8-1-1958

The effectiveness of oral arithmetic instruction

Alice B. Wideman

Atlanta University

Follow this and additional works at: http://digitalcommons.auctr.edu/dissertations

Part of the Education Commons

Recommended Citation

THE EFFECTIVENESS OF ORAL ARITHMETIC INSTRUCTION

A THESIS
SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION, ATLANTA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS

BY
ALICE B. WIDEMAN

SCHOOL OF EDUCATION

ATLANTA UNIVERSITY
AUGUST, 1958
DEDICATED

To my husband, Walter Wade Wideman and my mother
Sadie Ballard for their patience and encouragement
during this research
ACKNOWLEDGMENT

Acknowledgment is made to Dr. Edward K. Weaver who directed this study. His willing and constructive guidance was indispensable.

Thanks are due other members of the Committee for their helpful suggestions. Namely: Dr. L. Saine and Dr. P. I. Clifford.

The cooperation of the superintendent, administrative personnel, teachers, and pupils of the participating school made possible this study.

Thanks are also due various graduate students in the School of Education of Atlanta University for their significant contributions, understanding, and encouragement throughout the period of the writer's graduate study.

A.B.W.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>DEDICATION</th>
<th>ACKNOWLEDGMENT</th>
<th>LIST OF TABLES</th>
<th>LIST OF ILLUSTRATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Chapter I. INTRODUCTION

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Statement of Problem</th>
<th>Origin of Study</th>
<th>Purpose of the Study</th>
<th>Scope and/or Limitation of the Research</th>
<th>Period of Study</th>
<th>Definition of Terms</th>
<th>Method of Research</th>
<th>Subjects and Materials</th>
<th>Procedure</th>
<th>Value of Study</th>
<th>Related Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Chapter II. PRESENTATION AND ANALYSIS OF DATA

<table>
<thead>
<tr>
<th>Introductory Statement</th>
<th>Initiating Testing Period</th>
<th>Interpretation of the Gray-Votaw-Rogers Achievement Test, Form Q, Reading</th>
<th>Interpretation of the Otis Quick-Scoring Mental Ability Test, Beta: Form EM</th>
<th>Experimental Group A†</th>
<th>Control Group B†</th>
<th>Comparative Data and Significant Differences</th>
<th>Experimental Group A†</th>
<th>Control Group B†</th>
<th>Comparative Data and Significant Differences</th>
<th>Intermediate Testing</th>
<th>Experimental Group A†</th>
<th>Control Group B†</th>
<th>Comparative Data and Significant Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS—Continued

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Testing Period</td>
<td>33</td>
</tr>
<tr>
<td>Introductory Statement</td>
<td>33</td>
</tr>
<tr>
<td>Experimental Group B²</td>
<td>33</td>
</tr>
<tr>
<td>Control Group A²</td>
<td>35</td>
</tr>
<tr>
<td>Comparative Data Significant Difference</td>
<td>35</td>
</tr>
<tr>
<td>III. SUMMARY AND CONCLUSIONS</td>
<td>42</td>
</tr>
<tr>
<td>Rationale</td>
<td>42</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>42</td>
</tr>
<tr>
<td>Purpose of Study</td>
<td>43</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>43</td>
</tr>
<tr>
<td>Summary of Related Literature</td>
<td>43</td>
</tr>
<tr>
<td>Procedure</td>
<td>44</td>
</tr>
<tr>
<td>Summary of Findings</td>
<td>44</td>
</tr>
<tr>
<td>Conclusions</td>
<td>47</td>
</tr>
<tr>
<td>Implications</td>
<td>48</td>
</tr>
<tr>
<td>Recommendations</td>
<td>49</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>51</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>54</td>
</tr>
<tr>
<td>Appendix A</td>
<td>54</td>
</tr>
<tr>
<td>Oral Arithmetic Lessons</td>
<td>54</td>
</tr>
<tr>
<td>Appendix B</td>
<td>70</td>
</tr>
<tr>
<td>Answer Sheet for Study Lessons</td>
<td>70</td>
</tr>
<tr>
<td>Answer Sheets for Practice Lessons</td>
<td>72</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1. Frequency Distribution of Raw Scores made by Sixty-Three Sixth Grade Pupils on the Gray-Votaw-Rogers Test, Form Q, Reading Comprehension</td>
<td>18</td>
</tr>
<tr>
<td>2. Distribution of Scores by Ages of Forty-Three Sixth Grade Pupils on the Otis Quick-Scoring Mental Ability Tests, Beta Test, Form EM</td>
<td>19</td>
</tr>
<tr>
<td>3. Frequency Distribution of &quot;Beta IQ&quot; Obtained from Scores of Forty-Four Sixth Grade Pupils on the Otis Quick-Scoring Mental Ability Test</td>
<td>20</td>
</tr>
<tr>
<td>4. Comparison of Data Obtained by Matched Groups of Sixth Grade Pupils on the Otis Quick-Scoring Mental Ability Test-Beta - Form EM</td>
<td>21</td>
</tr>
<tr>
<td>5. Frequency Distribution of Raw Scores Obtained by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers Test, Form Q, Reasoning and Computation Initial Test</td>
<td>23</td>
</tr>
<tr>
<td>6. Frequency Distribution of Raw Scores made by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers Achievement Test, Form Q, Arithmetic Division (Reasoning and Computation Combined)</td>
<td>25</td>
</tr>
<tr>
<td>7. Comparison of Data Obtained by Matched Groups of Sixth Grade Pupils on the Gray-Votaw-Rogers Achievement Test, Form Q, Arithmetic Division</td>
<td>26</td>
</tr>
<tr>
<td>8. Comparison of the Age Level and Scores Obtained by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers General Achievement Test, Arithmetic Division, Form Q and the Otis Quick-Scoring Mental Ability Test</td>
<td>28</td>
</tr>
<tr>
<td>9. Frequency Distribution of Raw Scores Obtained by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers Test Form R, Reasoning and Computation</td>
<td>30</td>
</tr>
</tbody>
</table>
# LIST OF TABLES—Continued

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Frequency Distribution of Raw Scores made by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers General Achievement Test, Form R, Arithmetic Division - Intermediate Test</td>
<td>31</td>
</tr>
<tr>
<td>11</td>
<td>Comparison of Data Obtained by Matched Groups of Sixth Grade Pupils on the Gray-Votaw-Rogers General Achievement Test, Form R, Arithmetic Division - Intermediate Test</td>
<td>32</td>
</tr>
<tr>
<td>12</td>
<td>Frequency Distribution of Raw Scores Obtained by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers Test, Form S, Reasoning and Computation - Final Test</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>Frequency Distribution of Raw Scores made by Forty-Four Sixth Grade Pupils on the Gray-Votaw-Rogers General Achievement Test, Form S, Arithmetic Division (Reasoning and Computation Combined) - Final Test</td>
<td>36</td>
</tr>
<tr>
<td>14</td>
<td>Comparison of Data Obtained by Matched Groups of Sixth Grade Pupils on the Gray-Votaw-Rogers General Achievement Test, Form S, Arithmetic Division</td>
<td>38</td>
</tr>
<tr>
<td>15</td>
<td>Mean Scores on the Initial Test and Final Test, Mean Gain for Each Group, and Mean of the Means for each of the Two Groups</td>
<td>39</td>
</tr>
<tr>
<td>16</td>
<td>Number of Pupils Using Paper and Pencil Procedures for Oral Work Before and After Instruction</td>
<td>40</td>
</tr>
</tbody>
</table>
# LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Using the Method of Cross-Checking of Groups.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Diagram Showing Cross-Checking Method</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Rationale.—It is a matter of common experience and observation that life presents many uses for oral arithmetic in arriving at quick solutions to arithmetical situations. The individual is frequently confronted with the need to perform simple computation, simple problems, situations involving numbers and processes, make approximation, and interpret quantitative terms and statements. Paper and pencil should seldom be necessary for understanding and solving many of these quantitative situations. Because these activities of everyday life require competence in oral arithmetic, schools must provide pupils with this type of practice. It is important, then, that not only the content which is taught in the classroom be that most needed and most useful in life outside of school, but also the methods by which it is learned and the way it is put into practice should serve to make life's daily activities easier to perform and more successful.

Though oral arithmetic had lost practically all of its standing in American education by the beginning of the twentieth century, a few prominent thinkers in the field of arithmetic continued to point out the need for oral and written exercises in the arithmetic program. In relation to this problem Flapper indicates that proficiency in oral work

\footnote{Flapper, Teaching of Arithmetic (n.d.), pp. 118-19.}
contributes directly to greater accuracy and speed in written work, and is of the opinion that oral arithmetic should be emphasized in the interest of written arithmetic and comprise about one-third of the total time spent in arithmetic activity.

Spitzer makes the following assertion about oral and written arithmetic and other probable values which may accrue:

Oral arithmetic should be included in any program designed to develop ability in problem-solving...When the procedure is carefully examined, it is not difficult to see how problem-solving ability is furthered by oral practice that does not make use of pencil and paper. In written solutions the task of writing takes both time and attention and may interfere with the pupil's thinking. In oral solution there is no such interference. The lack of record in the oral solution forces him to give closer attention to the processes and steps he uses, and to concentrate on the most important. For purposes of illustration, suppose that the problem involves the addition of thirty-eight and forty-three. In the effective oral solution the pupil takes two of the three ones in forty-three, combines them with the thirty-eight, and then adds forty and forty-one, thus going directly to the process of making tens and ones. In the written solution he can easily get the correct answer without realizing that he has rearranged the tens and ones of the two numbers into a single equivalent number of tens and ones. Oral arithmetic, then, tends to emphasize significant aspects of the number system.

It is believed that the time which is spent on oral arithmetic is insufficient or inadequate, especially when compared with the time spent on written arithmetic.

One writer states that the development of the whole child is the chief fundamental objective of the modern elementary school, and defends his thinking with the following statement of Bruencker and Grossnickle:

The teacher should recognize the possible contribution instruction in arithmetic can make to the social objective of all education. Many of the experiences pupils have in school

---

that are rich in application of number can be designed as experiences in democratic living. Actual practice in solving problems of daily life that are of concern to the pupils is a most valuable type of experiences in democratic living. In most instances, arithmetic makes valuable contributions to these experiences.  

Several studies indicate that problem-solving is still an arithmetical difficulty, which means that there is a need for improving ability in problem-solving.

In a study made by Hogg, the results of a mathematics test revealed the following percentile ranks:

<table>
<thead>
<tr>
<th></th>
<th>Elementary Level</th>
<th>Secondary Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic computation</td>
<td>82 per cent</td>
<td>42 per cent</td>
</tr>
<tr>
<td>Problem solving</td>
<td>42 per cent</td>
<td>31 per cent</td>
</tr>
<tr>
<td>Quantitative understanding</td>
<td>21 per cent</td>
<td>14 per cent</td>
</tr>
</tbody>
</table>

Although the pupils on the elementary level ranked higher than the pupils on the secondary level, problem solving ranked the second highest percentile.  

In a recent study it was found that in ranking the difficulties of basic arithmetic skills, verbal problems remain high on the list of arithmetical deficiencies.

---

In view of the foregoing postulations, it is believed that arithmetic should assume a more important place in our current arithmetic programs in order to develop those skills and competencies in pupils which will enable them to operate with numbers within and without the schoolroom.

Statement of Problem.-- The problem of this study was to determine the relative effectiveness of arithmetic instruction when oral arithmetic is used as an integral part of the regular program of teaching for reasoning and computation in problem-solving.

Origin of the Study.-- This study originated from experiences gained as a teacher over a period of years, and from reading the literature in the field. These sources implied or stated explicitly that it is impossible or probable that oral work, used as an integral part of the regular program of reasoning and computation, will result in improved ability in solving problems. These experiences and authoritative statements created, within the writer, an interest in attempting to discover the extent to which the teaching of oral arithmetic is an effective means of improving classroom instruction.

Purpose of the Study.-- The major purpose of this study was to determine the effectiveness of instruction in oral arithmetic when used as an integral part of the regular arithmetic program for the sixth grade pupils enrolled in the Eastside Junior High School, Coweta County, Georgia. More specifically, the purposes of this research were:

1. To determine the effect of teaching oral arithmetic on pupils' ability to solve problems without the use of paper and pencil, through use of oral examples and word problems
2. To determine the effect instruction in oral arithmetic, when used as a part of the regular arithmetic program, will have on pupil growth in solving problems as measured by achievement on a standardized arithmetic test.

3. To identify the different ways pupils can and will think when performing each of four fundamental processes without use of paper and pencil.

4. To propose implication for improving the teaching of arithmetic in the sixth grade of Eastside Junior High School, Coweta County, Georgia.

Scope and/or Limitation of the Research—This study was confined to instruction in oral arithmetic, tests, and general growth in arithmetic performance between two groups of sixth grade pupils enrolled in Eastside Junior High School, Coweta County, Georgia, during the school term 1957-1958.

Period of Study—The data for this study were collected during a twelve week period, beginning February 6, 1958 and lasting through May 29, 1958.

Definition of Terms—To facilitate understanding of the terms which were used throughout the conduct of the study, the following definitions are offered:

1. The term, "Oral Arithmetic," as used in this study has reference to arithmetic done without the aid of paper and pencil.

2. The term, "Arithmetic Performance," has reference to the general attainment of the two groups as measured by a standardized test in arithmetic problem-solving.
3. The term, "Growth," as used in this study refers to "progress" made by the pupils during the period of the study.

Method of Research.— The Experimental Method of Research, employing the rotation group technique was used to gather the necessary data required to fulfill the expressed purposes of this research.

Subjects and Materials.— The subjects and materials used in this study were as follows:

1. The subjects involved in this study were all pupils enrolled in the two sections of the sixth grade classes in arithmetic at the Eastside Junior High School, Coweta County, Georgia.

2. The instruments used to collect the necessary data were as follows:
   c. A series of oral arithmetic lessons
   d. Pupil answer sheets

Procedure.— The following procedure was used in carrying out
the study. Sixth grade girls and boys at the Eastside Junior High School were selected at the beginning of the second semester January, 1958, on the basis of reading ability and divided into two sections.

The Gray-Votaw-Rogers General Achievement Test, Intermediate, Form Q, reading division was administered in order to find the reading level of the pupils, before the intelligence and arithmetic tests were given. Only those pupils who read five months in the third grade and above were used as subjects. The groups were equated on the basis of the scores made on the Otis Quick-Scoring Mental Ability Test, Beta: Form EM, the Gray-Votaw-Rogers Achievement Test, Form Q, Intermediate (Arithmetic Division), and chronological age.

The rotation group method was used. One group of pupils was controlled for six weeks while the other group was used as an experimental group for the same period. At the beginning of the seventh week the groups were reversed. That is, the group that had been experimented with became the control group. See Figure 1, Page 8. The groups were designated as groups A\textsubscript{1} and A\textsubscript{2} and groups B\textsubscript{1} ad B\textsubscript{2}. Group A\textsubscript{1} was the first experimental group while group B\textsubscript{1} was the control group. Group A\textsubscript{2} was then the control group and B\textsubscript{2} was the experimental group. The two groups covered the same series of oral arithmetic lessons during the experimental period. One-third of the period was utilized daily for oral arithmetic instruction with each experimental group, along with the regular arithmetic program, and the entire period was used for each control group for the regular arithmetic program.

The groups were compared on the basis of the statistical interpretation of the raw scores obtained from the initial, intermediate, and final tests. The scores were treated to find the mean, standard deviation,
Initial Test

Experimental Group A
Six Weeks

Control Group B
Six Weeks

Intermediate Test

Experimental Group A
Six Weeks

Control Group B
Six Weeks

Final Test

Fig. 1. Using the Method of Cross-Checking of Groups. Diagram Showing Cross-Checking Method

1 Gussie Griffin Hyatte, "An Experimental Study of Arithmetical Difficulties with Two Eighth Grade Classes of the East Fifth Street School, Chattanooga, Tennessee" (unpublished Master's thesis, School of Education, Atlanta University, Atlanta, Georgia, 1941), p. 27.
mean difference, standard error of the mean, and standard error of the 
difference of the mean.

Value of Study.— It is believed that the critical analysis of 
principles, theories and research in this study will be beneficial to 
school administrators and teachers in the improvement of classroom 
instruction.

The findings may be used to the extent that they will become a 
part of the regular school program in the improvement of instruction.

Related Literature.— Aside from the opinion of a few educators, 
some outstanding ones of which were mentioned in the rationales, little 
literature closely related to oral arithmetic materials and methods is 
available. This notable lack of research studies, textbook materials, 
and professional literature related to oral arithmetic should not be 
allowed to lead one to assume that oral arithmetic has little value as 
a part of the educational program and in life outside of school.

One writer states that arithmetic textbooks in common use today 
have few oral arithmetic materials and suggested methods. Indications 
are, however, that the more recent textbooks are beginning to include 
a few lessons which deal with oral arithmetic. The following was 
noted in a recent publication to teachers by Scott, Foresman and Company:

Even middle-graders who get good grades in solving 
arithmetic problems on paper can get tripped up away from 
school. That's because most of life's arithmetic calls for 
clear, quick-thinking without the aid of paper-and-pencil 
figuring.

Bob is moving along with the cafeteria line. He is 
trying to add up his bill in his head as he goes. He wants 
to keep within the thirty-five cent he has to spend. His 
soup costs seven cent, sandwich fifteen cents, milk eight 
cents. Ice cream is eight cents. A few more steps and he 
will be at the dessert counter. He doesn't want to hold up 
the line. He is figuring in his head. Is there enough 
money left for ice cream?
Situations such as this go to show how necessary it is for children to compute orally so that their school arithmetic will stand them in good stead in everyday life.

Concerning methods to be used in performing oral arithmetic, the following suggestion was made in the Scott, Foresman bulletin:

Pupils can learn how to organize unwieldy combinations of numbers for simpler handling. For example, two ways of adding 39 and 38 are: 39 and 38 can be broken down into 30 and 30; their sum makes 60. The 9 and the eight left over make 17; 60 plus 17 equals 77. Or 39 and 38 can each be thought of as nearly the same as 40; 40 and 40 equals 80. Then three must be subtracted from 80 because 39 was less 1 than that of 40 and 38 was 2 less than 40; eighty minus three is 77.

Just as the need for oral arithmetic materials and methods is being recognized by the authors of a few elementary arithmetic textbooks, it may also have received some attention from those responsible for providing instructional materials in certain school systems.1

It has been previously mentioned that oral arithmetic has received practically no attention in professional literature. An examination of periodical literature yielded reports on only a few investigations, and two were made by the same writer. Jack V. Hall2 reported in his first investigation growth in grades five and six, on a standardized test, during one school year in which oral problem-problem was emphasized. Pupils, using problems constructed by themselves, read these aloud to other pupils and then ask them to tell the correct process for solving. Emphasis was placed on phrasing words for thought rather than a word by word procedure for reading. The writer reported the most outstanding results to be that "children's antagonism toward problem-solving


was overcome."

For each grade the standardized test median scores were reported by ability groups, as determined by intelligence quotients. The median scores for each group in each grade showed more than a year's growth between September and April.

A second investigation by the same writer,¹ was made to ascertain the ability of a group of sixth grade children to solve certain verbal arithmetic problems without using paper and pencil. An unselected group of 179 sixth grade pupils in Kelso, Washington were used for this investigation. Fifty problems were printed on strips of tagboard so that each could be read from any part of the classroom. The examiner showed one problem at a time, read it aloud, and left it in view while the pupils solved it without using paper and pencil.

The mean score on the test was 26.86. Of the responses to twenty-four one-step problems, 65.68 per cent were correct. They made 47.76 per cent correct responses on eighteen two-step problems. On eight three-step problems, they got 31.63 per cent correct.

Mary Frances Flournoy made a study to determine the effectiveness of an oral arithmetic program. A total of 550 pupils in twenty intermediate classrooms took part in the study. She gave the following conclusions:

1. Pupils taking part in this study exhibited a need for specific experiences with oral arithmetic, and during the course of the study they made statistically significant gains at a high level of confidence on tests in oral computation and in


problem-solving.

2. Pupil progress in written arithmetic, as this was measured by both teacher-made and standardized tests, was not hindered by the fact that part of the school arithmetic times was spent with oral arithmetic. Rather, it is suggested that experience in solving without paper-and-pencil problems may result in greater pupil confidence and understanding of written word problems.

3. In the case of gains of pupils at both the upper and the lower levels of arithmetical ability, as determined by standardized-test scores, highly satisfactory gains at both levels were evidenced. Each class was dealt with as a unit, since the teacher used the time, materials, and methods of procedure for all pupils.

4. As evidenced by comments made by teachers and pupils participating in the research project, planned oral arithmetic experiences were favorably accepted as a part of the total arithmetic program.

