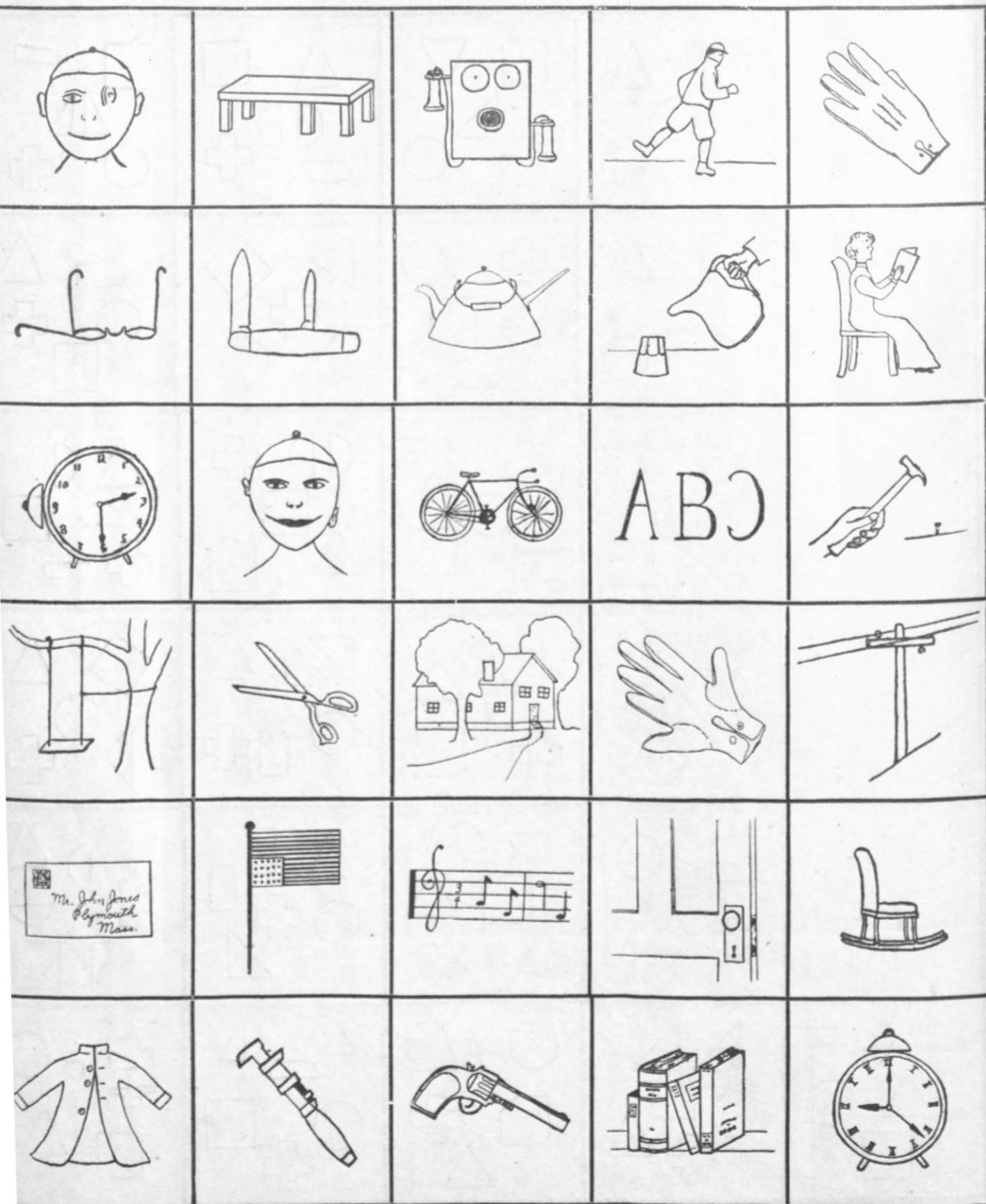
II. CLASSIFICATION TEST


III. FORM BOARD TEST






V. ABSURDITIES



# Achievement Examination in Reading

SIGMA 1, FOR GRADES 1-3

Arranged and standardized by M. E. HAGGERTY, University of Minnesota, and MARGARET E. NOONAN, Public Schools of St. Louis  
Used in the Virginia School Survey

My name is ..... I am a .....  
First name Last name Write boy or girl

This is the ..... day of ..... 19..... I am ..... years old.