5. It also seems a plausible conclusion that pupils at the intermediate grade level are capable of becoming adept at handling the oral arithmetic situations met in everyday activities. However, they are likely to perform much below their level of ability in these situations unless schools provide them with definite oral arithmetic experiences.

Petty did two experiments. The first of these was set up to compare the performance of two groups of children, each group having practiced in a different way. The experimental group practiced solving without the use of pencil and paper, verbal problems not presented continuously during the allowed solution time. The control group practiced solving, with the use of pencil and paper, verbal problems that were presented continuously during the allowed solution time. Ten sixth grade classes participated. The pupils in each room were randomly divided into two groups and each group received a different type of practice as the two types were just described. There were two days of pre-testing, five days of practice work, and two days of final testing.

---

The significance ratios on the non-pencil-and-paper test and the orally stated test were larger for the group which practiced without pencil and paper for solving. The pencil-and-paper group obtained larger significance ratios on the pencil-and-paper test and on the speed test. Pupils did best on the tests which were similar to their methods of practice. The general conclusion was that pupils need both types of practice and unless they receive some training in a non-pencil-and-paper method of solving verbal problems not continuously presented during the solution time, they will likely encounter some difficulty with the method when met in everyday life.

In a second experiment the same practice materials were used except that a pencil-and-paper group was not timed on each individual problem. Ten classes were again used and were paired according to arithmetical ability as measured by a mid-year standardized test. In each pair, one of the classes practiced with pencil and paper and the other practiced without pencil and paper. No pre-tests were given in the experiment. Results obtained indicated, as in Experiment I, that pupils were able to perform better on that test administered in the same way as the exercises on which they had practiced. Any difference, however, in the performance of the two groups on each type of test was not statistically significant. The mean scores on an orally stated test were about the same for both groups. It was concluded that both methods may be equally effective in producing improvement in the ability to solve word problems which are stated orally. However, it was suggested that by using both the pencil and non-pencil methods, pupils may be so motivated as to bring about a general improvement in problem-solving under both types of conditions.
Though it could not be demonstrated during the short length of time used for each of the experiments described, it was suggested that it is believed by others that lessons in solving problems without the use of paper and pencil may improve pupils' ability to solve word problems.

Wood studied the effect of sixteen weeks of practice in estimating answers to arithmetic problems upon the pupils' ability to solve problems. He chose for his subjects twenty-six seventh grade pupils and twenty-six eighth grade pupils. The pupils were given special instruction in making approximations. Two different standardized tests were given both before and after the sixteen weeks of practice. One of the tests given before the practice was repeated at the final testing, but equivalent forms of the other standardized tests were used. A series of tests which he constructed were given as a check on how well pupils were approximating answers to problems.

The results of Wood's study showed gains as great as two years in some instances. The gains in both computation and problem solving were statistically significant for the seventh grade pupils. However, only the gain in problem-solving was statistically significant for eighth grade children.

In his conclusion it was stated that in the beginning stages of his study the pupils had little knowledge of how to estimate answers to verbal problems. He found that the pupils became more proficient in estimating answers as the practice proceeded. The author, further

---

commented that an understanding of, and a method for estimating answers is necessary because most people use "oral" arithmetic in everyday situations in life. It was his belief that the careful reading required in making estimations was beneficial to comprehension of the problem situation.

It is evident from the foregoing reviews of the various studies of different methods used in attempts to improve problem-solving in arithmetic that no one method produced superior results.
CHAPTER II

PRESENTATION AND ANALYSIS OF DATA

Introductory Statement.— The presentation of the data in this is organized in the following manner: The Initial Testing Period, the Intermediate Testing Period, and the Final Testing Period.

The Initial Testing Period was designed for the purpose of selecting subjects for the study, equating the groups, and performance on the initial test.

The Intermediate Testing Period was designed for the purpose of a standard or measure of the change of each pupil with reference to arithmetic achievement after the first six weeks of the study.

The Final Testing Period was designed for the purpose of securing measures of the final status or change of each pupil with reference to arithmetic achievement at the end of the study.

The scores made during the testing period were obtained from the two groups designated as Experimental Group A1 and Control Group B1 and were tabulated for each group. The necessary statistical treatment, the mean, standard deviation, standard error of mean, difference between means, standard error of difference between means, and the "t" ratio were calculated and used as the basis of the interpretation of the data. Appropriate tables illustrative of the data will be found in this chapter.

The hypothesis that no significant difference in arithmetic achievement existed between forty-four sixth grade pupils was formulated. The
hypothesis was tested statistically by using the standard error of the mean difference with reference to the table of "t."

The reliability of statistics that proved significant at or beyond the five per cent level of confidence was accepted. This degree of reliability was used so that at least ninety-five out of every hundred instances would there be a probability of correctness.

**Initial Testing Period**

**Interpretation of the Gray-Votaw-Rogers Achievement Test, Form O, Reading Comprehension.** Table 1 presents the raw scores made on the Gray-Votaw-Rogers Test, Reading Comprehension by sixty-three sixth grade pupils of Eastside Junior High School. On and above five months in the third grade reading level was the criterion for selecting subjects for the study.

The reading level ranges were second 0-29, third grade 30-42, fourth grade 43-53, fifth grade 54-62, sixth grade 69-73, and eighth grade 74-78.

The table also reveals that there were thirty-nine pupils who read on and above the fourth grade level, thirteen on the third grade level, and eleven on the second grade level. The thirty-nine reading on and above the fourth grade level and the five ranking highest above five months in the third grade were selected as subjects for the study.

**Interpretation of the Otis Quick-Scoring Mental Ability Test, Beta: Form EM.** The Otis Quick-Scoring Mental Ability Test was administered to the selected forty-four subjects, after which they were grouped and

---

TABLE 1

FREQUENCY DISTRIBUTION OF RAW SCORES MADE BY SIXTY-THREE SIXTH GRADE PUPILS ON THE GRAY-YOTAW-ROGERS TEST, FORM Q, READING COMPREHENSION

<table>
<thead>
<tr>
<th>Scores</th>
<th>Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-78</td>
<td>1</td>
</tr>
<tr>
<td>73-75</td>
<td>0</td>
</tr>
<tr>
<td>70-72</td>
<td>1</td>
</tr>
<tr>
<td>67-69</td>
<td>1</td>
</tr>
<tr>
<td>64-66</td>
<td>3</td>
</tr>
<tr>
<td>61-63</td>
<td>1</td>
</tr>
<tr>
<td>58-60</td>
<td>2</td>
</tr>
<tr>
<td>55-57</td>
<td>4</td>
</tr>
<tr>
<td>52-54</td>
<td>2</td>
</tr>
<tr>
<td>49-51</td>
<td>5</td>
</tr>
<tr>
<td>46-48</td>
<td>9</td>
</tr>
<tr>
<td>43-45</td>
<td>10</td>
</tr>
<tr>
<td>40-42</td>
<td>4</td>
</tr>
<tr>
<td>37-39</td>
<td>4</td>
</tr>
<tr>
<td>34-36</td>
<td>4</td>
</tr>
<tr>
<td>31-33</td>
<td>1</td>
</tr>
<tr>
<td>28-30</td>
<td>11</td>
</tr>
<tr>
<td>N</td>
<td>63</td>
</tr>
</tbody>
</table>

equated on the basis of general intelligence. The groups were designated as Experimental Group A and Control Group B.

Table 2 presents a distribution of "Beta IQ" by ages of forty-four sixth grade pupils on the Otis Quick-Scoring Mental Ability Test: Beta:
### TABLE 2

**DISTRIBUTION OF SCORES BY AGES OF FORTY-FOUR SIXTH GRADE PUPILS IN THE OTIS QUICK-SCORING MENTAL ABILITY TESTS: BETA TEST, FORM EM**

<table>
<thead>
<tr>
<th>Intervals</th>
<th>Age Last Birthday</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>89-91</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>86-88</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>83-85</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>80-82</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>77-79</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>74-76</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>71-73</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>68-70</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>65-67</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>62-64</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>59-61</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>56-58</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>7</td>
<td>18</td>
</tr>
</tbody>
</table>

Median age: 12 years, 6 months  
Median IQ: 72

The table was given to show the median age and score, also to show the wide range of ages and ability that are found in one grade.

Although the forty-four pupils scored below the age norms for Beta
Test, Form EM, one should not conclude that these children are as inferior as they appear to be, because more than one factor must be considered in an evaluation of children's abilities. \(^1\) On the initial arithmetic test, the pupils with the lowest IQ's scored higher than some of the pupils with higher IQ's.

Table 3 presents a frequency distribution of "Beta IQ" obtained from scores of forty-four sixth grade pupils on the Otis Quick-Scoring Mental Ability Test and statistics.

**TABLE 3**

FREQUENCY DISTRIBUTION OF "BETA IQ" OBTAINED FROM SCORES OF FORTY-FOUR SIXTH GRADE PUPILS ON THE OTIS QUICK-SCORING MENTAL ABILITY TEST

<table>
<thead>
<tr>
<th>IQ Intervals</th>
<th>Experimental Group A</th>
<th>Control Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>89-91</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>86-88</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>83-85</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>80-82</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>77-79</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>74-76</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>71-73</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>68-70</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>65-67</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>62-64</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>59-61</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>56-58</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Totals 22 22

Mean 73.77 Mean 73.92

SD 7.56  .SD 7.65

SE m₁ 2.05 SE m₂ 2.07

Experimental Group A\(^1\).— The data on the mental ability test for the twenty-two pupils in the Experimental Group A\(^1\) are shown in Table 3 which reveal that the mean was 73.77, the standard deviation was 7.56, and the standard error of the mean was 2.05. About seventeen or seventy-seven per cent of the pupils fell within the first standard deviation above and below the mean. The data apparently would approximate a normal curve and tend toward homogeneity.

Control Group B\(^1\).— The data on the twenty-two pupils in the Control Group are shown in Table 3, which reveal that the mean was 73.92, the standard deviation was 7.65 and the standard error of the mean was 2.07. About 17 or 77 per cent of the pupils fell within the first standard deviation above and below the mean. This data would apparently approach a normal curve also, and tend toward homogeneity.

Comparative Data and Significant Differences.— As indicated in Table 4, the "Beta IQ" mean for the pupils of the Experimental Group A\(^1\) was 73.77; for the Control Group B\(^1\) it was 73.92. The standard deviation for the Experimental Group A\(^1\) was 7.56; for the Control Group B\(^1\) it was 7.65. The standard error of the mean for the pupils of the Experimental Group A\(^1\) was 2.05; for the Control Group B\(^1\) it was 2.07. The

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>(M_1-M_2)</th>
<th>SE(\text{md})</th>
<th>&quot;t&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group A(^1)</td>
<td>73.77</td>
<td>7.56</td>
<td>2.05</td>
<td>0.15</td>
<td>2.91</td>
<td>0.05</td>
</tr>
<tr>
<td>Control Group B(^1)</td>
<td>73.92</td>
<td>7.65</td>
<td>2.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 4
COMPARISON OF DATA OBTAINED BY MATCHED GROUPS OF SIXTH GRADE PUPILS ON THE OTIS QUICK-SCORING MENTAL ABILITY TEST- BETA - FORM EM
difference between the two means was 0.15. The standard error of the difference between the means was 2.91.

The "t" value for the two groups was 0.05. This "t" was not significant as it was less than 1.96 at the five per cent level of confidence. Therefore, there is no statistically significant difference in the general intelligence of the pupils in the Experimental Group A and that of the pupils in the Control Group B. The groups were classified as equal in general intelligence statistically which was in favor of the Control Group B.

The Gray-Votaw-Rogers Achievement Test, Arithmetic Division was administered to the two groups of sixth grade pupils to determine their previous arithmetic achievement. This test was used for the initial test.

Experimental Group A. The data on the arithmetic test of the twenty-two pupils in the Experimental Group are shown in Table 5. This table reveals that in reasoning the mean was 46.35, the standard deviation 8.34, and the standard error of the mean was 2.26. On computation the mean was 50.19, standard deviation 7.23, and the standard error of the mean 1.96. In reasoning 14 or 64 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 16 or 73 per cent fell within the first standard deviation above and below the mean. Two-thirds of the pupils were expected to fall within the first standard deviation above and below the mean, but in reasoning was a little short, but not reasonably so.

Control Group B. The data on the arithmetic test of the pupils in the Control Group are shown in Table 5, which reveal that in reasoning the mean was 47.19, the standard deviation was 7.62, and the
TABLE 5
FREQUENCY DISTRIBUTION OF RAW SCORES OBTAINED BY FORTY-FOUR SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS TEST, FORM Q, REASONING AND COMPUTATION INITIAL TEST

<table>
<thead>
<tr>
<th>Scores</th>
<th>Experimental Group A</th>
<th></th>
<th>Control Group B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reasoning</td>
<td>Computation</td>
<td>Reasoning</td>
<td>Computation</td>
</tr>
<tr>
<td>62-64</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>59-61</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>56-58</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>53-55</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>50-52</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>47-49</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>44-46</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>41-43</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>38-40</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>35-37</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>32-34</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

| | Mean | | Mean | | Mean | | Mean | |
|---|---|---|---|---|---|---|---|
| | 46.95 | | 50.19 | | 47.19 | | 49.39 |
| SD | 8.34 | | 7.23 | | 7.62 | | 7.56 |
| SE | 2.26 | | 1.96 | | 2.07 | | 2.05 |

standard error of the mean 2.07. In computation the mean was 49.39, standard deviation 7.56, and the standard error of the mean 2.05. In reasoning 16 or 73 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 14 or 64 per cent
fell within the same range. In computation the expectancy was a little short, but not reasonably so.

The "t" value for the two groups in reasoning was 0.27 and in computation it was 0.28. Neither was significant as they were less than 1.96 at the five per cent level of confidence. Therefore, there is no statistically significant difference in previous arithmetic achievement of pupils in the Experimental Group and that of the pupils in the Control Group. The groups were classified as equal in previous arithmetic achievement, statistically which was in favor of the Control Group in reasoning and the Experimental Group in computation.

The data on the total arithmetic of the Experimental and Control Groups are shown in Table 6. This table reveals that the mean for the Experimental Group was 96.23, the standard deviation was 10.86, and the standard error of the mean was 2.94. For the Control Group the mean was 96.23, the standard deviation was 14.01, and the standard error of the mean was 3.80. In the Experimental Group 12 or 55 per cent of the pupils fell within the first standard deviation above and below the mean, and in the Control Group 15 or 68 per cent of the pupils fell within the same range. The expectancy was two-thirds of the pupils, but the Experimental Group fell short in this respect.

**Comparative Data and Significant Differences**— As indicated in Table 7, the mean score in reasoning for the pupils of the Experimental Group A was 46.35; for the Control Group B it was 47.19. The standard deviation for the Experimental Group A was 8.34; for the Control Group B it was 7.62. The standard error of the mean for the pupils of the Experimental Group A was 2.26; for the Control Group B it was 2.07. The difference between the means was 0.84. The standard error of the
TABLE 6
FREQUENCY DISTRIBUTION OF RAW SCORES MADE BY FORTY-FOUR SIXTH GRADE PUPILS ON THE GRAY-VOTAM-ROGERS ACHIEVEMENT TEST, FORM Q, ARITHMETIC DIVISION (REASONING AND COMPUTATION COMBINED)

INITIAL TEST

<table>
<thead>
<tr>
<th>Scores</th>
<th>Experimental Group A</th>
<th>Control Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>121-123</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>118-120</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>115-117</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>112-114</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>109-111</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>106-108</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>103-105</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>100-102</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>97-99</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>94-96</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>91-93</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>88-90</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>85-87</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>82-84</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>79-81</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>76-78</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>73-75</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>70-72</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Mean 96.23
SD 10.86
SE 2.94

Mean 96.23
SD 11.01
SE 3.80
<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>M₁-M₂</th>
<th>SEₓmd</th>
<th>&quot;t&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A₁</td>
<td>46.35</td>
<td>8.34</td>
<td>2.26</td>
<td>0.84</td>
<td>3.06</td>
<td>0.27</td>
</tr>
<tr>
<td>Reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B₁</td>
<td>47.19</td>
<td>7.62</td>
<td>2.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A₁</td>
<td>50.19</td>
<td>7.23</td>
<td>1.96</td>
<td>0.80</td>
<td>2.84</td>
<td>0.28</td>
</tr>
<tr>
<td>Computation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B₁</td>
<td>49.39</td>
<td>7.56</td>
<td>2.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A₁</td>
<td>96.23</td>
<td>10.86</td>
<td>2.94</td>
<td>0.00</td>
<td>4.80</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B₁</td>
<td>96.23</td>
<td>14.01</td>
<td>3.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
difference between the means was 3.06.

The "t" value for the two groups was 0.27 and was not significant.

The mean score in computation for the Experimental Group A was 50.19; for the Control Group B it was 49.39. The standard deviation for the Experimental Group A was 7.23; for the Control Group B it was 7.56. The standard error of the mean for the Experimental Group A was 1.96; for the Control Group B it was 2.05. The difference between the means was .80, and the standard error of the difference between the means was 2.84.

Table 7 also reveals the mean, standard deviation, standard error of the mean, difference between the means, the standard error of the difference between the means and the "t" value of the total arithmetic of the Experimental Group and the Control Group.

The "t" value for the two groups was .00. It was not significant. Therefore, there is no statistically significant difference in previous arithmetic achievement of pupils in the Experimental Group and that of the pupils in the Control Group. The groups were classified as equal in previous arithmetic achievement, statistically which was not in favor of either group on the total arithmetic.

Table 8 reveals a comparison of the age level and scores obtained by forty-four sixth grade pupils on the Gray-Votaw-Rogers Achievement Test, Form Q, Arithmetic Division, and the Otis Quick-Scoring Mental Ability Test.

The analysis of variance was used throughout this study. It was used to determine whether or not any difference existed between the two groups.
## Table 8

### COMPARISON OF THE AGE LEVEL AND SCORES OBTAINED BY FORTY-FOUR SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS GENERAL ACHIEVEMENT TEST, ARITHMETIC DIVISION, FORM Q AND THE OTIS QUICK-SCORING MENTAL ABILITY TEST

| Subject | Age | IQ | Arithmetic | Experimental Group A\textsuperscript{1} | | | Age | IQ | Arithmetic | Control Group B\textsuperscript{1} | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13-0 | 90 | 115 | 117 | 91 | 11-8 | 1 | 12-7 | 2 | 12-9 | 3 | 12-1 | 4 | 13-1 | 5 | 13-3 | 6 |
| 2 | 12-0 | 88 | 106 | 106 | 88 | 12-7 | 2 | 12-9 | 3 | 12-1 | 4 | 12-2 | 5 | 12-3 | 6 | 12-1 | 7 |
| 3 | 11-9 | 82 | 123 | 123 | 82 | 12-9 | 3 | 12-1 | 4 | 12-2 | 5 | 12-3 | 6 | 12-4 | 7 | 12-5 | 8 |
| 4 | 12-2 | 81 | 111 | 111 | 82 | 12-2 | 4 | 12-3 | 5 | 12-4 | 6 | 12-5 | 7 | 12-6 | 8 | 12-7 | 9 |
| 5 | 11-10 | 79 | 89 | 92 | 79 | 15-4 | 7 | 13-1 | 6 | 12-2 | 5 | 12-3 | 6 | 12-4 | 7 | 12-5 | 8 |
| 6 | 12-1 | 78 | 101 | 100 | 79 | 13-1 | 6 | 13-2 | 7 | 12-3 | 6 | 12-4 | 7 | 12-5 | 8 | 12-6 | 9 |
| 7 | 11-11 | 77 | 94 | 92 | 77 | 12-1 | 5 | 12-2 | 6 | 12-3 | 7 | 12-4 | 8 | 12-5 | 9 | 12-6 | 10 |
| 8 | 13-2 | 77 | 115 | 110 | 76 | 11-3 | 9 | 12-4 | 10 | 12-5 | 11 | 12-6 | 12 | 12-7 | 13 | 12-8 | 14 |
| 9 | 12-4 | 76 | 109 | 88 | 76 | 12-4 | 10 | 12-5 | 11 | 12-6 | 12 | 12-7 | 13 | 12-8 | 14 | 12-9 | 15 |
| 10 | 12-10 | 74 | 92 | 109 | 74 | 11-3 | 10 | 12-4 | 11 | 12-5 | 12 | 12-6 | 13 | 12-7 | 14 | 12-8 | 15 |
| 11 | 12-0 | 74 | 96 | 76 | 73 | 12-2 | 12 | 12-3 | 13 | 12-4 | 14 | 12-5 | 15 | 12-6 | 16 | 12-7 | 17 |
| 12 | 12-6 | 73 | 76 | 104 | 73 | 11-11 | 12 | 12-2 | 13 | 12-3 | 14 | 12-4 | 15 | 12-5 | 16 | 12-6 | 17 |
| 13 | 12-6 | 73 | 78 | 71 | 73 | 12-2 | 13 | 12-3 | 14 | 12-4 | 15 | 12-5 | 16 | 12-6 | 17 | 12-7 | 18 |
| 14 | 12-0 | 73 | 100 | 91 | 72 | 12-7 | 15 | 12-8 | 16 | 12-9 | 17 | 12-1 | 18 | 12-2 | 19 | 12-3 | 20 |
| 15 | 11-11 | 73 | 86 | 83 | 72 | 12-2 | 15 | 12-3 | 16 | 12-4 | 17 | 12-5 | 18 | 12-6 | 19 | 12-7 | 20 |
| 16 | 13-2 | 71 | 110 | 112 | 71 | 13-10 | 16 | 12-3 | 17 | 12-4 | 18 | 12-5 | 19 | 12-6 | 20 | 12-7 | 21 |
| 17 | 12-8 | 69 | 99 | 87 | 70 | 13-0 | 17 | 12-3 | 18 | 12-4 | 19 | 12-5 | 20 | 12-6 | 21 | 12-7 | 22 |
| 18 | 12-10 | 68 | 81 | 83 | 68 | 13-8 | 18 | 12-3 | 19 | 12-4 | 20 | 12-5 | 21 | 12-6 | 22 | 12-7 | 23 |
| 19 | 13-0 | 67 | 92 | 96 | 66 | 12-7 | 19 | 12-8 | 20 | 12-9 | 21 | 12-1 | 22 | 12-2 | 23 | 12-3 | 24 |
| 20 | 11-5 | 64 | 72 | 83 | 64 | 12-4 | 20 | 12-5 | 21 | 12-6 | 22 | 12-7 | 23 | 12-8 | 24 | 12-9 | 25 |
| 21 | 13-7 | 63 | 92 | 94 | 62 | 13-10 | 21 | 12-6 | 22 | 12-7 | 23 | 12-8 | 24 | 12-9 | 25 | 12-10 | 26 |
| 22 | 11-6 | 57 | 85 | 81 | 58 | 13-6 | 22 | 12-7 | 23 | 12-8 | 24 | 12-9 | 25 | 12-10 | 26 | 12-11 | 27 |

N 22

**Intermediate Testing Period**

At the end of six weeks the Experimental Group A\textsuperscript{1} and Control Group B\textsuperscript{1} were administered the Gray-Votaw-Rogers Achievement Test, Form R, Arithmetic Division. The results are found in Table 8. This table presents a comparison of the frequency distribution of scores obtained.
by the two groups of sixth grade pupils. This test was used for the purpose of finding the difference between the initial and the intermediate test for the two groups.

**Experimental Group A**

The data on the Gray-Votaw-Rogers Achievement Test, Form R, in reasoning of the twenty-two pupils in the Experimental Group are found in Table 9, and reveals that the mean was 52.50, standard deviation 6.45, and the standard error 1.75. In computation the mean was 54.27, standard deviation 8.10 and the standard error 2.20. Table 10 reveals that on the total arithmetic, the mean was 107.42, the standard deviation 13.47, and the standard error was 3.65. In reasoning 15 or 68 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 14 or 65 per cent of them fell within the same range. In reasoning there was a mean gain of 6.15, and in computation a mean gain of 4.08.

**Control Group B**

The data on the Intermediate Test for the twenty-two pupils in the Control Group are also found in Table 9, and reveals that the mean was 47.73, standard deviation 7.77, and standard error was 2.11 in reasoning. In computation, the mean was 51.15, standard deviation 8.58, and standard error 2.33. Table 10 reveals that on the total arithmetic the mean was 98.81, standard deviation 14.34, and standard error of the mean was 3.89. In reasoning 15 or 68 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 14 or 64 per cent of them fell within the same range. There was a mean gain of .54 in reasoning and 1.76 in computation.

**Comparative Data and Significant Differences**

As indicated in Table 11, the mean score for the Experimental Group in reasoning was 52.50;
TABLE 9

FREQUENCY DISTRIBUTION OF RAW SCORES OBTAINED BY FORTY-FOUR SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS TEST FORM R, REASONING AND COMPUTATION

INTERMEDIATE TEST

<table>
<thead>
<tr>
<th>Scores</th>
<th>Experimental Group</th>
<th>Control Group B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reasoning</td>
<td>Computation</td>
<td>Reasoning</td>
</tr>
<tr>
<td>65-57</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>62-64</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>59-61</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>56-58</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>53-55</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>50-52</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>47-49</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>44-46</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>41-43</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>38-40</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>35-37</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>32-34</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

N 22  Mean 52.50  Mean 54.27  Mean 47.73  Mean 51.15
SD 6.45  SD 8.10  SD 7.77  SD 8.58
SE 1.75  SE 2.20  SE 2.11  SE 2.33

for the Control Group it was 47.73. The standard deviation for the Experimental Group was 6.45, for the Control Group it was 7.77. The
<table>
<thead>
<tr>
<th>Score</th>
<th>Experimental Group A</th>
<th>Control Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>133-135</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>130-132</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>127-129</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>126-124</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>121-123</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>118-120</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>115-117</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>114-111</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>109-111</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>106-108</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>103-105</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>100-102</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>97-99</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>96-94</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>91-93</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>88-90</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>85-87</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>84-82</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>79-78</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>76-78</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total** | **22** | **22**

Mean | 107.42 | Mean | 98.61
SD  | 13.47  | SD   | 14.34
SE  | 3.65   | SE   | 3.89
### TABLE 11

**COMPARISON OF DATA OBTAINED BY MATCHED GROUPS OF SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS GENERAL ACHIEVEMENT TEST, FORM R, ARITHMETIC DIVISION**

**INTERMEDIATE TEST**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>M&lt;sub&gt;1&lt;/sub&gt;-M&lt;sub&gt;2&lt;/sub&gt;</th>
<th>SE&lt;sub&gt;End&lt;/sub&gt;</th>
<th>&quot;t&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasoning</td>
<td>52.50</td>
<td>6.45</td>
<td>1.75</td>
<td>14.77</td>
<td>2.74</td>
<td>1.74</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasoning</td>
<td>47.73</td>
<td>7.77</td>
<td>2.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td>54.27</td>
<td>8.10</td>
<td>2.20</td>
<td>3.12</td>
<td>3.20</td>
<td>0.98</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td>51.15</td>
<td>8.58</td>
<td>2.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td>107.42</td>
<td>13.47</td>
<td>3.65</td>
<td>8.61</td>
<td>5.33</td>
<td>1.62</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td>98.81</td>
<td>14.34</td>
<td>3.89</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
standard error of the mean for the pupils in the Experimental Group was 1.75; for the Control Group it was 2.11. The difference between the means was 4.77, and the standard error of the difference of the means was 2.71.

The "t" value for the two groups was 1.71. This "t" was not significant as it was less than 1.96 at the five per cent level of confidence. Therefore, there is no significant difference statistically.

Both groups had improved over the initial test, however, Group B1 had not improved as much as Group A1, because the former was the Control Group. The results of the intermediate test in Table 11 reveal a mean difference of 4.77 in reasoning, 3.12 in computation, and 8.61 in total arithmetic in favor of the Experimental Group A1.

**Final Testing Period**

**Introductory Statement.**— After the intermediate had been administered to the Experimental Group A1 and the Control Group B1, the groups were reversed. That is, the group that had been experimented with became the Control Group. These groups were designated as Experimental Group B2 and Control Group A2.

The Gray-Votaw-Rogers Achievement Test, Form S, Arithmetic Division, was given to determine the growth of both groups in arithmetic, with particular attention to growth made in reasoning or problem solving. Table 12 reveals the results of the final test and a comparison of the frequency distribution of scores obtained by two groups of sixth grade pupils.

**Experimental Group B2.**— The data on the Gray-Votaw-Rogers Achievement Test, Form S, Arithmetic Division for the twenty-two pupils in the Experimental Group B2 are shown in Table 12 which reveal that the mean was
TABLE 12
FREQUENCY DISTRIBUTION OF RAW SCORES OBTAINED BY FORTY-FOUR SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS TEST, FORM S, REASONING AND COMPUTATION
FINAL TEST

<table>
<thead>
<tr>
<th>Scores</th>
<th>Experimental Group B (^2)</th>
<th>Control Group A (^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reasoning</td>
<td>Computation</td>
</tr>
<tr>
<td>65-67</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>62-64</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>59-61</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>56-58</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>53-55</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>50-52</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>47-48</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>44-46</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>41-43</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>38-40</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N 22</th>
<th>Mean 52.77</th>
<th>Mean 52.38</th>
<th>Mean 54.42</th>
<th>Mean 55.50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SD 6.81</td>
<td>Mean 9.81</td>
<td>SD 6.54</td>
<td>SD 8.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SE 1.84</td>
<td>SE 2.66</td>
<td>SE 1.77</td>
<td>SE 2.19</td>
<td></td>
</tr>
</tbody>
</table>

52.77 standard deviation 6.81 and standard error of the mean was 1.84, in reasoning. In computation the mean was 52.38, standard deviation 9.81, and standard error of the mean was 2.66. Table 13 presents a comparison of the frequency distribution of scores obtained on the total arithmetic.
The mean was 105.92, the standard deviation 15.06, and the standard error of the mean was 4.08. About 18 or 82 per cent of the pupils fell within the first standard deviation above and below the mean in reasoning, 15 or 68 per cent in computation, and 15 or 68 per cent in the total arithmetic. The data still seems that a normal curve would be approached and to tend toward homogeneity. During the study a mean gain of 5.58 was made in reasoning, 2.99 in computation, and 9.69 in total arithmetic.

Control Group A$^2$.— The data on the final test for the twenty-two pupils in the Control Group A$^2$ are also found in Table 12, which reveal that the mean was 54.42, the standard deviation 6.54, and the standard error of the mean was 1.77 in reasoning. In computation the mean was 55.50, the standard deviation was 8.07, and the standard error of the mean was 2.19. Table 13 presents a comparison of the frequency distribution of scores obtained on the total arithmetic. The mean was 109.6, standard deviation 13.50, and the standard error of the mean was 3.66. In reasoning 19 or 86 per cent of the pupils fell within the first standard deviation above and below the mean, in computation 15 or 68 per cent, and in total arithmetic 16 or 73 per cent. There was a mean gain of 8.07 in reasoning, 5.31 in computation, and 13.23 in total arithmetic.

Comparative Data Significant Difference.— As indicated in Table 14, in reasoning the mean score for the Experimental Group B$^2$ was 52.77; for the Control Group A$^2$ it was 54.42. The standard deviation for the Experimental Group was 6.81; for the Control Group it was 6.54. The standard error of the mean for the Experimental Group was 1.84; for the
### TABLE 13
FREQUENCY DISTRIBUTION OF RAW SCORES MADE BY FORTY-FOUR SIXTH
GRADE PUPILS ON THE GRAY-VOTAW-ROGERS GENERAL ACHIEVEMENT
TEST, FORM S, ARITHMETIC DIVISION (REASONING AND
COMPUTATION COMBINED)

**FINAL TEST**

<table>
<thead>
<tr>
<th>Scores</th>
<th>Experimental Group B</th>
<th>Control Group A</th>
</tr>
</thead>
<tbody>
<tr>
<td>133-135</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>130-132</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>127-129</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>124-126</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>121-123</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>118-120</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>115-117</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>112-114</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>109-111</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>106-108</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>103-105</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>100-102</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>97-99</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>94-96</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>91-93</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>88-90</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>85-87</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>82-81</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>79-81</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

N 22  Mean  105.92  Mean  109.46
Std 15.06  Std 13.50
SE  4.08  SE  3.66
Control Group it was 1.77. The difference between the means was 1.65, and the standard error of the difference of the means was 2.55.

The "t" value for the two groups was 0.65. This was not significant as it was less than 1.96 at the five per cent level of confidence. Therefore, there is no significant difference statistically.

The mean score in computation for the Experimental Group $B^2$ was 52.38; for the Control Group $A^2$ it was 55.50. The standard deviation for the Experimental Group $B^2$ was 9.81; for the Control Group $A^2$ it was 8.07. The standard error of the mean for the Experimental Group $B^2$ was 2.66; for the Control Group $A^2$ it was 2.19. The difference between the means was 3.12. The standard error of the difference between the means was 3.44.

The "t" value for both groups was 0.91. Since it was less than 1.96 at the five per cent level of confidence, there is no significant difference statistically.

The mean score for the total arithmetic for the Experimental Group $B^2$ was 105.92; for the Control Group $A^2$ it was 109.46. The standard deviation for the Experimental Group $B^2$ was 15.06; for the Control Group $A^2$ it was 13.50. The standard of the mean for the Experimental Group $B^2$ was 4.08; for the Control Group $A^2$ it was 3.66. The difference between the means was 3.54. The standard error of the difference between the means was 5.48.

The "t" value for the two groups was 0.65. It was not significant at the five per cent level of confidence. Therefore, there is no significant difference statistically.

The results of the final test in Table 14 reveal a mean difference of 1.65 in reasoning, 3.12 in computation, and 3.54 in total arithmetic
in favor of the Control Group A2.

**TABLE 1h**

**COMPARISON OF DATA OBTAINED BY MATCHED GROUPS OF SIXTH GRADE PUPILS ON THE GRAY-VOTAW-ROGERS GENERAL ACHIEVEMENT TEST, FORM S, ARITHMETIC DIVISION**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>M1-M4</th>
<th>SEmd</th>
<th>&quot;t&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B²</td>
<td>52.77</td>
<td>6.81</td>
<td>1.84</td>
<td>1.65</td>
<td>2.55</td>
<td>0.65</td>
</tr>
<tr>
<td>Reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A²</td>
<td>54.42</td>
<td>6.54</td>
<td>1.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B²</td>
<td>52.38</td>
<td>9.81</td>
<td>2.66</td>
<td>3.12</td>
<td>3.44</td>
<td>0.91</td>
</tr>
<tr>
<td>Computation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A²</td>
<td>55.50</td>
<td>8.07</td>
<td>2.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B²</td>
<td>105.92</td>
<td>15.06</td>
<td>4.08</td>
<td>3.54</td>
<td>5.48</td>
<td>0.65</td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group A²</td>
<td>109.46</td>
<td>13.50</td>
<td>3.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 15 presents the mean scores on the initial and final tests, mean gain for each group, and the mean of the means for each of the two groups.

**TABLE 15**

MEAN SCORES ON THE INITIAL TEST AND FINAL TEST, MEAN GAIN FOR EACH GROUP, AND MEAN OF THE MEANS FOR EACH OF THE TWO GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Pupils</th>
<th>Initial Test</th>
<th>Final Test</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reasoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental B²</td>
<td>22</td>
<td>47.19</td>
<td>52.77</td>
<td>5.58</td>
</tr>
<tr>
<td>Control A²</td>
<td>22</td>
<td>46.35</td>
<td>54.42</td>
<td>8.07</td>
</tr>
<tr>
<td>Mean of Means</td>
<td></td>
<td>46.77</td>
<td>53.60</td>
<td>6.83</td>
</tr>
</tbody>
</table>

|                |                  | Computation  |            |      |
|                |                  |              |            |      |
| Experimental B² | 22               | 49.39        | 52.38      | 2.99 |
| Control A²     | 22               | 50.19        | 55.50      | 3.12 |
| Mean of Means  |                  | 49.79        | 53.94      | 3.06 |

|                |                  | Total Arithmetic |      |      |
|                |                  |                  |      |      |
| Experimental B² | 22               | 96.23            | 105.92 | 9.69 |
| Control A²     | 22               | 96.23            | 109.46 | 13.23 |
| Mean of Means  |                  | 96.23            | 107.69 | 11.46 |

How do the "before instruction" methods used by pupils in performing the fundamental processes without the use of paper and pencil
compare with the "after instruction" methods?

Pupil's written explanations of thinking when adding, subtracting, multiplying, and dividing whole numbers without the use of paper and pencil were analyzed to determine how many were using the same steps as they had been taught to use when working with the aid of paper and pencil. It will be recalled that these explanations were secured by asking pupils to write a statement in six different lessons as to how they thought in getting the answer to specific examples. (See booklet of oral lessons, page 54, Appendix A.

TABLE 16

NUMBER OF PUPILS USING PAPER AND PENCIL PROCEDURES FOR ORAL WORK BEFORE AND AFTER INSTRUCTION

<table>
<thead>
<tr>
<th>Group</th>
<th>Number Before Instruction</th>
<th>After Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental B</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>Control A</td>
<td>22</td>
<td>10</td>
</tr>
</tbody>
</table>

Presented in the paragraphs to follow are some of the examples used for each process in obtaining explanations of the pupils' thinking. These explanations were worded by the pupils.

1. \(14 + 35\)

I know that \(14\) equals \(10 + 4\) and \(35\) equals \(30 + 5\), so I added \(10 + 30\) which is \(40\). Then I added \(4 + 5\) to get \(9\), and \(40 + 9\) to get my answer of \(49\).

2. \(42 - 14\)
I know that 10 from 42 is 32, so I just subtracted 4 from 32 to get my answer of 28.

3. 15 x 13

I subtracted 3 from 13 and multiplied 15 by 10 to get 150. Then I multiplied 15 by 3 to get 45 and added 150 + 45 to get my answer of 195.

4. 65 divided by 5

I counted by 5's to get my answer 13.

Another pupil gave this explanation about the same example. I said 5 x 12 equals 60, and 60 + 5 equals 65, so there must be 13 5's in 65.

As indicated in Table 1, some were still using the paper and pencil method, but both groups made some progress during the study.
CHAPTER III

SUMMARY AND CONCLUSIONS

Rationale.— Today the importance of oral arithmetic is recognized more than ever, because it is receiving increased emphasis in the textbooks and classroom practices, however, very little attention has been given to it in professional literature.

Since most everyday uses of members are of the non-paper-and-pencil type, it seems logical that oral arithmetic should have an important place in arithmetic instruction.

There is a great need for more research seeking quantitative evidence as to the effectiveness of oral arithmetic instruction. This study attempted to ascertain the effectiveness of oral arithmetic instruction when used as an integral part of the regular program of reasoning and computation, upon a selected group of sixth grade pupils.

Statement of Problem.— The problem of this study was to determine what effect oral arithmetic instruction, when used as an integral part of the regular program of reasoning and computation, would have upon a selected group of sixth grade pupils.

Purpose of Study.— The major purpose of this study was to determine the effectiveness of instruction in oral arithmetic when used as an integral part of the regular arithmetic program of sixth grade pupils enrolled in the Eastside Junior High School. More specifically, the purposes of this study were:
1. To determine the effectiveness of the use of oral arithmetic on pupils' general growth in arithmetic, with particular attention to growth in ability to solve problems.

2. To obtain explanations of the ways pupils think when performing each of the four fundamental processes in arithmetic without use of paper and pencil.

3. To propose any implication for improving the teaching of arithmetic in the sixth grade of Eastside Junior High School, Coweta County, Georgia.

**Definition of Terms.**—To facilitate understanding of the terms which were used throughout the conduct of the study, the following definitions are offered:

1. The term, "Oral Arithmetic," as was used in this study has reference to arithmetic done without the aid of paper and pencil.

2. The term, "Arithmetic Performance," has reference to the general attainment of the two groups as measured by a standardized test in Arithmetic Problem Solving.

3. The term, "Example," has reference to an arithmetical situation in which the sign or operation to be performed is indicated.

4. The term, "Problem," has reference to an arithmetical situation which requires the pupils to decide which operation is to be performed.

5. The term, "Growth," as was used in this study has reference to progress made by the pupils during the study.

**Summary of Related Literature.**—It was concluded from the related
literature that:

1. Oral arithmetic should be emphasized because of its relationship to written arithmetic.
2. Oral arithmetic should be included in all arithmetic programs designed to develop ability in problem-solving.
3. The teacher should provide pupils with the kind of instruction that will enable them to use arithmetic in the ways it is needed.

Procedure.— Both sections of the sixth grade were given the Gray-Votaw-Rogers General Achievement Test, Form Q, Reading Division, after which two groups of twenty-two pupils each were selected. The pupils selected were reading on and above five months in the third grade. Both groups were given the Otis Quick-Scoring Mental Ability Test, Beta: EM, and Form Q of the Gray-Votaw-Rogers General Achievement Test, Arithmetic Division. One group was designated as B1 and was controlled six weeks while the other group was designated as A1 and received the planned oral arithmetic lessons along with the regular arithmetic program. The Control Group B1 received the regular arithmetic program without the planned oral arithmetic lessons.