My next birthday will be ..... 19..... I am in ..... half of Grade .....

The name of my school is ..... The name of my city (county) is .....

The name of my state is .....

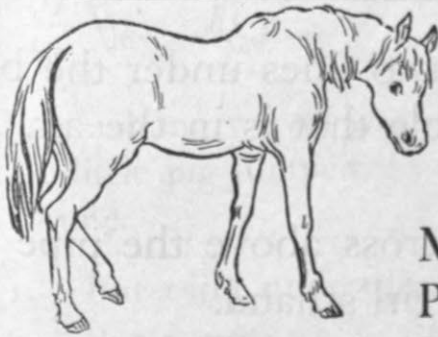
Put a stem on the apple.



Put a cross on the ball.



Put a ring around the bee.



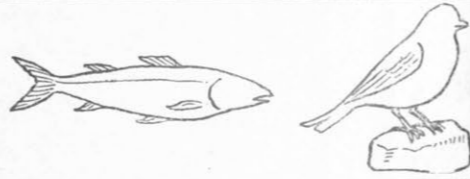
Make two lines under the horse.  
Put a cross over the dog.

Test 1

1. Put a tail on this pig.



2. Make an eye on the bird.



3. Put a ring around the squirrel.



4. Put a cross on the wing of the goose.



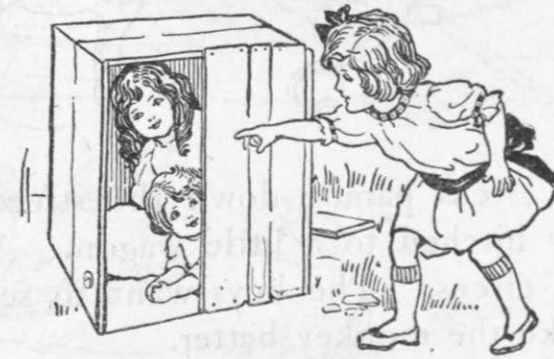
5. Find the rabbit's tail and make it longer.



6. Make two lines under the big bubble that is in the air.

7. Put a cross above the pipe in the girl's hand.

8. Put a cross over each bird that is on the ground.



9. Put a cross on each child that is hiding.

10. Put two lines under the girl who has found the children.

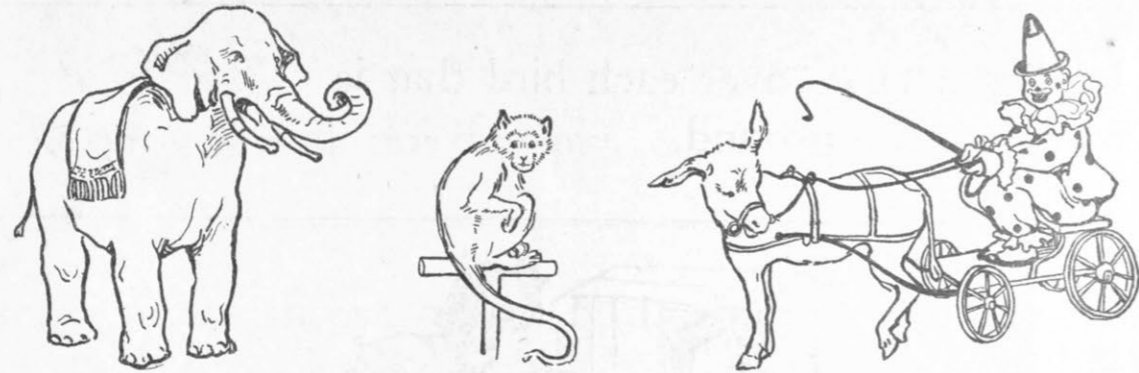


Once a hungry wolf was about to eat a poor little pig. The little pig jumped into a big kettle and saved herself just in time.