At the beginning of the seventh week, a second (Intermediate) test was given to determine the achievement of both groups. Immediately, the Control Group B1 became the Experimental Group, while the former Experimental Group A1 became the Control Group A2. At the end of six weeks a final test was given.

Summary of Findings.— The analysis and study of the data obtained, led to the following findings and conclusions:
1. In the two sections of the sixth grade class 80 per cent of the pupils who performed on the Gray-Votaw-Rogers Test, Form Q, Reading Division, read on and above the third grade level, and 20 per cent read below the third grade level.

2. The mean score on the Otis Quick-Scoring Mental Ability Test, Beta: EM, (Beta IQ) for the Experimental Group A was 73.77, standard deviation 7.56, and the standard error of the mean was 2.05. The mean score for the Control Group B was 73.92, standard deviation 7.65, and the standard error of the mean was 2.07.

3. The mean score on the Gray-Votaw-Rogers General Achievement Test, Form Q, Arithmetic Division for the pupils in the Experimental Group A was 96.23, standard deviation 10.86, the standard error of the mean 2.94. The mean score for the Control Group B was 96.23, standard deviation 14.01, and the standard error of the mean was 3.80.

4. The difference between the means of the two groups was zero, the standard error of the difference of the means 4.80, and the "t" value was zero.

5. The mean score on the Gray-Votaw-Rogers Test, Form R, Arithmetic Division for the pupils in the Experimental Group A was 107.42, standard error 13.47, and the standard error of the mean 3.65. The mean score for the Control Group B was 96.81, the standard deviation 14.34, and the standard error of the mean was 3.89.

6. The difference between the means of the two groups was 8.61, the standard error of the difference between the means 5.33,
and the "t" value was 1.62.

7. The mean score on the Gray-Votaw-Rogers Test, Form S, Arithmetic Division (final test) for the pupils in the Experimental Group B\(^2\) was 105.92, standard deviation 15.06, and standard error 4.08. The mean score for the pupils in the Control Group A\(^2\) was 109.46, standard deviation 13.50, and the standard error 3.66.

8. The difference between the means for both groups was 3.54, the standard error between the difference of the means 5.48, and the "t" value 0.65.

9. Table 17 indicates the mean scores on the initial test and final test, mean gain for each group, and mean of the means for each of the two groups.

Table 17

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Pupils</th>
<th>Initial Test</th>
<th>Final Test</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Arithmetic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental B(^2)</td>
<td>22</td>
<td>96.23</td>
<td>105.92</td>
<td>0.69</td>
</tr>
<tr>
<td>Control A(^2)</td>
<td>22</td>
<td>96.23</td>
<td>109.46</td>
<td>13.23</td>
</tr>
<tr>
<td>Mean of Means</td>
<td></td>
<td>96.23</td>
<td>107.69</td>
<td>11.46</td>
</tr>
</tbody>
</table>
10. On the initial test, 14 or 64 per cent of the pupils in the Experimental Group fell within the first standard deviation above and below the mean in reasoning, and in computation 16 or 73 per cent of the pupils fell within the same range. On the final test, 19 or 86 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 15 or 68 per cent fell within the same range. There was a mean gain of 8.07 in reasoning and 5.31 in computation.

11. On the initial test, 16 or 73 per cent of the pupils in the Control Group fell within the first standard deviation above and below the mean in reasoning, and in computation 14 or 64 per cent fell within the same range. On the final test, 18 or 82 per cent of the pupils fell within the first standard deviation above and below the mean, and in computation 15 or 68 per cent fell within the same range. There was a mean gain of 5.58 in reasoning and 2.99 in computation. The data shows that a normal curve would be approached and to tend toward homogeneity.

12. Both groups made progress during the study in computation and reasoning, but the greater gain was in reasoning or problem-solving which was in favor of Group A.

13. In recording explanations of pupil thinking in the groups, it was discovered that pupils can and will use a variety of ways of thinking when performing the four fundamental processes in arithmetic.

Conclusions. -- The conclusions were:
1. Pupils taking part in the study exhibited a need for specific experiences with oral arithmetic, and during the course of the study they made gains in computation and problem-solving, however, the gains were not statistically significant.

3. Pupil progress is written arithmetic as was measured by standardized tests, was not hindered by the fact that part of the regular arithmetic period was used for oral arithmetic. Rather, it seems that the experiences of solving problems without paper and pencil helped the pupils better understand written word problems.

3. It also seems that a logical conclusion would be that pupils at the intermediate-grade level are capable of becoming proficient at handling oral arithmetic situations met in everyday activities, if they are provided with the proper oral arithmetic instruction.

Implications.— From the results certain implications may be drawn, indicating that oral arithmetic instruction is of worth and that more attention should be given to it:

1. Oral arithmetic instruction is generally held in good repute by many authorities, and as, it can be taught with a fair degree of satisfaction, more effort and time should be given to oral arithmetic instruction by teachers of arithmetic, and more space devoted to it by authors of arithmetic textbooks.

2. Most people use oral arithmetic in everyday situations in life which call for oral instruction. An understanding and habit of using good methods in finding "how much," therefore, should prove beneficial and practical.

3. With problems such as the ones used in this study, a non-
pencil-and-paper method of solving problems could be used in practice work without decreasing the efficiency of the sixth grade pupils' work in arithmetic.


5. Timed problems and practice exercises are useful in motivating the pupils' work in problem solving.

6. There are some problems which, no doubt, should be handled by the pencil-and-paper method at all times.

7. Although it was concluded by the writers, referred to in this study, that no studies have shown any marked superiority for any one method of improving problem-solving ability, this writer feels safely in saying, that an arithmetic program will not suffer by conducting a plan of oral arithmetic instruction similar to the one used in this study, but there is a possibility that much good may be done.

Recommendations.— During the time that the writer worked with the experiment reported in this thesis, she noted several problems associated with the whole question of non-paper-and-pencil work in arithmetic, which she felt warranted further investigation. Some of these problems are herein suggested with the hope that some interested person/or persons might be influenced to investigate them.

1. The effectiveness of the non-pencil-and-paper method of solving verbal problems should be studied under an experimental design that covered at least one semester or even a year. In such a design the experimental group should have its regular arithmetic work supplemented with the non-pencil-and-paper type of work, while the control group
should have its regular arithmetic program which is more on a pencil-and-paper type of arithmetic.

2. The effectiveness of the non-pencil-and-paper method of solving verbal problems in arithmetic during the first formal instruction in problem solving should be investigated.

3. A more comprehensive study should be made to determine whether non-pencil-and-paper training results in less use of pencil and paper in situations where such use is optional than results from a like amount of training in the "traditional" pencil-and-paper method.

4. A carefully designed study should be made to determine what types of problems are better solved by the method used in this study.

5. A study of the effect that timing problems individually in the practice work has upon achievement in solving problems should be conducted.

6. An extensive and intensive study should be conducted to determine the effect that varying the methods of solving verbal has upon achievement, class interest, and general class morale.
BIBLIOGRAPHY

Books


Yearbook


Report


Unpublished Materials

Brown, Richard C. "An Experimental Study of the Effect of Frequent Testing on Achievement in Arithmetic Upon a Selected Group of Sixth Grade Pupils of the Coolidge Negro Public School, College, Georgia." Unpublished Master's thesis, School of Education, Atlanta University, Atlanta, Georgia, 1952.


Published Material

Flournoy, Mary Frances. "A Study of the Effectiveness of An Oral
CONTENTS

1. Arrangement of Tests and Oral Arithmetic Lessons 1
2. Examples and Problems 3
   Addition 3
   Subtraction, Multiplication, Division 4
   "Follow Me" 5
   Problems 5
3. Suggestive Patterns for Study Lessons 10
4. References 14
ARRANGEMENT OF TESTS AND ORAL ARITHMETIC LESSONS

1. Initial Tests
2. Study Lesson 1 • • • • How to add without pencil and paper
3. Example Practice 1 • • • • Addition
4. Example Practice 2 • • • • Addition
5. One-step Problem Practice 1
6. One-step Problem Practice 2
7. One-step problem Practice 3
8. Study Lesson 2 • • • • How to subtract without pencil and paper
9. Example practice 3 • • • • Subtraction
10. Example practice 4 • • • • Subtraction
11. One-step problem Practice 4
12. One-step problem Practice 5
13. One-step problem Practice 6
14. Study Lesson 3 • • • • How to multiply without pencil and paper
15. Example practice 5 • • • • Multiplication
16. Example practice 6 • • • • Multiplication
17. One-step problem Practice 7
18. One-step problem Practice 8
19. One-step problem Practice 9
20. Study Lesson 4 • • • • How to divide without pencil and paper
21. Example Practice 7 • • • • Division
22. Example practice 8 • • • • Division
23. One-step problem Practice 10
24. One-step problem Practice 11
25. One-step problem Practice 12
26. Study Lesson 5 . . . . "FollowMe" Examples without pencil and paper
27. "FollowMe" Practice 1 . . . . More than one process involved
28. "Follow Me" practice 2 . . . . More than one process involved
29. One-step problem Practice 13
30. One-step problem Practice 14
31. One-step problem Practice 15

INTERMEDIATE TEST

Lessons to Control Group

Final Test
EXAMPLES AND PROBLEMS

The examples and problems were read once orally by the teacher, and thirty seconds were allowed for each example and forty seconds were allowed for each problem. After solving some of the problems and examples the pupils were asked to turn their papers over and write on the back the steps of how they thought in getting their answers. When solving some of the problems, the pupils were asked to write the first letter of the operation used, to the right of the answers. For example: A for add, S for subtract, M for multiply, and D for divide. Six seconds were allowed to write explanations. Only six lessons were used to obtain explanations. Twenty minutes of the regular arithmetic period were used daily for six weeks for each of the two groups.

Add:  1. 16 + 23  
      2. 14 + 35  
      3. 19 + 17  
      4. 29 + 16  
      5. 18 + 21  
      6. 35 + 26  
      7. 25 + 28  
      8. 45 + 19  
      9. 28 + 24  
     10. 65 + 37  

11. 74 + 19  
12. 58 + 25  
13. 34 + 48  
14. 57 + 12  
15. 13 + 29  
16. 34 + 50  
17. 96 + 19  
18. 32 + 65  
19. $2.84 + .96  
20. $1.25 + $1.43

Subtract: 1. 55 - 20  
           2. 26 - 18  
           3. 42 - 28  
           4. 43 - 19  

9. 38 - 23  
10. 60 - 11  
11. 46 - 27  
12. $1.34 - .38
5. 31 - 14
6. 51 - 34
7. 51 - 43
8. 52 - 28

Multiply:
1. 10 x 14
2. 10 x 19
3. 10 x 29
4. 10 x 48
5. 10 x 10
6. 20 x 8
7. 20 x 9
8. 20 x 20
9. 14 x 13
10. 11 x 17
11. 6 x 21
12. 8 x 32
13. 12 x 11
14. 13 x 15
15. 14 x 105
16. 6 x 55
17. 9 x 32
18. 10 x 16
19. 7 x 23
20. 8 x 120

Divide:
1. 45 - 3
2. 65 - 5
3. 64 - 4
4. 96 - 8
5. 96 - 6
6. 98 - 7
7. 84 - 6
8. 95 - 5
9. 87 - 3
10. 128 - 4
"Follow Me"

1. \(9 + 8 - 5 \times 2 - 4\)
2. \(99 + 4 - 6 \times 3 - 7\)
3. \(32 - 8 \times 9 + 8\)
4. \(3 \times 12 - 4 \times 3 + 6\)
5. \(54 - 9 \times 7 + 9\)
6. \(7 \times 8 - 3 - 6\)
7. \(24 - 2 + 4 - 8\)
8. \(23 - 15 \times 8 - 2\)
9. \(63 - 9 \times 6 + 8\)
10. \(12 + 19 - 10 - 3 \times 7\)
11. \(12 + 19 - 10 - 3 \times 7\)
12. \(15 + 9 - 3 \times 7 - 14\)

Problems:

1. Mr. Smith paid 48¢ for his movie ticket and 16¢ for his son's ticket. How much did Mr. Smith spend for both tickets?

2. Jack paid $2.50 for a pair of skates and 75¢ for a cap. How much did he spend in all?

3. How much will Henry have to pay for five tennis balls priced at 40¢ each?

4. How much will Walter's lunch cost if he buys soup for 8¢, a salad for 13¢, and ice cream for 10¢?

5. How much money will Sally need to buy a 15¢ pad, a 7¢ pencil, a 6¢ eraser, and a 15¢ bottle of ink?

7. Pears are selling at 2 for 5¢. How much will Joan pay for 8 pears?

8. On each school day Allen spends 10¢ for carfare and 30¢ for lunch. How much does he spend for carfare and lunch in five school days?

9. Jim can plow 2 acres in one hour, how many hours will it take to plow 30 acres?

10. One quart of ice cream is enough to serve 6 children. How many quarts are needed to serve 36 children?

11. How much will a ball and bat cost, if the ball costs 98¢ and the bat costs $1.65?

12. The sixth grade printed 125 tickets for the class play. They sold all but 29. How many were sold?

13. In a shipment of watermelons 52 arrived in good condition and 107 were damaged. How many watermelons were in the whole shipment?

14. Mrs. Jones has bought $2.67 worth of groceries. How much change should she receive from a five-dollar bill?

15. Joe gathered 10 dozen eggs and sold them at 55¢ a dozen. How much did he receive for the eggs?

16. How much is left from Bill's ten-dollar bill after he has spent $6.98 for his mother's birthday present?

17. Joe earns 45¢ an hour each Saturday. How much does he earn in 10 hours?

18. Jack and Henry have a stamp book. Jack has 87 stamps in his book and Henry has 102 in his. How many more stamps has Henry than Jack?

19. How much will one orange cost if they are selling at 48¢ a dozen?

20. Jack weighs 120 pounds. His younger brother weighs 80 pounds.
How much more does Jack weigh than his brother?

21. One hen has 12 chicks and another has 9. How many do both hens have?

22. Mary took her three dimes and two nickels to the bank to get pennies for her toy bank. How many pennies did she get?

23. Joyce spent 23¢ Saturday and 10¢ Sunday. How much did she spend both days?

24. Carl picked 150 pounds of cotton at $2.00 per hundred. How much money did he receive?

25. If one arithmetic book cost $1.27, how much will ten books cost?

26. We have 34 pupils on roll and 31 are present. How many are absent?

27. How many apples can be bought for 60¢ if they sell at 3 for 10¢?

28. What is the total cost of ten 3¢ stamps and eight 2¢ stamps?

29. How many pounds of apples can be bought for 45¢ if they are selling at 15¢ a pound?

30. A pupil’s lunch cost 32¢ a day. How much will he have to pay for lunches in five days?

31. How many problems did a boy get right if he missed 9 out of 38?

32. How much did Mrs. Adams spend at the store if she bought a loaf of bread for 18¢ and a pound of butter for 80¢?

33. Dick wants to buy 4 ping pong balls. They cost 48¢ a dozen. How much will the 4 balls cost?

34. How much will 6 lbs. of apples cost if they are selling at 3 lbs. for 26¢?
35. How many cents does James have if he has a half-dollar, a quarter, two dimes, and four pennies?

36. During the first six school weeks with five school days each week, Jane was absent 3 days. How many days was she present?

37. How many minutes late was a train if it was due at 5:45 p.m., but came in at 6:12?

38. How many \( \frac{1}{2} \) lb. boxes of candy can be filled from \( \frac{3}{2} \) pounds of candy?

39. How many cookies did a bakery sell if they sold all but 12 of the 100 they had made?

40. A class is taking a 20 min. test. If they start at 10:55 A.M., at what time should they stop?

41. Mrs. Williams uses \( 1\frac{1}{2} \) cups of flour in making enough cookies for 8 people. How much flour will she have to use in making enough cookies for 16 people?

42. If paper cups sell at the rate of 3 for 15¢, how many can be bought for 35¢?

43. Annie takes a bus to and from school each day. The fare each day is 20¢. Her lunch is 32¢ each day. How much altogether are these school expenses each day?

44. Elizabeth gave the bus driver a quarter. The bus driver gave her 2 pennies and 3 nickels as change. How much bus fare had she paid?

45. Jim bought a $24 watch. He paid $1 down and will pay the rest at $5 a month. How many months will it take for him to finish paying for the watch?

46. Fred bought 35 papers at 2¢ each and will sell them at 5¢ each. How much money will he gain?
47. Mr. Adams needs to put all the milk from a 5 gallon can into quart bottles. How many bottles does he need?

48. On an arithmetic test of 30 problems, Ned left out 4 problems and had 8 wrong. How many did he have correct?

49. Next week coats will be on sale at \( \frac{1}{2} \) off the regular price. A coat priced at $12 now will cost how much next week?

50. Bill wants to buy a bicycle that will cost $46. He has already earned $28. How much more does he need to earn?

51. Mary has 72 snapshots. She plans to paste 8 on a page. How many pages does she need?

52. Ninety boys and 60 girls are enrolled in Emerson Junior High School. What is the total enrollment?

53. Miss Jones wants to give 4 sheets of paper to each of her 22 pupils. How many sheets of paper will she need?

54. Mrs. Jones bought a lamp on sale for $9.98. Before the sale the lamp was marked $12. How much did she save?

55. Andy's father averages 40 miles per hour with his car on a long trip. At this rate, how long will it take him to go 160 miles?

56. How many hours did Mr. Sims work last week at the garage if he worked 6 hours on Monday, 8 hours on Tuesday, 7 hours on Wednesday, and 8 hours on Friday?

57. One automobile tire costs $16.50. What will it cost at the same price?

58. The crosstown bus traveled a total of 72 miles one day. It made a total of 6 rounds trips. How long was each round trip?

59. In Ray's school 112 out of 210 boys and girls have library cards. How many do not have cards?

60. Tickets for the game were 15¢ each. The sixth grade of our school sold 25 tickets. How much money did they receive for these tickets?
SUGGESTIVE PATTERNS TO FOLLOW IN STUDY LESSONS

Study Lesson 1

How to add without pencil and paper

1. Add 43 + 28 (allow 30 seconds)

Write on the back of your paper how you thought in getting your answer. (allow 60 seconds)

The teacher wrote the example on the board and gave her explanation by saying 43 + 28

I first added 40 + 28. How much is that? (pause for response)
Then I added 3 more to this answer. What would be my final answer? (pause for explanation from children)
Yes, in 43 we have 40 and 3.
To make addition easy you may first add 40 to 28 and then add 3 to this answer.

The correct answer is 71. Check your answer.

2. Add 43 \(\frac{1}{3}\) 20

What else would you have to do to get the correct answer? Why? (pause)
Yes, you would have to add 3 because the example was 43 \(\frac{1}{3}\) 28.

Try to use this way of adding for the following examples: Examples were given one at a time, and after each, time was given for explanations from the pupils.
Study Lesson 2

How to subtract without using pencil and paper

Today, let us study some ways of subtracting without paper and pencil. Perhaps you already know some ways of doing this. Let us begin.

1. 32 - 14

(allow 30 seconds)

The teacher wrote the example on the board and gave her explanation by saying:

\[
\begin{align*}
32 \\
- 14 \\
---
\end{align*}
\]

When I subtracted these numbers, I first subtracted 10 from 32. How much is this? (pause). Then I subtracted 4 from this answer. What would be my final answer? (pause) Why is it all right to subtract that way? (pause) Yes, because in 14 we have one ten and a four.

The correct answer is 18. Check your answer. Are there any questions?

Try to use this way of subtracting for example 2 which is 55-29.

(pause) Yes, one way to do it is to take 20 from 55. What is the next step? Yes, 35 - 9 equals 26. It could be written like this: 55-20=35-9=26.

Work the following by using this way or others. Any way will be accepted if you get the correct answer.

Give two or three examples and then check to see how many are doing with the procedure.
Study Lesson 3

Today let us study some ways of multiplying without paper and pencil.

1. Multiple 12 x 16 (allow 30 seconds)

The teacher wrote the example on the board and gives her explanation by saying: 12 x 16

This is one way to do it. Since 12 is our multiplier, we will multiply by $\frac{1}{2}$ of it. 6 x 6 = 96 then multiply it by 2 and will get 192. 96 was doubled.

Why? In 12 there are two 6's so doubling the answer is same as multiplying by 12. You may say 2 x 96 or 96 + 96.

Another way is to separate 16 into a 10 and 6, then say 6 x 10=60 + 6 x 6 and 60 + 36 = 96 x 2 which will give your 192.

Time should be given for the pupils to express themselves, because pupils can and do think in many ways.

Try to use this way of multiplying for the next example. Give examples one at a time and let them try and write their explanations if time permits.

(Teach the pupils an easy way to multiply by 10. Tell them 10 times any number is that number with a zero written after it. To multiply by 20 will be the number given, doubled with a zero written after it and by 30 it will be three times the number given with a zero written after it.)
Study Lesson 4

How to divide without using paper and pencil

Today, let us divide some examples without using paper and pencil.

1. $96 \div 6$ (allow 30 seconds)

Teacher may write the example on the board and tell the pupils how it may be done. It may be done by dividing 9 by 6 and get 1, then add the 3 tens changed to ones to the 6 and say 36 divided by 6 = 6. The correct answer would be one ten plus 6 ones = 16.

Give the pupils a chance to try to work them and give their explanations. Emphasize the importance of multiplication factors in dividing.

Study Lesson 5

The words "follow me" mean just what they say. In the "follow me" examples we use a mixture of the four operations. An example is read aloud one step at a time, and time is given for the pupils to compute as you read the example in parts.

1. $13 - 4 \text{ (pause)} \times 3 \text{ (pause)} + 5 \text{ (pause)} \div 8 = 4$. 
Problem Solving

Today, let us work some one-step problems. I will read them aloud one time and when you write your answers, please write the first letter of the operation that you need in getting your answer.

References:


APPENDIX B

ANSWER SHEETS FOR STUDY AND PRACTICE LESSONS
### Answer Sheet for Study Lessons

<table>
<thead>
<tr>
<th>Lesson 1</th>
<th>Lesson 2</th>
<th>Lesson 3</th>
<th>Lesson 4</th>
<th>Lesson 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
<tr>
<td>Practice 1</td>
<td>Practice 2</td>
<td>Practice 3</td>
<td>Practice 4</td>
<td>Practice 5</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice 6</th>
<th>Practice 7</th>
<th>Practice 8</th>
<th>Practice 9</th>
<th>Practice 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
<tr>
<td>Practice 1</td>
<td>Practice 2</td>
<td>Practice 3</td>
<td>Practice 4</td>
<td>Practice 5</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice 6</th>
<th>Practice 7</th>
<th>Practice 8</th>
<th>Practice 9</th>
<th>Practice 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
<tr>
<td>Practice 1</td>
<td>Practice 2</td>
<td>Practice 3</td>
<td>Practice 4</td>
<td>Practice 5</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
<td>5.</td>
</tr>
<tr>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
<td>6.</td>
</tr>
<tr>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
<td>7.</td>
</tr>
<tr>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
<td>9.</td>
</tr>
<tr>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
<td>10.</td>
</tr>
<tr>
<td>Page 6</td>
<td>Page 5</td>
<td>Page 4</td>
<td>Page 3</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>25</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>46</td>
<td>26</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>47</td>
<td>27</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>48</td>
<td>28</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>49</td>
<td>29</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>50</td>
<td>30</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>51</td>
<td>31</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>52</td>
<td>32</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>53</td>
<td>33</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>54</td>
<td>34</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>55</td>
<td>35</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>56</td>
<td>36</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>57</td>
<td>37</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>58</td>
<td>38</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>59</td>
<td>39</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>60</td>
<td>40</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>61</td>
<td>41</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>62</td>
<td>42</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>63</td>
<td>43</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>44</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>
**Otis Quick-Scoring Mental Ability Tests: New Edition**

**BETA TEST: FORM EM**

by Arthur S. Otis

---

*Do not open this booklet, or turn it over, until you are told to do so.*

Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name........................................ Grade............ Boy........ Girl........

Date of birth...................................... How old are you now?........

Date........................................ School.................. City and state....

---

*Read these directions. Do what they tell you to do.*

This is a test to see how well you can think. It contains questions of different kinds. Under each question there are four or five possible answers. You are to read each question and decide which of the answers below it is the right answer. Do not spend too much time on any one question. Here are three sample questions.

**Sample a:** Which one of the five things below is soft?

(1) glass   (2) stone   (3) cotton   (4) iron   (5) ice

The right answer, of course, is cotton. The word cotton is No. 3. Now look at the “Answer Spaces for Samples” at the right. In the five spaces after the Sample “a,” a heavy mark has been made, filling the space under the 3. This is the way to answer the questions.

Try the next sample question yourself. Do not write the answer; just put a heavy mark in the space under the number corresponding to the right answer.

**Sample b:** A robin is a kind of —

(6) plant   (7) bird   (8) worm   (9) fish   (10) flower

The answer is bird, which is answer 7; so you should answer Sample “b” by putting a heavy mark in the space under the 7. Try the Sample “c.”

**Sample c:** Which one of the five numbers below is larger than 55?

(11) 53  (12) 48  (13) 29  (14) 57  (15) 16

The correct answer for Sample “c” is 57, which is No. 14; so you would answer Sample “c” by making a heavy black mark that fills the space under the number 14. Do this now.

Read each question carefully and decide which one of the answers is best. Notice what number your choice is. Then on the answer sheet, make a heavy black mark in the space under that number. In marking your answers, always be sure that the question number on the answer sheet is the same as the question number in the test booklet. Examine completely any answer you wish to change, and be careful not to make stray marks of any kind on your answer sheet or on your test booklet. When you finish a page, go on to the next page. If you finish the entire test before the time is up, go back and check your answers. Work as rapidly and as accurately as you can.

The test contains 80 questions. You are not supposed to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to start. Try to get as many questions right as possible, careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No question about the test will be answered by the examiner after the test begins. Lay your pencil down.

---

Do not turn this booklet until you are told to begin.
This Answer Sheet is not intended for machine scoring.
1. The opposite of weak is —
   (1) poor (2) sick (3) tall (4) strong (5) young

2. Which of the five words below comes first in the dictionary?
   (6) brown (7) black (8) blown (9) break (10) blend

3. Which answer tells best what a teakettle is?
   (11) a tool (12) a weapon (13) a utensil (14) a thing. (15) a machine

4. An eggshell is to an egg the same as an orange skin is to —
   (16) a lemon skin (17) an orange (18) an orange seed (19) a hen (20) a c

5. Ruth is prettier than Sadie but not so pretty as Mabel. Therefore, Mabel is (?) Sadie.
   (21) not so pretty as (22) just as pretty as (23) cannot say which (24) pret

6. The mayor is to a city as the governor is to —
   (25) a nation (26) a president (27) a state (28) a council (29) an off

7. A stove is to heat as a refrigerator is to —
   (31) a kitchen (32) cold (33) electricity (34) gas (35) food

8. Three of the four designs at the right are alike in some way.
   Which one is not like the other three?

9. Northwest is to southeast as up is to —
   (41) north (42) higher (43) northeast (44) down (45) under

10. The opposite of clockwise is —
    (46) backward (47) counterclockwise (48) right (49) left (50) round

11. Which of the five words below comes first in the dictionary?
    (51) times (52) stand (53) ruled (54) grand (55) quill

12. Which of the five persons below is most like a carpenter, a plumber, and a bricklayer?
    (56) a postman (57) a lawyer * (58) a truck driver (59) a doctor (60) a

13. Which of the following sentences tells best what an arm is?
    (61) It goes in the coat sleeve. (62) You can put it around something.
    (63) It carries the hand. (64) It is the part of the body attached to the should
    (65) We have two of them.

14. Four of the following things are alike. Which one is different from the other four?
    (66) a beet (67) a peach (68) a radish (69) an onion (70) a potato

15. What is to hearing as an eye is to sight?
    (71) glasses (72) voices (73) a sound (74) an ear (75) an earphone

16. Three of the four designs at the right are alike in some way.
    Which one is not like the other three?

17. Which of the five things below is most like the moon, a balloon, and a ball?
    (81) sky (82) a cloud (83) a marble (84) an airplane (85) a toy

18. Fur is to a rabbit as feathers are to —
    (86) a pillow (87) a bird (88) a hair (89) an animal (90) a nest

19. What is the most important reason for using screens at windows?
    (91) They are easy to paint. (92) They improve the looks of the windows.
    (93) They keep out flies but let in the breeze. (94) They keep out burglars.
    (95) They are easier to keep clean than windows are.

20. Which of the five words below comes last in the dictionary?
    (1) front (2) local (3) lemon (4) floor (5) knoll

21. The moon (?) around the earth. (Which of the following words completes the sentence best?)
    (6) turns (7) goes (8) moves (9) revolves (10) spins

22. Printing is to a book as writing is to —
    (11) talking (12) a letter (13) a pen (14) a friend (15) reading

23. Which of the five things below is most like a chimney, a roof, and a door?
    (16) a chair (17) a bed (18) a stove (19) a window (20) a desk

24. The ground is to an automobile as water is to —
    (21) a train (22) gasoline (23) the engine (24) a ship (25) a river...
25 If grapefruit are 4 for a quarter, how much will two dozen cost?

(26) 23¢ (27) 60¢ (28) 96¢ (29) $1.50 (30) $1.00

26 The author is to a book as the inventor is to a —

(31) machine (32) bookmark (33) discoverer (34) writer (35) magazine

27 Which of the following tells what a kitchen is?

(36) a room in which to cook (37) a place to keep knives and forks
(38) a part of a house (39) a room with a table and chairs
(40) a room next to the dining room

28 If the following words were rearranged to make the best sentence, with what letter would the last word of the sentence begin?

wood made often of are floors

(41) a (42) m (43) w (44) f (45) o

29 Which of the five things below is most like tea, milk, and lemonade?

(46) water (47) vinegar (48) coffee (49) olive oil (50) mustard

30 Three of the four designs at the right are alike in some way. Which one is not like the other three?

(51) (52) (53) (54)

31 Which of the sentences below tells best what a kitten is?

(56) It has whiskers. (57) It is a small animal that drinks milk.
(58) It is a playful animal. (59) It is afraid of cats. (60) It is a young cat.

32 If the following were arranged in order, which one would be in the middle?

(61) pint (62) barrel (63) cup (64) quart (65) gallon

33 If Tom is brighter than Dick and Dick is just as bright as Harry, then Harry is (?) Tom.

(66) brighter than (67) not so bright as (68) just as bright as (69) cannot say which

34 Count each 4 that has a 2 next after it in this row.

24142354624752442394328784224552242

How many are there?

(71) 1 (72) 2 (73) 3 (74) 4 (75) 5

35 The opposite of ignorance is —

(76) beauty (77) knowledge (78) goodness (79) honesty (80) truth

36 Four of the following words have something in common. Which one is not like the other four?

(81) cowardly (82) dishonest (83) poor (84) stingy (85) rude

37 A photograph is 3 inches wide and 5 inches long. If it is enlarged to be 12 inches wide, how long will it be?

(1) 8 in. (2) 20 in. (3) 14 in. (4) 15 in. (5) 60 in.

38 The opposite of spend is —

(6) give (7) earn (8) money (9) take (10) use

39 Which of the following sentences tells best what an airplane is?

(11) It flies. (12) It is something to travel in. (13) It is a flying conveyance.
(14) It has wings and a tail. (15) It is a mechanical bird.

40 A man drove 9 miles east from his home, and then drove 4 miles west. He was then (?) of his home.

(16) 5 miles east (17) 5 miles west (18) 13 miles east (19) 13 miles west

41 If the following words were rearranged to make the best sentence, with what letter would the last word of the sentence begin?

men deep the a trench dug long

(21) d (22) l (23) t (24) s (25) m

42 A pitcher is to cream as a bowl is to —

(26) baseball (27) a saucer (28) coffee (29) sugar (30) a dish

43 If the following words were rearranged to make the best sentence, the last word of the sentence would begin with what letter?

cook the pie a made apple deep

(31) c (32) p (33) a (34) d (35) m

44 A very strong feeling of affection is called —

(36) sympathy (37) pity (38) admiration (39) love (40) esteem
A chair is most likely to have —

(41) rockers (42) upholstery (43) legs (44) a seat (45) arms.

A boy has three dogs. Their names are Rover, Spot, and Fido. Rover is larger than Spot and Spot is larger than Fido. Therefore, Rover is (?) Fido.

(46) smaller than (47) larger than (48) the same size as (49) cannot say.

Wood is to box as wire is to —

(51) iron (52) electricity (53) doorbell (54) screen (55) fire.

There is a saying, "It is a long road that has no turning." It means —

(56) Most long roads are straight. (57) Things are bound to change sooner or later. (58) Most short roads have turns. (59) It is a bad idea to turn around on the road.

Which of the five things below is most like a sheet, a towel, and a handkerchief?

(61) a blanket (62) a coat (63) a napkin (64) a carpet (65) a mattress.

Three of the four designs at the right are alike in some way. Which one is not like the other three?

(66) P (67) A (68) D (69) B

If the following were arranged in order, which one would be in the middle?

(71) foundation (72) walls (73) ceiling (74) roof (75) floor.

Which one of these series contains a wrong number?

(1) 2-4-6-8-10 (2) 1-3-5-7-9 (3) 3-6-9-12-15 (4) 1-4-7-10-12 (5) 2-5-8-11-14

A pair of trousers always has —

(6) a belt (7) cuffs (8) pockets (9) a crease (10) seams.

One number is wrong in the following series. What should that number be?

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

(11) 9 (12) 7 (13) 6 (14) 8 (15) 5.

A machine that works rapidly and well is said to be —

(16) fluent (17) revolutionary (18) novel (19) automatic (20) efficient.

What letter in the following series appears a third time nearest the beginning?

A C E B D F E A B C B E C A D A B C D E

(21) O (22) C (23) D (24) E (25) B.

The stomach is to food as the heart is to —

(26) a man (27) the lungs (28) blood (29) a pump (30) beating.

In the alphabet, which letter follows the letter that comes next after Q?

(31) O (32) S (33) P (34) T (35) R.

Most persons prefer automobiles to buses because —

(36) it is always cheaper to use an automobile. (37) the bus carries too many persons. (38) an automobile gets you where you want to go when you want to go. (39) automobiles are easier to park.

The opposite of contract is —

(41) explode (42) detract (43) expend (44) die (45) expand.

In a certain row of trees one tree is the fifth one from either end of the row. How many trees are there in the row?

(46) 5 (47) 7 (48) 10 (49) 9 (50) 11.

There is a saying, "Honesty is the best policy." It means —

(51) Honesty is more important than generosity. (52) In the long run it pays to be honest. (53) Honest people become wealthy. (54) You can never tell what a dishonest person will do.

Three of the four designs at the right are alike in some way. Which one is not like the other three?

(56) (57) (58) (59)
64 The one of two objects that is not so good as the other is said to be —
(61) unsuitable (62) lesser (63) single (64) inferior (65) unnecessary...

65 If the following words were rearranged to make the best sentence, the last word of the sentence would begin with what letter?
fall clouds from the raindrops dark
(66) f (67) d (68) t (69) o (70) r

66 An object or institution that is not likely to move or change is said to be —
(71) fundamental (72) stable (73) temporary (74) solid (75) basic...

67 Worst is to bad as (?) is to good.
(1) more (2) better (3) best (4) very good (5) excellent...

68 If the following persons were arranged in order, which one would be in the middle?
(6) grandfather (7) grandson (8) brother (9) uncle (10) nephew...

69 A man who buys and sells when there is considerable danger of loss is said to —
(11) transact (12) stipulate (13) contract (14) speculate (15) bargain.

70 Which tells best what a refrigerator is?
(16) a piece of kitchen furniture (17) a place to store food
(18) an electrical device for the kitchen (19) a large white box
(20) a cabinet for keeping food cold...

71 There is a saying, “A bird in the hand is worth two in the bush.” It means —
(21) Two birds are worth more than one.
(22) Something you are sure of is twice as good as something doubtful.
(23) Your own bird is worth two that belong to others.
(24) It is hard to catch birds that are in bushes.

72 When the time by a clock was 14 minutes past 9, the hands were interchanged. The clock then said about —
(26) 14 minutes past 3 (27) 14 minutes of 10 (28) 14 minutes past 2
(29) 14 minutes of 3...

73 One number is wrong in the following series. What should that number be?
1 9 2 8 3 9 4 8 5 9 6 8 7 9 8 9
(31) 9 (32) 7 (33) 8 (34) 6 (35) 5...

74 The boy deserves (?) for his effort and perseverance.
(36) condemnation (37) censure (38) scholarship (39) commendation
(40) a medal...

75 One number is wrong in the following series. What should that number be?
1 2 4 8 16 32 48 128
(41) 96 (42) 6 (43) 64 (44) 12 (45) 24...

76 If I have a large box with 4 smaller boxes in it and 3 very small boxes in each small box, how many boxes do I have in all?
(46) 7 (47) 12 (48) 13 (49) 16 (50) 17...

77 If each 3 in the following series were changed to a 2 and if each 1 were dropped out, the seventh 2 would be followed by what number? (Do not mark the paper.)
1 2 5 2 3 1 5 2 3 4 2 3 1 3 4 2 2 2 5
(51) 1 (52) 3 (53) 2 (54) 4 (55) 5...

78 There is a saying, “An ounce of prevention is worth a pound of cure.” It means —
(56) Prevention is a good cure. (57) Prevention and cure can be purchased by weight.
(58) It is much better to prevent something than to cure it.
(59) It is much better to cure something than to prevent it...

79 Which of the five words below is most like heavy, blue, and nice?
(61) weight (62) round (63) sky (64) color (65) weather...

80 In a foreign language, boli deta kipo means very good weather; boli cora means bad weather; and deta sedu means very hot. What word means good?
(66) boli (67) deta (68) cora (69) kipo (70) sedu...

[ 6 ]
**The Gray-Votaw-Rogers**

**GENERAL ACHIEVEMENT TESTS**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Boy or Girl?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**What is your age?**

**When is your next birthday?**

**Where do you live?**

**What is your building?**

---

**INTERMEDIATE TEST FOR GRADES 4—6**

By

- Hob Gray
- David F. Votaw
- J. Lloyd Rogers

---

**INDIVIDUAL EDUCATIONAL CHART**

(Also the Means for a Class May Be Charted on This Page)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

---

1. **Elem. Science**

2. **Language**

3. **Literature**

4. **Spelling**

5. **Reading: Vocab.**

6. **Reading: Comp.**

7. **Social Studies**

8. **Health & Safety**

9. **Arith. Reas.**

10. **Arith. Compu.**

**Total Average**

**Educational Grade**

**Educational Age**

1. The educational grade and age scales on this Profile Chart indicate the norms for this test.
2. Ages above 14—2 and below 8—2 are extrapolated.
3. The short vertical lines are probable errors of the estimated true scores.
4. The scale of scores for all of the tests has been equated. Thus uniform achievement will be indicated for a child if the line connecting his ten score-points is approximately horizontal.

**Directions** given in the manual must be followed in administering this test if the results are to be compared with the norms.

---

**Copyright © 1948 by THE STECK COMPANY Publishers — Austin, Texas All rights reserved. Printed and bound in the U.S.A.**
TEST 1. ELEMENTARY SCIENCE

DIRECTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

EXAMPLE: A turkey is a 1 fish 2 fowl 3 plant.

|   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 1. Coal is found in  | 1 | the ground | 2 | oil | 3 | water. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 2. Lumber comes from | 1 | forests | 2 | mines | 3 | prairies. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 3. Dye is commonly used to color | 1 | cloth | 2 | metal | 3 | wood. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 4. The engine of an automobile is run by | 1 | steam | 2 | crude oil | 3 | gasoline. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 5. Earthworms live in | 1 | water | 2 | soil | 3 | rocks. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 6. An X-ray machine takes pictures of | 1 | clouds | 2 | bones | 3 | colors. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 7. A telephone wire carries | 1 | electricity | 2 | light | 3 | heat. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 8. A toadstool is a type of | 1 | cabbage | 2 | carrot | 3 | mushroom. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 9. Linen is made from | 1 | wool | 2 | flax | 3 | hair. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 10. Grains of pollen fall upon the pistil of a flower to make |   | 1 | petals | 2 | leaves | 3 | seeds. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 11. Linoleum is used to cover the | 1 | bed | 2 | yard | 3 | floor. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 12. The earth gets its warmth from the | 1 | planets | 2 | moon | 3 | sun. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 13. Starch is the principal food material in | 1 | eggs | 2 | potatoes | 3 | spinach. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 14. Wooden furniture can be preserved by the use of |   | 1 | sandpaper | 2 | alcohol | 3 | varnish. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 15. Sponges grow in | 1 | caves | 2 | water | 3 | soil. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |
| 16. The rainbow is sunlight refracted by | 1 | dust | 2 | raindrops | 3 | atmosphere. |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   | 1 | 2 | 3 |   |

(GO ON TO NEXT PAGE)
7. The principal food of song birds is 1 grain 2 insects 3 fruit. .........................

8. The shedding of feathers by birds before growing a new coat is called
1 migrating 2 mating 3 molting. ..............................................................

9. The smallest forms of plant life and animal life are observed through a
1 microscope 2 telescope 3 stereoscope. ...................................................