11. Put a line under the animal which was about to eat the pig.

12. Put a cross under the place where the pig hid.





Here comes the circus parade down the street. A clown is driving a donkey hitched to a little wagon. All the children want to see the circus. The boys want to see the elephant, while the girls like the monkey better.

13. Put two lines over what the boys want to see.
14. Put a cross under what the girls like.



A mouse once gnawed some ropes with which a lion had been bound by some hunters. The lion was thankful to be free.

15. Draw a line under the ones who bound the lion.
16. Draw a cross over the one which set the lion free.



One day Grandfather took his two grandsons fishing. They rowed along the shore in an old boat for a long time without seeing anything. At last they spied some mud turtles sitting on an old stump near the shore. Grandfather rowed very quietly toward them. One turtle heard him and escaped by sliding off the stump into the pond, but all the others were caught.

17. Make a cross under the one who rowed quietly.
18. Make a cross on this line \_\_\_\_\_ for each turtle that was caught.



In a country far across the sea is a land of mountains and valleys and many wonderful lakes and rivers. When the spring-time covers the mountain sides with fresh green grass, thousands of cattle are driven up into them to graze during the summer. Here they are watched and tended by the men from the villages, while the women are busily preparing butter and cheese for the market. The men hang bells about the necks of the cows so that they can locate those which wander from the herd. In the fall, when the cattle are driven down again into the valleys, there is great rejoicing and a holiday among the children.

19. Draw a line under those who spend the summer preparing food for the market.
20. Draw a ring around those who make merry in the fall.
21. Draw a cross under what helps the men locate the wandering cows.

*Read this paragraph and then do what it says to do. Read it again if you need to.*

Mr. Toil had a severe and ugly countenance, especially for such little boys or big men as were inclined to be idle. His voice, too, was harsh; and all his ways and customs seemed very disagreeable to our friend Daffydowndilly. The whole day long, this terrible old schoolmaster sat at his desk, overlooking the scholars, or stalked about the schoolroom with a certain awful birch rod in his hand. Unless a lad chose to attend quietly and constantly to his book, he had no chance of enjoying a quiet moment.

22. Draw a line under the one of these four words that tells Mr. Toil's occupation.
23. Draw a line under the one of these four words that shows how Mr. Toil looked.

lawyer  
farmer  
teacher  
merchant

handsome  
indifferent  
agreeable  
displeasing

*Read this paragraph and then do what it says to do. Read it again if you need to.*

But we are anxious to see the inside of this wonderful craft; so, after a few minutes in the turret, we go down the narrow hatchway into the boat itself. Here we are immediately struck by the amount of machinery everywhere and the neatness and compactness of everything. Behind the living room is the engine room. Here are two heavy oil engines for driving the boat on the surface, and a powerful motor for use when the boat is submerged. In another compartment there are storage batteries for supplying the electric current for the motors, lights, and cooking apparatus.

24. Draw a line under the one of these three words that shows what is described in this paragraph.
25. Draw a line under the one of these three words that best shows the amount of machinery to be seen.

sailboat  
aéroplane  
submarine

little  
much  
none



## Test 2

---

Do dogs bark ?.....	NO	<u>YES</u>
Is ice hot ?.....	<u>NO</u>	YES
Have cats wings ?.....	NO	YES
Can you see ?.....	NO	YES