10. The main solvent used in the paint industry is 1 ether 2 turpentine 3 carbon.

11. Petroleum is found mostly in 1 Utah 2 Texas 3 Missouri. ............................

12. A liquid used in thermometers is 1 colored water 2 mercury 3 iodine. ...........

13. We breathe to secure 1 oxygen 2 carbon dioxide 3 hydrogen. ........................

14. The treatment of hides to make leather is called
1 tanning 2 skinning 3 dipping. .................................................................

15. Water becomes hard by dissolving 1 sands 2 gases 3 minerals. .....................

16. Bacteria grow on 1 bright surfaces 2 dirty hands 3 sunny porches. ...............

17. A calendar day begins for a locality at 1 sunrise 2 noon 3 midnight. .............

18. The rotation of the earth upon its axis causes
1 day and night 2 seasons 3 winds. ...........................................................

19. After the winter is ended, birds usually grow a new coat of feathers that are
1 duller 2 brighter 3 the same color. ...........................................................

20. Coal is formed from 1 buried plants 2 sea shells 3 bones. ...........................

21. Lightning is a result of 1 static electricity 2 thunder 3 magnetism. ..............

22. A bat's body is covered with 1 feathers 2 scales 3 hair. ............................

23. A spider has 1 four legs 2 six legs 3 eight legs. ......................................

24. The male deer is called a 1 doe 2 buck 3 fawn. ......................................
35. The steam engine was invented by 1 Bell 2 Watt 3 Edison.  

36. The number of sound vibrations per second which produces high pitch is  
1 many 2 medium 3 few.  

37. Fertile soil contains an abundance of 1 oxides 2 alkalies 3 humus.  

38. Anthracite coal is 1 soft 2 powdered 3 hard.  

39. In the spring many birds fly 1 north 2 south 3 west.  

40. If a man and a boy are on a seesaw across a fence, the fence will have to be  
1 at the center of the seesaw 2 nearer the boy 3 nearer the man.  

41. The pendulum is found in 1 clocks 2 compasses 3 meters.  

42. Compared with the earth as to size, most stars are  
1 smaller 2 larger 3 the same size.  

43. Light or heat is absorbed most readily by an object which is painted  
1 black 2 gray 3 white.  

44. The number of parts of an insect's body is 1 six 2 four 3 three.  

---

No. Right. Score.
TEST 2. LANGUAGE

RECTIONS: If you choose the upper word, phrase, or punctuation marks, place an X in the first square at the right of the page; if you choose the lower, place the X in the second square. Do not skip any of the items.

XAMPLES: a) The boys 1 is 2 are playing ball. .....................................................
     b) The month of 1 May 2 may brings flowers. ..............................................
     c) When did you 1 come? 2 came? ..............................................................

1. Billy's mother 1 doesn't 2 don't know where he is. ........................................
2. Spring 1 came 2 come early this year. ............................................................
3. Tom's friends 1 saw 2 seen him whitewashing the fence. ................................
4. 1 Can 2 Can I use your eraser? ....................................................................
5. Silver will soon outrun 1 them 2 those other horses. ....................................
6. The children in the hospital 1 took 2 taken special interest in the dolls. ....
7. The captains had already 1 chosen 2 chose the best spellers. ....................
8. There 1 are 2 are thirty days in September. ...................................................
9. The fourth grade 1 sang 2 sung as if they enjoyed singing. .......................
10. The circus posters show pictures of 1 lions 2 lion, elephants and clowns. ...
11. I wish I had 1 went 2 gone to the rodeo. .......................................................
12. It 1 doesn't 2 don't seem any time since last Christmas. ..........................
13. Longfellow often read to his daughters what he had 1 wrote 2 written. ....
14. 1 Her 2 She and Tom had splendid ideas for games. .................................
15. The Lone Ranger has 1 rode 2 ridden Silver in many parades. ...............
16. Just outside my window 1 was 2 were two robins. .....................................
17. The lovely bubble 1 burst 2 bursted when it touched the floor. ...............
18. No one likes cake better than 1 I 2 me. .....................................................

(GO ON TO NEXT PAGE)
19. You weren't supposed to open the book. 

20. The boy scouts have brought their equipment. 

21. Some boys stole fruit from Mr. Hardy's orchard. 

22. Us boys liked the new pupil. 

23. It seemed kind of queer that no one was at home. 

24. Laura should have known better. 

25. Every dollar we have given to the Red Cross has been used wisely. 

26. Margaret Mitchell wrote Gone with the Wind. 

27. Balloting is when you vote. 

28. It is kind of you to invite me. 

29. Those boards are a foot too long. 

30. Rip Van Winkle met some queer little men. They gave him a drink from their flagons. 

31. Ask Joe what kinds of planes he has flown. 

32. A cowboy loves his horse and treats him well. 

33. It is a good idea to lie down and rest after dinner. 

34. The people couldn't hardly believe that Arthur should be their king. 

35. If apples are shaken from the tree, they get bruised. 

36. Jim's sore foot was hurting considerably. 

37. The South is noted for its hospitality. 

38. Here is a picture of Junius and Julius our twin calves. 

39. Children should learn to defend themselves. 

40. The baby thinks it's fun to play in the sandpile. 

(GO ON TO NEXT PAGE)
1. Leonard’s horse has a loose shoe. ..............................................
   1 2
   ☐ ☐

2. Bob would not tell where the ball was. ......................................
   1 2
   ☐ ☐

3. Margaret, please come into the house and help me. .......................  
   ☐ ☐

4. I went to the museum with John and Robert took Father for a walk. ....
   1 2
   ☐ ☐

5. The king granted favors to whoever flattered him. .........................
   1 2
   ☐ ☐

6. It was they who captured the bandits. .......................................
   1 2
   ☐ ☐

7. Sarah’s new hat is nice. ......................................................  
   1 2
   ☐ ☐

8. Please mail your answer to Hazel or myself. ................................
   ☐ ☐

9. I advise you to study your lesson. ..........................................  
   1 2
   ☐ ☐

10. Good citizenship is when you are loyal to your country. ................ 
     ☐ ☐

11. “It matters not who I am,” said the stranger. ............................
    1 2
    ☐ ☐

12. Anyone who really loves his country will obey its laws. ................
    1 2
    ☐ ☐

13. You sat the bowl on the wrong shelf. ....................................
    1 2
    ☐ ☐

14. A list of twenty names were written on the blackboard. ................
    ☐ ☐

---

No. Right............. Score.............
TEST 3. LITERATURE

DIRECTIONS: Each sentence has four answers which are numbered 1, 2, 3, and 4, but only one of the answers is correct. Read each sentence carefully and select the answer that you believe to be the correct one. Then place an X in the square at the right that has the same number as the answer you selected. Do not skip any sentences.

EXAMPLE: Captain Kidd was a famous
1 soldier 2 king 3 pirate 4 writer.

ANSWER

1. The three blind mice ran after
   1 the piper 2 the farmer's wife 3 Princess Rose 4 the baker.

2. At Christmas, the shoemaker and his wife gave the elves
   1 a tiny cottage 2 a magic nut 3 bright jewels 4 new coats and shoes.

3. Peter and Barbara Ann Brandon
   1 explored an island
   2 traveled with a circus
   3 visited their uncle's ranches
   4 won a tennis tournament.

4. Lucy Locket lost her
   1 slipper 2 ring 3 pocket 4 bonnet.

5. The wind blew Half-Chick
   1 into a tree-top
   2 into a ditch
   3 to the top of the church steeple
   4 to the giant's castle.

6. The Fisherman and His Wife is the story of a woman who was
   1 greedy 2 lazy 3 careless 4 generous.

7. The Owl and the Pussy-Cat
   1 went to sea
   2 ate each other up
   3 climbed the glass hill
   4 sailed the skies in a wooden shoe.

8. Tom Sawyer's half-brother was named
   1 Sidney 2 Jim 3 Joe 4 Walter.

9. A man who understood the language of the animals was
   1 Dr. Dolittle 2 the Raggedy Man 3 Johnny Appleseed 4 the Pied Piper...

10. Clement C. Moore wrote
    1 A Visit from Saint Nicholas
    2 Why the Chimes Rang
    3 Heidi
    4 The Wizard of Oz.

( GO ON TO NEXT PAGE )
1. The Uncle Remus Stories say that the Tar-Baby which caught Brer Rabbit was made by 1 Farmer Brown 2 Brer Fox 3 Brer Possum 4 the Scarecrow.

2. The musical instrument most often associated with Scotland is the 1 harp 2 bagpipe 3 lyre 4 accordion.

3. Huckleberry Finn was a companion of 1 Penrod 2 Hans Brinker 3 Tom Sawyer 4 Jim Hawkins.

4. Lazy Jack is somewhat like the story of 1 Goldilocks 2 Drakesbill 3 Rumpelstiltskin 4 Epaminondas.

5. In The Boy and the Parrot, Sebastian bought for his mother 1 a churn 2 a plaid shawl 3 a flute 4 a sewing machine.

6. Sunnybank was the home of 1 Washington Irving 2 the Moffat family 3 a collie dog named Lad 4 the Little Colonel.

7. "The cinema" is another name for 1 pottery-making 2 literary criticism 3 motion pictures 4 light opera.

8. A battle between a father and son is the chief incident in 1 Silas Marner 2 Richard Carvel 3 The Ancient Mariner 4 Sohrab and Rustum.

9. The word "Pharaoh" suggests 1 India 2 Egypt 3 Assyria 4 Crete.

0. In his poem "Loveliest of Trees," A. E. Housman writes of the 1 maple tree 2 almond tree 3 cherry tree 4 ebony tree.

1. Wynken, Blynken, and Nod talked to 1 a witch on a broom 2 the moon 3 the queen of the fairies 4 the Thanksgiving elf.

2. Toby Tyler spent ten weeks 1 on a whaling boat 2 on a plantation 3 with an Indian tribe 4 with a circus.

3. Flopsy and Mopsy were 1 twin dolls 2 trained seals 3 kittens 4 rabbits.
24. Tom Sawyer had the unusual experience of  
   1 going up in a balloon  
   2 traveling with a circus  
   3 hearing his own funeral sermon  
   4 diving for pearls. ........................................... [1 2 3] 

25. When Pelle's new suit was finished, Pelle thanked  
   1 his mother  2 his two grandmothers  3 the tailor  4 his pet lamb. ........................................... [1 2 3]

26. *Hans Brinker, or The Silver Skates* tells of life in  
   1 Sweden  2 Holland  3 Switzerland  4 Denmark. ........................................... [1 2 3]

27. Flicka's master was 1 Colin  2 Joe  3 Harry  4 Ken. ........................................... [1 2 3]

28. In the Robin Hood stories, the Curtail Friar was named  
   1 Much  2 Tuck  3 Wat  4 Lobb........................................... [1 2 3]

29. The Elephant Child was spanked many times because of his  
   1 bad manners  2 throwing melon rinds about  3 meddlesome ways  4 curiosity. ........................................... [1 2 3]

30. Ferdinand was a young bull who liked to  
   1 fight  2 travel  3 smell flowers  4 sleep in the daytime. ........................................... [1 2 3]

31. The legendary hero of the Canadian forests was  
   1 Pierre Curie  
   2 the Count of Monte Cristo  
   3 David Balfour  
   4 Paul Bunyan. ........................................... [1 2 3]

32. *The Perfect Tribute* is a story about  
   1 the first United States flag  
   2 World War I  
   3 the Unfinished Symphony  
   4 Lincoln's Gettysburg address. ........................................... [1 2 3]

33. The Tin Woodman is a character in  
   1 *Pinocchio*  2 *Bambi*  3 *The Wizard of Oz*  4 *The Tinder Box*. ........................................... [1 2 3]

34. Commander Richard Byrd tells of his flight over the North Pole in  
   1 *Sky Pilot*  2 *Skyward*  3 *Wings*  4 *Night Flight*. ........................................... [1 2 3]

35. Long John Silver's parrot was named  
   1 Captain Flint  2 Brom Bones  3 Napoleon  4 Pablo. ........................................... [1 2 3]

36. Howard Pyle is the author of  
   1 *Book of Pirates*  2 *Rootabaga Stories*  3 *Water Babies*  4 *Tanglewood Tales* ........................................... [1 2 3]

37. Sara Penn moved her family into a  
   1 barn  2 dug-out  3 schoolhouse  4 box car. ........................................... [1 2 3]
8. The Cat That Walked by Himself could make himself at home in the Cave when the woman
   1 spoke three words in his praise
   2 drove the Dog away
   3 put out the fire
   4 moved into a hut. ................................................................. 1 2 3 4
   □ □ □ □

9. Mrs. Wiggs of the Cabbage Patch gave her three daughters the names of
   1 flowers 2 characters in the Bible 3 seasons of the year 4 continents. .......
   □ □ □ □

10. Plymouth was the home of
   1 Ichabod Crane 2 Miles Standish 3 Paul Revere 4 Rip Van Winkle. ........
   □ □ □ □

1. The hero who found the Golden Fleece was
   1 Jason 2 Orpheus 3 Hercules 4 Ulysses. ........................................... 1 2 3 4
   □ □ □ □

2. Cimarron is the story of the rush for land in
   1 California 2 Ohio 3 Nebraska 4 Oklahoma. ........................................ 
   □ □ □ □

3. The gift Prometheus gave to man was
   1 music 2 fire 3 wisdom 4 the seasons. ............................................. 1 2 3 4
   □ □ □ □

4. The wife of Cupid was 1 Persephone 2 Daphne 3 Psyche 4 Alcestis. ......... 1 2 3 4
   □ □ □ □

5. The author of The Red Badge of Courage is
   1 George W. Cable 2 Stephen Crane 3 Daniel Defoe 4 Walter Edmonds...
   □ □ □ □

6. Christian and Hopeful are characters in
   1 Gulliver's Travels 2 The Pilgrim's Progress 3 Ivanhoe 4 Robinson Crusoe.
   □ □ □ □

7. In Treasure Island, the treasure-seekers sailed aboard the
   1 Santa Maria 2 Admiral Benbow 3 Hispaniola 4 Triton. ........................ 1 2 3 4
   □ □ □ □

8. Pecos Bill reminds the reader of
   1 Ferdinand 2 Dr. Dolittle 3 Buffalo Bill 4 Paul Bunyan. ...................... 1 2 3 4
   □ □ □ □

9. Harvey Cheyne is a character in
   1 Captains Courageous 2 The Spy 3 The Yearling 4 Wings. .................... 1 2 3 4
   □ □ □ □

10. The hero of the Medieval Norse legends is
    1 Siegfried 2 Roland 3 Arthur 4 Charlemagne. .................................... 1 2 3 4
        □ □ □ □

No. Right... Score
TEST 4. SPELLING

<table>
<thead>
<tr>
<th>Grades</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Number words credit to point of beginning: 0 8 16
Number words spelled correctly: Sum

<table>
<thead>
<tr>
<th>Sum</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>25</td>
<td>52</td>
</tr>
<tr>
<td>26</td>
<td>53</td>
</tr>
<tr>
<td>27</td>
<td>54</td>
</tr>
<tr>
<td>28</td>
<td>55</td>
</tr>
<tr>
<td>29</td>
<td>56</td>
</tr>
<tr>
<td>30</td>
<td>56</td>
</tr>
<tr>
<td>31</td>
<td>57</td>
</tr>
<tr>
<td>32</td>
<td>58</td>
</tr>
<tr>
<td>33</td>
<td>59</td>
</tr>
<tr>
<td>34</td>
<td>60</td>
</tr>
<tr>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>36</td>
<td>61</td>
</tr>
<tr>
<td>37</td>
<td>62</td>
</tr>
<tr>
<td>38</td>
<td>63</td>
</tr>
<tr>
<td>39</td>
<td>64</td>
</tr>
<tr>
<td>40</td>
<td>65</td>
</tr>
<tr>
<td>41</td>
<td>65</td>
</tr>
<tr>
<td>42</td>
<td>66</td>
</tr>
<tr>
<td>43</td>
<td>67</td>
</tr>
<tr>
<td>44</td>
<td>68</td>
</tr>
<tr>
<td>45</td>
<td>69</td>
</tr>
<tr>
<td>46</td>
<td>70</td>
</tr>
<tr>
<td>47</td>
<td>71</td>
</tr>
<tr>
<td>48</td>
<td>72</td>
</tr>
<tr>
<td>49</td>
<td>73</td>
</tr>
<tr>
<td>50</td>
<td>74</td>
</tr>
<tr>
<td>51</td>
<td>75</td>
</tr>
<tr>
<td>52</td>
<td>76</td>
</tr>
<tr>
<td>53</td>
<td>77</td>
</tr>
<tr>
<td>54</td>
<td>78</td>
</tr>
<tr>
<td>55</td>
<td>79</td>
</tr>
<tr>
<td>56</td>
<td>80</td>
</tr>
<tr>
<td>57</td>
<td>81</td>
</tr>
<tr>
<td>58</td>
<td>82</td>
</tr>
<tr>
<td>59</td>
<td>83</td>
</tr>
<tr>
<td>60</td>
<td>84</td>
</tr>
<tr>
<td>61</td>
<td>85</td>
</tr>
<tr>
<td>62</td>
<td>86</td>
</tr>
<tr>
<td>63</td>
<td>87</td>
</tr>
<tr>
<td>64</td>
<td>88</td>
</tr>
<tr>
<td>65</td>
<td>89</td>
</tr>
<tr>
<td>66</td>
<td>90</td>
</tr>
<tr>
<td>67</td>
<td>91</td>
</tr>
<tr>
<td>68</td>
<td>92</td>
</tr>
<tr>
<td>69</td>
<td>93</td>
</tr>
<tr>
<td>70</td>
<td>94</td>
</tr>
<tr>
<td>71</td>
<td>95</td>
</tr>
<tr>
<td>72</td>
<td>96</td>
</tr>
<tr>
<td>73</td>
<td>97</td>
</tr>
<tr>
<td>74</td>
<td>98</td>
</tr>
<tr>
<td>75</td>
<td>99</td>
</tr>
<tr>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>77</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
</tr>
<tr>
<td>88</td>
<td></td>
</tr>
<tr>
<td>89</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td></td>
</tr>
</tbody>
</table>
TEST 5. READING: VOCABULARY

DIRECTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you chose. Do not skip any of the items.

EXAMPLE: A lad is a 1 girl 2 pony 3 boy 4 kitten.

1. To be clean we must 1 wash 2 work 3 laugh 4 pull.
2. Waves are seen on 1 schools 2 hats 3 water 4 gardens.
3. A hue is a 1 food 2 color 3 hut 4 plan.
4. A feast is a 1 meal 2 race 3 giant 4 mountain.
5. A gift is a 1 trip 2 number 3 present 4 drive.
6. A library has 1 bottles 2 books 3 horns 4 tools.
7. The tongue is used when we 1 walk 2 talk 3 write 4 sleep.
8. A reply is an 1 offer 2 idea 3 answer 4 opinion.
9. A castle is a 1 fence 2 house 3 lock 4 organ.
10. Least means 1 smallest 2 last 3 closest 4 first.
11. Twice means 1 before 2 double 3 often 4 seldom.
12. Simple means 1 silent 2 happy 3 single 4 easy.
13. To stare is to 1 fear 2 look 3 like 4 hunt.
14. A university is a 1 ray 2 school 3 realm 4 pearl.
15. Brilliant means 1 sparkling 2 spacious 3 noisy 4 bushy.
16. To spy is to 1 catch 2 arrest 3 watch 4 report.
17. An idea is a 1 picture 2 thought 3 story 4 knight.
18. Fuel produces 1 heat 2 famine 3 tides 4 disease.
19. Pork comes from 1 sheep 2 goats 3 hogs 4 cows.

(GO ON TO NEXT PAGE)
20. Grief makes us 1 sad 2 great 3 dull 4 foolish.