---

- |     |   |    |     |    |
|-----|---|----|-----|----|
| 1.  | Can you eat ?.....                              | NO | YES | 1  |
| 2.  | Can a hat walk ?.....                           | NO | YES | 2  |
| 3.  | Can a clock talk ?.....                         | NO | YES | 3  |
| 4.  | Do girls like candy ?.....                      | NO | YES | 4  |
| 5.  | Does a stone like to play ?.....                | NO | YES | 5  |
| 6.  | Can a duck wade ?.....                          | NO | YES | 6  |
| 7.  | Is four more than two ?.....                    | NO | YES | 7  |
| 8.  | Have all girls the same name ?.....             | NO | YES | 8  |
| 9.  | Are men larger than boys ?.....                 | NO | YES | 9  |
| 10. | Is a dozen more than eleven ?.....              | NO | YES | 10 |
| 11. | Does flour come from milk ?.....                | NO | YES | 11 |
| 12. | Is every man a soldier ?.....                   | NO | YES | 12 |
| 13. | Are dresses sometimes made of gingham ?.....    | NO | YES | 13 |
| 14. | Does April come before March ?.....             | NO | YES | 14 |
| 15. | Are sweaters ever worn by men ?.....            | NO | YES | 15 |
| 16. | Are hoods usually worn by elephants ?.....      | NO | YES | 16 |
| 17. | Do pigeons have two legs ?.....                 | NO | YES | 17 |
| 18. | Does the sun rise in the evening ?.....         | NO | YES | 18 |
| 19. | Are difficult problems easily solved ?.....     | NO | YES | 19 |
| 20. | Do convicts sometimes escape from prison ?..... | NO | YES | 20 |



*Standard Educational Tests*

# Intelligence Examination

DELTA 1, FOR GRADES 1—3

Arranged and standardized by M. E. HAGGERTY, University of Minnesota

*Used in the Virginia School Survey*

My name is \_\_\_\_\_ I am a \_\_\_\_\_  
First name Last name Write boy or girl

This is the \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_ I am \_\_\_\_\_ years old.

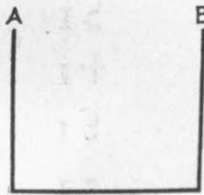
My next birthday will be \_\_\_\_\_ 19\_\_\_\_ I am in \_\_\_\_\_ half of Grade \_\_\_\_\_

The name of my school is \_\_\_\_\_ The name of my city (county) is \_\_\_\_\_

The name of my state is \_\_\_\_\_

## EXERCISE 1

1



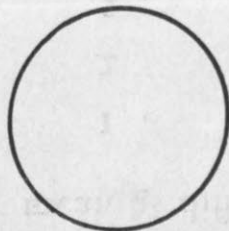
2



3

A

4



EXERCISE 12

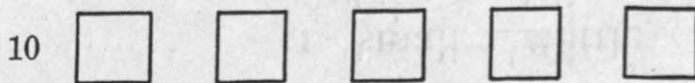
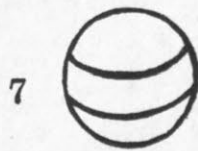
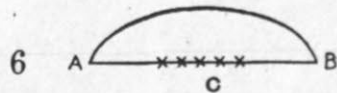
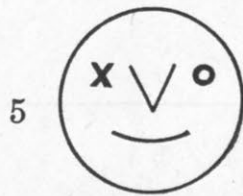
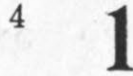
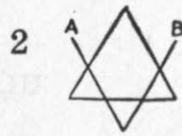
If the two words mean the same, put an **S** between them.

If they mean as different as can be, put a **D** between them.

1	big _____ large	1
2	good _____ bad	2
3	go _____ leave	3
4	quiet _____ still	4
5	wet _____ dry	5
6	high _____ low	6
7	sad _____ sorry	7
8	wide _____ broad	8
9	run _____ stand	9
10	near _____ close	10
11	sweet _____ sour	11
12	happy _____ cheerful	12
13	up _____ down	13
14	give _____ take	14
15	fear _____ fright	15
16	rude _____ polite	16
17	timid _____ shy	17
18	beg _____ plead	18
19	friend _____ enemy	19
20	order _____ command	20
21	begin _____ commence	21
22	advance _____ retreat	22
23	gradual _____ sudden	23
24	climb _____ ascend	24
25	accept _____ reject	25

Score .....

EXERCISE 2.

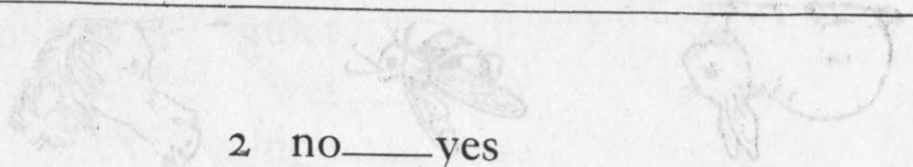


Score.....



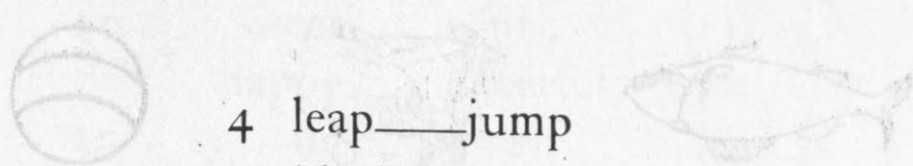
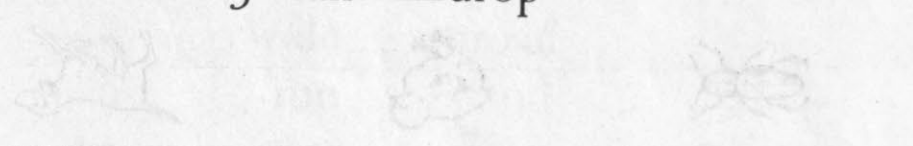
EXERCISE 11

10   1 small — little



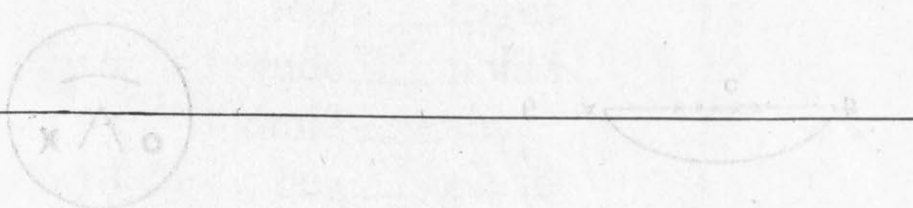
2 no — yes

3 fall — drop



4 leap — jump

5 black — white



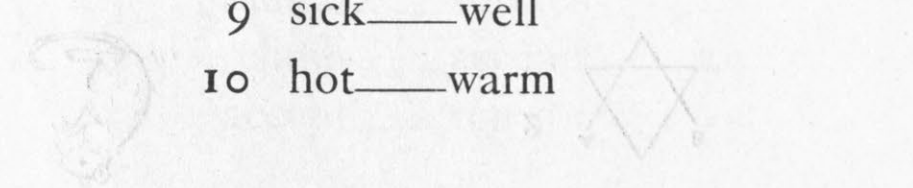
6 go — come

7 hit — strike

8 flower — blossom

9 sick — well

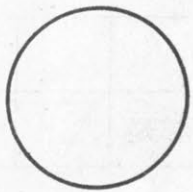
10 hot — warm



EXERCISE 3

1 A ——— B C D

2

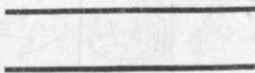


A

3



4

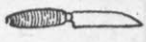


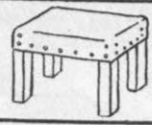




5















# EXERCISE 10













Put the right figure under every picture.