21. Rage refers to 1 fever 2 laughter 3 records 4 anger.

22. To decay is to 1 rot 2 refuse 3 renew 4 register.

23. To exalt is to 1 praise 2 explain 3 fear 4 heed.


25. To interrupt is to 1 distrust 2 help 3 join 4 hinder.

26. A mansion is a kind of 1 family 2 residence 3 tribe 4 mountain.

27. Aged means 1 bare 2 weak 3 empty 4 decayed.

28. A dungeon is a kind of 1 burglar 2 bureau 3 prison 4 servant.

29. Weary means 1 bare 2 weak 3 restless 4 tired.

30. Vivid means 1 visible 2 bright 3 thoughtful 4 respectful.

31. To explore is to 1 enter 2 examine 3 return 4 reap.

32. Quality refers to 1 excellence 2 pride 3 might 4 strength.

33. To reprove is to 1 restrain 2 separate 3 blame 4 revise.

34. An opportunity is a 1 falsehood 2 dragon 3 chance 4 fort.

35. A license is a 1 loan 2 gale 3 store 4 permit.

36. Crimson is a 1 color 2 salad 3 flower 4 crystal.

37. A melody is a 1 chest 2 tune 3 flake 4 film.

38. Severe means 1 humble 2 serene 3 sacred 4 stern.

39. Sufficient means 1 equal 2 lean 3 enough 4 lavish.

40. Artificial means 1 unreal 2 attractive 3 liberal 4 conscious.

41. Brisk means 1 stately 2 thirsty 3 lowly 4 lively.

(GO ON TO NEXT PAGE)
<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>42. An obstacle is a</td>
<td>basin</td>
<td>mob</td>
<td>barrier</td>
<td>driveway.</td>
</tr>
<tr>
<td>43. An utterance is</td>
<td>bought</td>
<td>spoken</td>
<td>carried</td>
<td>fancied.</td>
</tr>
<tr>
<td>44. A citron is a</td>
<td>fruit</td>
<td>tank</td>
<td>ravine</td>
<td>fugitive.</td>
</tr>
<tr>
<td>45. Dismal means</td>
<td>dirty</td>
<td>loyal</td>
<td>pale</td>
<td>gloomy.</td>
</tr>
<tr>
<td>46. An abode is a</td>
<td>mine</td>
<td>factory</td>
<td>dwelling</td>
<td>voyage.</td>
</tr>
<tr>
<td>47. To avoid means to</td>
<td>tread</td>
<td>bribe</td>
<td>worry</td>
<td>shun.</td>
</tr>
<tr>
<td>48. Mute means</td>
<td>naked</td>
<td>musical</td>
<td>kindly</td>
<td>silent.</td>
</tr>
<tr>
<td>49. To expose is to</td>
<td>discover</td>
<td>direct</td>
<td>fade</td>
<td>disclose.</td>
</tr>
<tr>
<td>50. A dynamo is a</td>
<td>dynasty</td>
<td>crater</td>
<td>bomb</td>
<td>machine.</td>
</tr>
<tr>
<td>51. To transmit is to</td>
<td>traverse</td>
<td>send</td>
<td>slash</td>
<td>reclaim.</td>
</tr>
<tr>
<td>52. Vigilant means</td>
<td>watchful</td>
<td>victorious</td>
<td>unworthy</td>
<td>valiant.</td>
</tr>
<tr>
<td>53. Verdant means</td>
<td>green</td>
<td>pure</td>
<td>realistic</td>
<td>vertical.</td>
</tr>
<tr>
<td>54. To bequeath is to</td>
<td>beseech</td>
<td>assert</td>
<td>will</td>
<td>attach.</td>
</tr>
</tbody>
</table>

No. Right | Score
TEST 6. READING: COMPREHENSION

DIRECTIONS: This test consists of several stories or passages. Each story or passage is followed by a few statements. Read the story or passage first. Then in each statement find the answer that makes the statement true and place an X in the square at the right that is numbered the same as the answer you chose. You will save time if you can select the right answers after having read the story or passage once. But you may look at the story or passage again if you need to do so in selecting the right answers. Do not skip any of the items.

EXAMPLE: Bob has a kitten, a puppy, and a rabbit. He feeds his kitten milk, his puppy meat scraps, and his rabbit carrots.

a. Bob has 1 one pet 2 two pets 3 three pets.

b. He feeds meat scraps to his 1 kitten 2 puppy 3 rabbit.

ANSWERS

I

Bob's pets did not like the same things to eat. Bob fed meat to Spot. He gave carrots to Bunny. Fluff said, "Mew, mew, I want my bowl of milk."

1. The dog's name was 1 Spot 2 Bob 3 Bunny.

2. The rabbit liked 1 milk 2 carrots 3 meat.

3. Fluff was a 1 puppy 2 pony 3 kitten.

II

Snuff is our cat. The fur on his back is red like gold. His chest and feet are white. Snuff is very smart. He says "Mew, mew," when he wants his dinner. He sleeps on the best chairs. When we go to bed at night we do not put Snuff out. He stays in the house until he wants out and then he unfastens the latch on the window screen with his paw and jumps out.

4. Our cat's name is 1 Tabby 2 Snuff 3 Puss.

5. His paws are 1 red 2 black 3 white.

6. Our cat sleeps on a 1 chair 2 bed 3 rug.

7. When he wants out he
   1 says "Mew, mew" 2 opens a door 3 opens a window screen.

8. His back is 1 red 2 black 3 white.

9. He unfastens the latch with his 1 nose 2 paw 3 tail.

(GO ON TO NEXT PAGE)
III
Caleb was half glad and half sorry that the long journey by covered wagon was
ending without even a glimpse of an Indian. It seemed queer, as he and his sister
Jane looked across the wide, flat prairie, to hear Father say, "Well, children, here is
our new home," for no house was in sight.
Mother's first remark was, "Blossom should give us plenty of milk with so much
good grass to eat."
Jane whispered to Caleb, "Do you think Cappy will be lonely with no other kitten
to play with?"

10. Caleb and his family traveled to their new home by
   1 boat 2 train 3 wagon. ............................................................
   1 2 3

11. Their house was 1 not begun 2 half built 3 ready to be lived in. ............
   1 2 3

12. They would live 1 near the ocean 2 on the prairie 3 in the hills. ..........
   1 2 3

13. The cow was named 1 Blossom 2 Daisy 3 Cappy. ..............................
   1 2 3

IV
Fred Wilson is older than his brother Roy. Fred is three grades above Roy, who is
in the second grade. When the boys start to school each morning, Fred's dog Spot
goes with them as far as the bus stop.

14. Spot belongs to 1 Mr. Wilson 2 Roy 3 Fred. ....................................
    1 2 3

15. Fred is in the 1 fifth grade 2 third grade 3 first grade. .....................
    1 2 3

16. Each morning Spot goes to 1 school 2 the bus stop 3 the store. ..........
    1 2 3

V
Robert E. Lee School bought a new flag. To pay for it, each of the ten homerooms
chose one pupil to sell ten tickets, at ten cents each. The child who sold his tickets
and turned in the dollar first was allowed to raise the flag. How proud Ralph was as
he pulled the cord and watched the silken banner, with its stars and stripes, unfurl!

17. The school bought a 1 state flag 2 school banner 3 United States flag.
    1 2 3

18. The flag cost 1 five dollars 2 ten dollars 3 twenty dollars. ...................
    1 2 3

19. The flag was raised by 1 a boy 2 a girl 3 the principal. ....................
    1 2 3

20. The flag was made of 1 wool 2 cotton 3 silk. ..................................
    1 2 3

21. The tickets were sold by 1 one pupil 2 five pupils 3 ten pupils. ...........
    1 2 3

(GO ON TO NEXT PAGE)
VI

Little Deerfoot was an Indian boy. His family belonged to a tribe of Plains Indians. His winter home was a tepee. The tribe migrated in the winter, and tepees were easily moved. Little Deerfoot was happiest in his summer home, an earth lodge, built by his mother and other women of the tribe. The lodge was a cool place even when the summer sun beat down on the hot, dusty plains.

22. A tepee was Deerfoot’s winter home, because it was
   1 warm 2 large 3 easily moved…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………
**TEST 7. SOCIAL STUDIES**

**DIRECTIONS:** Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

**EXAMPLE:** The capital of the United States is
1 Denver 2 Washington 3 Chicago 4 Atlanta. ..........

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1. Tallow was used in making</th>
<th>1 thread 2 matches 3 buttons 4 candles. ......</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Goods are made by machines in a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 factory 2 studio 3 library 4 warehouse. ........................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. &quot;The tulip land&quot; is a name which might be used to describe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Holland 2 Norway 3 Switzerland 4 Greece. ....................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Camels are used for carrying loads in the</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 desert 2 mountains 3 snow 4 jungle. ........</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. The people of China drink much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 reindeer milk 2 coffee 3 orange juice 4 tea. .....................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Genoa, Italy, was the birthplace of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Julius Caesar 2 Madame Curie 3 Christopher Columbus 4 Hernando Cortez. .................................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. A waterway made by man is a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 strait 2 bay 3 sound 4 canal. ..............................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. A forge and an anvil suggest a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 coal miner 2 blacksmith 3 meat packer 4 merchant. ..................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Feathers are placed on an arrow to make it</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 look pretty 2 fly far 3 fly straight 4 kill an animal. ..............................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. A great river made of ice and snow is called</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 an oasis 2 a glacier 3 an avalanche 4 a volcano. ...........................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Dikes are</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 lace-making machines 2 sea walls 3 fishing boats 4 lands of nobles. ......</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. William Tell is a national hero in</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sweden 2 Bavaria 3 Austria 4 Switzerland. .........................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. A pulley is used for</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 lifting heavy loads 2 breaking wood apart 3 grinding grain 4 polishing steel. ...................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. One of the American Indian tribes was named the</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Moabites 2 Hessians 3 Apaches 4 Caledonians. .........................................................</td>
</tr>
<tr>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
15. During World War II, the head of the government of the Soviet Union was
1 Leon Trotsky  2 Count Leo Tolstoy  3 Nikolay Lenin  4 Joseph Stalin.  
1  2  3  4
□ □ □ □

16. Samoset and Squanto were
1 twin peaks  2 river gods  3 friendly Indians  4 mountain lakes.  
1  2  3  4
□ □ □ □

17. David Crockett was
1 an English knight  2 a singer  3 an American frontiersman  4 an inventor.  
1  2  3  4
□ □ □ □

18. The land which a river has made at its mouth is called
1 an oasis  2 a delta  3 an isthmus  4 a peninsula.  
1  2  3  4
□ □ □ □

19. Boulder Dam controls the wild current of the
1 Colorado River  2 Brazos River  3 Tennessee River  4 Arkansas River.  
1  2  3  4
□ □ □ □

20. In traveling from Delaware to Kansas, a person would go
1 north  2 east  3 south  4 west.  
1  2  3  4
□ □ □ □

21. "The Sugar Islands" would be a good name for
1 the Aleutians  2 Hawaii  3 Midway Islands  4 Samoa Islands.  
1  2  3  4
□ □ □ □

22. One of Benjamin Franklin's helpful inventions was a
1 music box  2 stove  3 tractor  4 sewing machine.  
1  2  3  4
□ □ □ □

23. An important product of Central America is
1 asbestos  2 ivory  3 bananas  4 grain.  
1  2  3  4
□ □ □ □

24. George Washington's burial place is
1 Westminster Abbey  2 Arlington Cemetery  3 Richmond  4 Mount Vernon.  
1  2  3  4
□ □ □ □

25. The most important means of transporting goods in the United States is by
1 railroads  2 airplanes  3 river boats  4 trucks.  
1  2  3  4
□ □ □ □

26. Fujiyama is 1 a city  2 a volcano  3 a religion  4 an artist.  
1  2  3  4
□ □ □ □

27. In traveling by plane from Chicago to Alaska, a person would fly across
1 Panama  2 Canada  3 Gulf of Mexico  4 Australia.  
1  2  3  4
□ □ □ □

28. Long Island is a part of the state of
1 Rhode Island  2 Michigan  3 Delaware  4 New York.  
1  2  3  4
□ □ □ □

29. A forage crop is 1 tomatoes  2 squash  3 alfalfa  4 peppers.  
1  2  3  4
□ □ □ □

30. In the territory owned by the United States, the point closest to Russia is in
1 Florida  2 Oregon  3 Alaska  4 California.  
1  2  3  4
□ □ □ □

31. The Appalachian Mountains are near the
1 Pacific Ocean  2 Great Salt Lake  3 Atlantic Ocean  4 Gulf of Mexico.  
1  2  3  4
□ □ □ □

32. In the early days a smith was a 1 chief  2 hunter  3 metalworker  4 tanner.  
1  2  3  4
□ □ □ □

(GO ON TO NEXT PAGE)
33. The sea whose name means "in the midst of land" is the
   1 Baltic 2 Mediterranean 3 Adriatic 4 Ægean. .............................................
34. The Boston Tea Party was a
   1 pledge of peace with the Indians 2 protest against a tax
   3 celebration of the return of the Mayflower 4 party for the English king. ..............................
35. The swampy region in Florida is known as the
   1 Piedmont 2 Bayou 3 Klondike 4 Everglades. ..................................................
36. The capitol of Cuba is 1 Havana 2 Manila 3 Honolulu 4 San Juan. .........................
37. Famine results from a scarcity of 1 fuel 2 work 3 food 4 clothing. ................
38. La Guardia Airport is in
   1 Chicago 2 New York 3 Philadelphia 4 Los Angeles. ..........................................
39. The colony of Rhode Island was started by
   1 James Oglethorpe 2 Peter Stuyvesant 3 Roger Williams 4 Thomas Hooker. ..............................
40. The pyramids were built as
   1 burial places 2 forts for protection 3 look-out towers
   4 temples for worship. .............................................................................................
41. The Imperial Valley is a rich farming section in
   1 Iowa 2 Missouri 3 Georgia 4 California. ..............................................................
42. Coolies are to be found in 1 China 2 Arabia 3 Canada 4 Cuba. ...........................
43. In traveling from Denver to St. Louis, a person would go
   1 east 2 south 3 west 4 north. ...................................................................................
44. A rajah is
   1 an elephant trainer 2 a worker in ivory 3 a prophet
   4 a native prince of India. ...............................................................................................
49. Australia is unusual because of its
   1 dense population
   2 strange and varied plant and animal life
   3 coffee plantations
   4 industrial development.

50. A wise use of natural resources is called
   1 conservation 2 erosion 3 proration 4 rationing.

51. An excellent harbor is found in
   1 Winnipeg 2 Halifax 3 Edmonton 4 Regina.

52. Anthracite and bituminous are the names of two kinds of
   1 stone 2 coal 3 wheat 4 tobacco.

53. The settler who discovered that tobacco would grow well in Virginia was
   1 John Rolfe 2 Captain John Smith 3 Captain Newport 4 Sir Walter Raleigh.

54. The distance across the United States, from coast to coast, is about
   1 1,000 miles 2 2,000 miles 3 3,000 miles 4 10,000 miles.

55. The river that is most important in the lives of the Russian people is the
   1 Dneiper 2 Don 3 Lena 4 Volga.

56. The first Negro slaves were brought to America in 1619 by
   1 the Portuguese 2 the French 3 the Italians 4 the Dutch.

57. “Thar she blows” was a welcome statement to men who were
   1 getting water from windmills
   2 blasting tree stumps
   3 fishing for whales
   4 exploring volcanoes.

58. The Union Jack is another name for
   1 the British flag
   2 England’s colonial empire
   3 the Parliament buildings
   4 the Great Seal of England.

59. The first state to ratify the Constitution of the United States was
   1 New York 2 Virginia 3 Delaware 4 Massachusetts.

60. When George Washington was inaugurated as President, the capital of the nation was
   1 Boston 2 Washington, D.C. 3 New York City 4 Philadelphia.

No. Right Score.
**TEST 8. HEALTH AND SAFETY**

**INSTRUCTIONS:** Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

**EXAMPLE:** A drink that builds body tissue is
1 coffee 2 tea 3 milk 4 ginger ale. 

<table>
<thead>
<tr>
<th>1. The best material for a child's school shoes is</th>
<th>1 canvas 2 rubber 3 wool felt 4 leather.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The best material for a child's school shoes is</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 canvas 2 rubber 3 wool felt 4 leather.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Children should never drink</th>
<th>1 cocoa 2 coffee 3 prune juice 4 malted milk.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Children should never drink</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 cocoa 2 coffee 3 prune juice 4 malted milk.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. The best way to keep food from spoiling is to keep it</th>
<th>1 covered 2 warm 3 dry 4 cold.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. The best way to keep food from spoiling is to keep it</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 covered 2 warm 3 dry 4 cold.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Sweets should be eaten</th>
<th>1 between meals 2 at the end of a meal 3 at bedtime 4 only in cold weather.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Sweets should be eaten</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 between meals 2 at the end of a meal 3 at bedtime 4 only in cold weather.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. The best way to prevent accidents is to</th>
<th>1 stay at home 2 stay off skates and bicycles 3 hear talks on safety 4 observe safety rules.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. The best way to prevent accidents is to</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 stay at home 2 stay off skates and bicycles 3 hear talks on safety 4 observe safety rules.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. A safe place to play is a</th>
<th>1 fenced yard 2 sandbank 3 gravel pit 4 haymow.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. A safe place to play is a</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 fenced yard 2 sandbank 3 gravel pit 4 haymow.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Splints and casts are used in the treatment of</th>
<th>1 cuts 2 bruises 3 broken bones 4 skin diseases.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Splints and casts are used in the treatment of</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 cuts 2 bruises 3 broken bones 4 skin diseases.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. The skull protects the</th>
<th>1 heart 2 brain 3 scalp 4 throat.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The skull protects the</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 heart 2 brain 3 scalp 4 throat.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Houses have screens to keep out</th>
<th>1 dust 2 germs 3 heat 4 insects.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Houses have screens to keep out</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 dust 2 germs 3 heat 4 insects.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. The Eskimos' diet contains much</th>
<th>1 sugar 2 starch 3 fat 4 minerals.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. The Eskimos' diet contains much</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 sugar 2 starch 3 fat 4 minerals.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Pores are found in the</th>
<th>1 bones 2 nerves 3 teeth 4 skin.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Pores are found in the</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 bones 2 nerves 3 teeth 4 skin.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. A knowledge of first aid is useful in case of</th>
<th>1 bad colds 2 headaches 3 accidental injuries 4 sore throat.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. A knowledge of first aid is useful in case of</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 bad colds 2 headaches 3 accidental injuries 4 sore throat.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. A person should never touch an electric light switch if he is</th>
<th>1 wearing wool clothing 2 chewing gum 3 standing on a rubber mat 4 standing in water.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. A person should never touch an electric light switch if he is</td>
<td></td>
<td>□ □ □ □</td>
</tr>
<tr>
<td>1 wearing wool clothing 2 chewing gum 3 standing on a rubber mat 4 standing in water.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(**GO ON TO NEXT PAGE**)
14. A part of your home that is important to your health is the
   1 rugs  2 screens  3 wallpaper  4 curtains. ..............................................

15. Milk is safer to drink after it has been
   1 evaporated  2 homogenized  3 diluted  4 pasteurized. ..................................

16. The most healthful cereals are
   1 toasted  2 white  3 made from corn  4 whole-grain. ....................................

17. An important safety rule for those who ride in a bus is
   1 wait at regular bus stops
   2 do not drop wastepaper in the bus
   3 keep head and hands inside the windows
   4 be courteous to the driver .................................................................

18. It is dangerous to start a fire with
   1 newspapers  2 pine kindling  3 leaves and brush  4 kerosene. ..........................

19. "Polio" is a name popularly used for
   1 infantile paralysis  2 bronchitis  3 leukemia  4 anemia. ............................

20. It is dangerous to clean clothes at home with
   1 sponges  2 absorbing blotters  3 water and soap  4 gasoline. ........................

21. When driving a car in the city limits, a person should not go faster than
   1 ten miles per hour
   2 fifteen miles per hour
   3 thirty miles per hour
   4 fifty miles per hour. ..................................................................................

22. A large amount of fuel food is needed by a
   1 woodcutter  2 telephone operator  3 teacher  4 barber. .................................

23. A good thing to put on a cut or scratched finger is
   1 a very tight bandage  2 vaseline  3 ice water  4 tincture of merthiolate. ........

24. Protein is a
   1 food substance  2 drug  3 gland secretion  4 disease. .................................

25. The safest place to ride a bicycle is
   1 on the sidewalk
   2 hitched on an automobile
   3 near the curb
   4 in the middle of the street. ...........................................................................

26. An object which is sterile is free from
   1 color  2 odor  3 germs  4 moisture. .............................................................

27. If you are not certain of the purity of drinking water, you should
   1 salt it  2 boil it  3 chill it  4 drink only a little of it. ...................................

28. The thickening of the blood outside the body is called
   1 contraction  2 clotting  3 transfusion  4 fumigation. ...................................

29. A dog pants because he cannot
   1 cough  2 bark  3 sweat  4 eat. ..................................................................