					
1	2	3	4	5	6













1













2

3

4

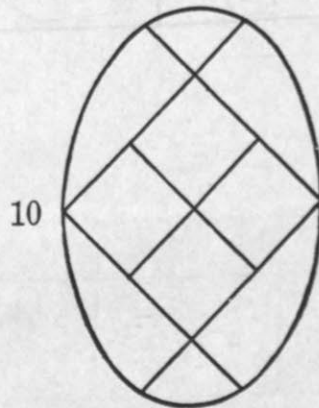
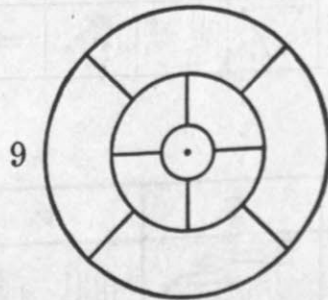
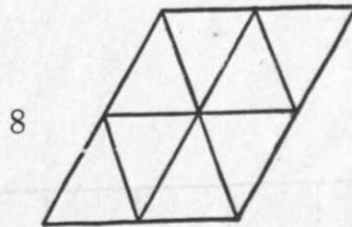
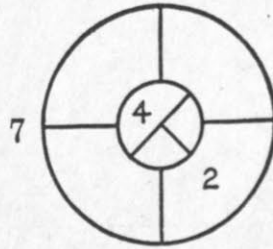
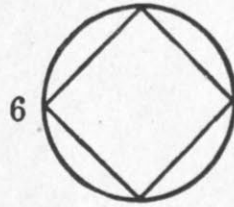
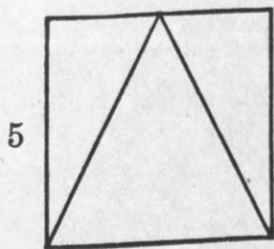
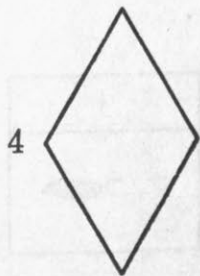
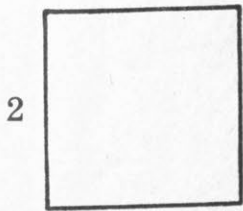
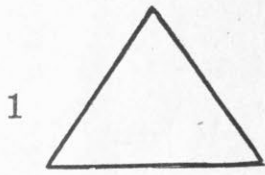
											

Score.....

















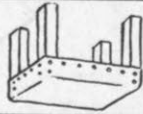



EXERCISE 4

Copy these pictures.



Score.....

EXERCISE 9

											
6	5	4	3	2	1						
											

EXERCISE 5

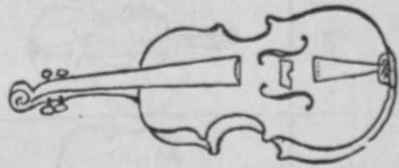
1



2



3



















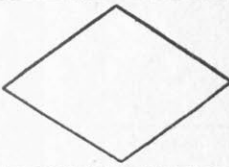





EXERCISE 8

If the two pictures are the same, put an **S** between them.

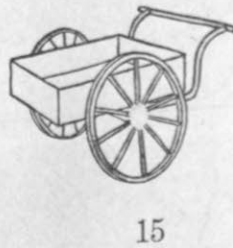
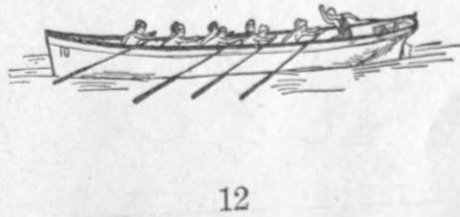
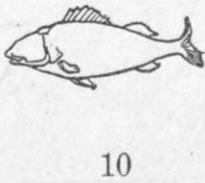
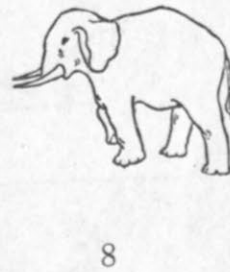
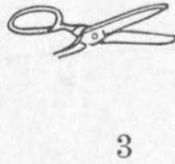
If they are different, put a **D** between them.

1		—		1
2		—		2
3		—		3
4		—		4
5		—		5
6		—		6
7		—		7
8		—		8
9		—		9
10		—		10

Score.....

EXERCISE 6

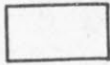
Mark in each picture what is left out.



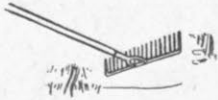
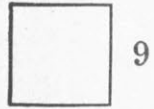
Score .....



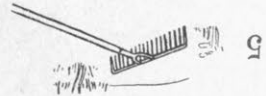
—



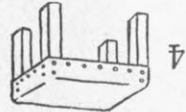
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—



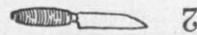
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THE RELATION OF READING ABILITY TO MENTAL ABILITY

SECTION IX.

APPENDIX- Samples of Tests Used in Collecting the Data.