(GO ON TO NEXT PAGE)
0. The School Safety Patrol may be seen on duty at
   1 fires  2 street crossing  3 libraries  4 ball games. ........................................
   1 2 3 4

1. A special treatment for infantile paralysis was introduced by
   1 Sister Kenny  2 Louis Pasteur  3 Clara Barton  4 Edward Jenner. .........................
   1 2 3 4

2. Members of the 4-H Clubs are
   1 great athletes  2 crippled children  3 farm boys and girls  4 expert swimmers.
   1 2 3 4

3. Plasma is found in the 1 blood  2 air  3 digestive juices  4 teeth. .......................
   1 2 3 4

4. A person’s ability to see and to think is less than normal when he has drunk
   1 alcohol  2 tea  3 coffee  4 cola drinks. ............................................................
   1 2 3 4

5. The abdomen contains the
   1 heart and lungs  2 intestines  3 sense organs  4 spinal column. .........................
   1 2 3 4

6. Artificial respiration should be applied to a person who has
   1 become overheated  2 been burned  3 stopped breathing  4 lost blood. .............
   1 2 3 4

7. The palate aids in 1 walking  2 seeing  3 chewing  4 speaking. ............................
   1 2 3 4

8. A disinfectant is useful in
   1 cleaning garbage cans  2 brushing teeth  3 washing hair  4 preparing meals. .........
   1 2 3 4

9. A school that has good sanitation has
   1 clean toilets  2 a good heating system  3 well-trained teachers  4 a school nurse.
   1 2 3 4

10. To prevent fainting, one should
    1 drink water  2 walk fast  3 lower his head  4 eat salt. ...................................
    1 2 3 4

11. Swelling of the salivary glands is a symptom of
    1 food poisoning  2 mumps  3 anemia  4 indigestion. ........................................
    1 2 3 4

12. The heat of the body is regulated mostly by the
    1 breathing  2 digestion  3 skin  4 glands. .......................................................
    1 2 3 4

13. A highly contagious skin disease is
    1 hives  2 impetigo  3 nettle rash  4 eczema. ...................................................
    1 2 3 4

14. The vertebrae are 1 bones  2 blood vessels  3 muscles  4 air passages. ..............
    1 2 3 4

No. Right..............  Score..............
DIRECTIONS: Find the answers as quickly as possible. Be sure to write each answer in the space provided for it at the right-hand margin of the page.

1. Mary has 9 pennies in her blue purse and 5 pennies in her red purse. How many pennies has she in all?

2. Ralph has $79 and his sister has $43. Ralph has how much more than his sister?

3. Mr. Smith gave each of his three horses 7 ears of corn. How many ears of corn in all did he give the horses?

4. There are 16 children at Donald's party and 9 of them are boys. How many girls are at the party?

5. John had $124 in the bank. He then sold his fat pig for $43 and earned $26 helping his father. When all of this was put in the bank, how much did John have in the bank?

6. If one yard is sawed off the end of an 8-foot board, how many feet long is the part that remains?

7. How many candy sticks can be bought for 25¢ if they sell at 3 for 5¢?

8. If the first Sunday of a month is on the 5th, the third Sunday will be on what day of the month?

9. George Washington was born in 1732. He died in 1799. How many years did he live?

10. Mr. Brown asked for 78¢ worth of stamps at the post office window and laid down a dollar bill in payment. How much more will he need to add to the dollar in order to receive a quarter in change?

11. Joe's teacher is 10 years older than twice Joe's age. Joe is 6 years old. How old is his teacher?

12. Dorothy is 8 years old and Julia is 10. What will the sum of their age be four years from now?

13. Jack sold seven pigs for $18 each. How much did he receive?

14. Roy spends ¼ of each 24 hours at school. How many hours each day does he spend at school?

15. A wire 112 feet long was doubled to make a two-strand clothes line. The posts for the clothes line must be placed how many feet apart?

16. A farmer sold a half dozen calves for $222. What was the average price per calf?

(Answer keys follow on the next page.)
7. The World Calendar has 312 working days each year. How many working
days does it have each quarter year?

8. Mr. Green bought a 5-gallon can of paint for his garage. It took only 3½ gal-
lons. How many gallons did he have left?

9. In the summer vacation of 9 weeks, Richard earned $95 and spent $50. How
much did he save each week?

10. A history teacher assigned the first half of chapter 6. The chapter begins on
page 196 and ends on page 228. To what page must the class read?

1. Each of 16 girls paid 75¢ into a club fund. The expenses of the club were
$2.25, $1.50, $3.00, and $3.50. How much remained in the club fund?

2. Joe’s train left at 8:30 a.m. and arrived in the city at 11:15 a.m. How long
was Joe on the train?

3. In a certain period of time, one pig will eat 2²/₃ bushels of corn. In the same
time how many bushels will 9 pigs eat?

4. The daily temperature readings at 8 o’clock each morning for a week were
63, 58, 54, 51, 55, 57, 61. What was the average temperature for the week?

5. Mr. Carter had 2½ acres of land which he marked off into lots of ½ acres each.
How many lots did he have?

6. When Mr. Morris sold his cattle he gave his son Claude $263.20, which was ½
of the amount of the sale. For how much did the cattle sell?

7. A plane with an air speed of 160 miles per hour is traveling head-on into a wind
of 30 miles per hour. How far will the plane have traveled in one and one-half
hours?

8. A radio-direction chart used in flying has a scale of 32 miles to the inch. Two
towns 80 miles apart will be shown on the chart how many inches apart?

9. Some clocks and watches are now made with 24 hours marked on the dial in-
stead of 12. (Each new day starts at midnight.) When an ordinary clock reads
5:35 p.m., what does this new clock read?

10. What is the next fraction in this series of fractions? ⅕, ⅖, ⅘

11. The stub of Mr. Harper’s bank book showed a balance of $100. He then made
three deposits of $10 each and wrote two checks for $4 each. How much is
his balance now?

(GO ON TO NEXT PAGE)
32. A fence post which is 9 feet high casts a shadow 3 feet long. How high is a telephone pole which casts a shadow 11 feet long at the same time of day?

33. May's father is 42 years old and her grandfather is 70. Her father's age is what fraction of her grandfather's age? (Write the answer in the form of a decimal fraction.)

34. Here are the arithmetic scores made by a group of children:

<table>
<thead>
<tr>
<th>Name</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary</td>
<td>17</td>
</tr>
<tr>
<td>Bob</td>
<td>20</td>
</tr>
<tr>
<td>Joe</td>
<td>13</td>
</tr>
<tr>
<td>Ruth</td>
<td>11</td>
</tr>
<tr>
<td>Jane</td>
<td>15</td>
</tr>
<tr>
<td>Bess</td>
<td>22</td>
</tr>
<tr>
<td>Roy</td>
<td>12</td>
</tr>
<tr>
<td>Maude</td>
<td>16</td>
</tr>
<tr>
<td>Carl</td>
<td>10</td>
</tr>
<tr>
<td>Ben</td>
<td>17</td>
</tr>
</tbody>
</table>

What per cent of the group made lower scores than Jane?

35. What per cent of this rectangle is shaded?

36. How many square feet are there in a rug that is 72 inches by 120 inches?

No. Right. Score.
**TEST 10. ARITHMETIC COMPUTATION**

**DIRECTIONS:** Find the answers as quickly as possible but try to be accurate. Be sure to write each answer in the space provided for it at the right-hand margin of the page. Before beginning work on a problem be sure you understand what you are to do.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Operation</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Subtract</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Add</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>(3)</td>
<td></td>
<td>4 x 6</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>Add</td>
<td>5</td>
</tr>
<tr>
<td>76</td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>28</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>(5)</td>
<td>Subtract</td>
<td>4</td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>(6)</td>
<td></td>
<td>24 ÷ 3</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td>Add</td>
<td>9</td>
</tr>
<tr>
<td>6855</td>
<td></td>
<td>560</td>
</tr>
<tr>
<td>564</td>
<td></td>
<td>187</td>
</tr>
<tr>
<td>7067</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8)</td>
<td>Subtract</td>
<td>12</td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>(9)</td>
<td>Subtract</td>
<td>8</td>
</tr>
<tr>
<td>4685</td>
<td></td>
<td>475</td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10)</td>
<td>Multiply</td>
<td>1</td>
</tr>
<tr>
<td>5808</td>
<td></td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1591</td>
</tr>
<tr>
<td>(11)</td>
<td>Multiply</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td></td>
<td>1591</td>
</tr>
<tr>
<td>475</td>
<td></td>
<td>300</td>
</tr>
<tr>
<td>(12)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>(GO ON TO NEXT PAGE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13) Add</td>
<td>(14) Multiply</td>
<td>(15)</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>465.83</td>
<td>625</td>
<td>9 $\overline{639}$</td>
</tr>
<tr>
<td>92.66</td>
<td>68</td>
<td>$\phantom{9}$.</td>
</tr>
<tr>
<td>634.95</td>
<td></td>
<td>$\phantom{9}$.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(16) Multiply</th>
<th>(17)</th>
<th>(18) Add</th>
</tr>
</thead>
<tbody>
<tr>
<td>532</td>
<td>$\phantom{6}6$ $\overline{258}$</td>
<td>$%$</td>
</tr>
<tr>
<td>407</td>
<td>$\phantom{6}6$</td>
<td>$%$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(19) Multiply</th>
<th>(20)</th>
<th>(21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4834</td>
<td>$\phantom{9}9$ $\overline{27.63}$</td>
<td>$\phantom{9}17$ $\overline{2006}$</td>
</tr>
<tr>
<td>426</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(22) How many sixths does this fraction equal? $\frac{2}{5} =$

<table>
<thead>
<tr>
<th>(23) Multiply</th>
<th>(24)</th>
<th>(25) Subtract</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.2</td>
<td>$\phantom{26}26$ $\overline{53409}$</td>
<td>$8\frac{1}{2}$</td>
</tr>
<tr>
<td>4.03</td>
<td>$\phantom{26}26$</td>
<td>$5\frac{1}{4}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(26) $\frac{1}{4} \times \frac{2}{5} =$</th>
<th>(27) Subtract</th>
<th>(28) Add</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\frac{2}{5}$</td>
<td>$\frac{2}{5}$</td>
</tr>
<tr>
<td></td>
<td>$\frac{2}{5}$</td>
<td>$6\frac{1}{4}$</td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
(29) \( \frac{5}{6} \times \frac{1}{2} = \)

53 \( \overline{30497} \)

(31) Add
\[
\begin{array}{c}
144 \\
32
\end{array}
\]

(35) Add
\[
\begin{array}{c}
2 \text{ gal. 3 qts. 1 pt.} \\
4 \text{ gal. 2 qts. 1 pt.}
\end{array}
\]

2) How many eighths does this fraction equal? \( \frac{3}{24} = \)

(33) Multiply
\[
\begin{array}{c}
394 \overline{247038}
\end{array}
\]

(34) .56

(35) .008

Water Pressure Record for Twenty-four Hours

*12 3 6 9 12 3 6 9 12

(36) What was the highest pressure reached for the period of record?

(37) At what hour was the water pressure lowest?

Place the decimal point in its proper position in the answer.

(39) \( 2 \frac{3}{4} + 1 \frac{1}{2} = \)

Subtract
\[
\begin{array}{c}
10 \\
5 \frac{1}{2}
\end{array}
\]

(41) Subtract
\[
\begin{array}{c}
\text{yr. mo.} \\
1959 \\
1941
\end{array}
\]

(40) 1941 10

(40) 1959 4

(41) ...yrs. ...mo.

39

40

41

GO ON TO NEXT PAGE
(42) \[ \frac{\%}{\%} = \]

(43) \[ 8 \) \( .328 \]

(44) What is the area of this building lot?

(45) Find the volume of this box.

(46) The number of words spelled by Jane is what per cent of the number of words spelled by Maude?
The Gray-Votaw-Rogers GENERAL ACHIEVEMENT TESTS

Grade Boy or Girl?

What is your age?

n is your next birthday? —

e of your town or district:

e of your building:

INTERMEDIATE TEST FOR GRADES 4—6

By

HOB GRAY
The University of Texas

DAVID F. VOTAW
Southwest Texas State Teachers College

J. LLOYD ROGERS
Southwest Texas State Teachers College

INDIVIDUAL EDUCATIONAL CHART
(Also the Means for a Class May Be Charted on This Page)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Elem. Science

2. Language

3. Literature

4. Spelling

5. Reading: Vocab.

6. Reading: Comp.

7. Social Studies

8. Health & Safety


10. Arith. Compu.

Total Average 10

Educational Grade

Educational Age

1. The educational grade and age scales on this Profile Chart indicate the norms for this test.

2. Ages above 14—2 and below 8—2 are extrapolated.

3. The short vertical lines are probable errors of the estimated true scores.

4. The scale of scores for all of the tests has been equated. Thus uniform achievement will be indicated for a child if the line connecting his ten score-points is approximately horizontal.

DIRECTIONS given in the manual must be followed in administering this test if the results are to be compared with the norms.

Copyright © 1948 by THE STECK COMPANY
Publishers — Austin, Texas
All rights reserved.
Printed and bound in the U.S.A.
TEST 1. ELEMENTARY SCIENCE

DIRECTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

EXAMPLE: A turkey is a 1 fish 2 fowl 3 plant. ...........................................................................

1. After wheat is ground into flour, it is used to make 1 bread 2 fats 3 carbon. 1 2  
2. Fish live in 1 trees 2 mines 3 water. .......................................................... 1 2
3. Ashes are the solids left after burning 1 wood 2 kerosene 3 gas. 1 2
4. Perfume is a 1 food 2 medicine 3 luxury. .......................................................... 1 2
5. Cotton is an important crop in 1 Wisconsin 2 Texas 3 Utah. 1 2
6. The pollen of one flower is often carried to the pistil of another by 1 farmers 2 bees 3 squirrels. 1 2
7. Wild geese migrate 1 singly 2 in pairs 3 in flocks. .......................................................... 1 2
8. Earthquakes are caused by 1 tornadoes 2 ocean waves 3 slipping of the earth's crust. 1 2
9. The earth rotates once in 1 12 hours 2 24 hours 3 36 hours. 1 2
10. Moths spend the winter in 1 cocoons 2 nut shells 3 caves. 1 2
11. An apple tree bears fruit 1 one year 2 two years 3 many years. 1 2
12. An explosion is a sudden expansion of 1 water 2 metal 3 gas. 1 2
13. In the United States the months of March, April, and May make the season of 1 spring 2 summer 3 fall. 1 2
14. The needle of a compass points toward the 1 east 2 north 3 west. 1 2
15. Patent leather is manufactured from 1 chemicals 2 wood pulp 3 skins. 1 2
16. Vitamins in food stimulate 1 disease 2 growth 3 indigestion. 1 2

(GO ON TO NEXT PAGE)
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. A bat's mouth is most like the mouth of a</td>
<td>1 mouse 2 bird 3 fish</td>
<td>3</td>
</tr>
<tr>
<td>8. Vitamins are found in</td>
<td>1 rubber 2 sulphur 3 oranges</td>
<td>2</td>
</tr>
<tr>
<td>9. The upper decks of an approaching ship are seen from shore before the hull is</td>
<td>1 fog 2 earth's curvature 3 bent light rays</td>
<td>2</td>
</tr>
<tr>
<td>10. Food is preserved by</td>
<td>1 refrigeration 2 oxidation 3 gradation</td>
<td>1</td>
</tr>
<tr>
<td>11. Electricity travels best through wire made of</td>
<td>1 glass 2 copper 3 iron</td>
<td>2</td>
</tr>
<tr>
<td>12. Hot air tends to</td>
<td>1 rise 2 fall 3 remain stationary</td>
<td>1</td>
</tr>
<tr>
<td>13. The habit which reptiles have of lying inactive where frost cannot reach them during the winter is called</td>
<td>1 roosting 2 hibernating 3 farrowing</td>
<td>2</td>
</tr>
<tr>
<td>14. At noon on a summer day in the United States, the sun is</td>
<td>1 low in the south 2 high overhead 3 low in the north</td>
<td>2</td>
</tr>
<tr>
<td>15. Phosphorus and sulphur are used in making</td>
<td>1 glue 2 soap 3 matches</td>
<td>2</td>
</tr>
<tr>
<td>16. Erosion is soil damage caused by</td>
<td>1 plows 2 dams 3 water</td>
<td>1</td>
</tr>
<tr>
<td>17. The force which rings a telephone bell is</td>
<td>1 electricity 2 gravity 3 heat</td>
<td>1</td>
</tr>
<tr>
<td>18. Salmon live in the ocean, but to lay their eggs they go into a</td>
<td>1 bay 2 ship channel 3 river</td>
<td>2</td>
</tr>
<tr>
<td>19. Pitch of the voice is controlled by the</td>
<td>1 vocal cords 2 abdomen 3 lungs</td>
<td>1</td>
</tr>
<tr>
<td>20. Carbon dioxide is given off by the</td>
<td>1 heart 2 arteries 3 lungs</td>
<td>2</td>
</tr>
<tr>
<td>21. To reach their winter feeding ground, American hummingbirds fly across the</td>
<td>1 Gulf of Mexico 2 Atlantic Ocean 3 Great Lakes</td>
<td>1</td>
</tr>
<tr>
<td>22. Logs are sometimes split by use of a</td>
<td>1 crowbar 2 wedge 3 jack</td>
<td>2</td>
</tr>
<tr>
<td>23. An echo is the result of sound waves being</td>
<td>1 reflected 2 refracted 3 absorbed</td>
<td>1</td>
</tr>
<tr>
<td>24. In cold weather the level of the mercury in a glass thermometer goes down because cold</td>
<td>1 expands glass 2 contracts mercury 3 exerts pressure</td>
<td>2</td>
</tr>
<tr>
<td>25. A bent tube in which a liquid will run uphill a short distance and then downhill a longer distance is called a</td>
<td>1 test tube 2 siphon 3 turbine</td>
<td>2</td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
36. The color of many animals is the same as the color of their surroundings and provides 1 beauty 2 warmth 3 protection. .................................................................

37. The rate of growth and reproduction of bacteria is 1 slow 2 medium 3 rapid.

38. The pain from the sting of an insect is caused by 1 bacteria 2 acids 3 germs.

39. Water erosion may be retarded by 1 terracing 2 fertilizing 3 irrigating. ......

40. Milk sours because of 1 bacteria 2 temperature 3 mold. ........................................

41. Caves are formed by the action of 1 winds 2 water 3 volcanoes. ......................

42. Mold plants make new mold plants by 1 spores 2 cuttings 3 bulbs. ..............

43. Decayed vegetable matter in the soil is called 1 humus 2 mulch 3 soilage.

44. The greatest depth from which a suction pump can draw water is about 1 30 feet 2 60 feet 3 90 feet. .................................................................

No. Right.............  Score.............
TEST 2. LANGUAGE

DIRECTIONS: If you choose the upper word, phrase, or punctuation marks, place an X in the first square at the right of the page; if you choose the lower, place the X in the second square. Do not skip any of the items.

EXAMPLES: a The boys 1 is 2 are playing ball. ............................................................
          b The month of 1 May 2 may brings flowers. .............................................
          c When did you 1 come 2 come? .................................................................

1. This watch 1 don't 2 doesn't belong to me. ......................................................
2. Ray wasn't allowed to do 1 any 2 none of the things that boys like to do. ...........
3. Because I had helped him load the hay, Father 1 give 2 gave me a dollar. ...........
4. The children's jokes made him 1 mad 2 angry. ..................................................
5. 1 King Midas he 2 King Midas loved gold. .........................................................
6. Swimming is 1 very 2 awful easy for some people. ..........................................
7. It is pleasant to 1 set 2 sit on a sunny hillside. ..............................................
8. Your house is 1 much 2 a lot larger than ours. ...................................................
9. Are you sure you left the cage 1 their 2 there? ..................................................
10. There 1 was 2 were two roads to our house. ......................................................
11. Claud borrows pencils 1 off 2 from his friends. ...............................................  
12. Everyone knows what Franklin 1 did 2 done with electricity. ............................
13. The roof of the cabin leaks 1 badly 2 bad. ....................................................... 
14. Bob could do the trick 1 easy 2 easily. ...............................................................
15. The living-room was 1 real 2 very warm. ...........................................................
16. When the river overflowed, two of our calves were 1 drowned 2 drowned. .........
17. It 1 must have 2 must of been the wind which broke the tree. .........................
18. Two of the baby rabbits were not very 1 healthy 2 healthful. ............................

(GO ON TO NEXT PAGE)
19. Let's us plan a picnic for the last day of school.
20. Susan's dress was torn from climbing through the fence.
21. What do you intend to do after school?
22. That mirror was broken when we moved.
23. Our pet lamb was in a bad condition when we rescued him from the dogs.
24. It is rather hard for a child to understand the directions.
25. Father had dressed before the sun had risen.
26. It rained every day we were at camp.
27. Aunt Sally had only three cookies to divide among the six hungry girls.
28. I believe I can guess your age.
29. Our teacher wants us to come to school regularly.
30. You will not do well in school unless you study.
31. The skaters skimmed over the ice as if they had wings.
32. The guide led the hunters to the camp.
33. Little Jules drove his goats into the meadow.
34. It was she who brought us the message.
35. Miss Walker bragged on Bob's poster.
36. Be sure to dial correctly when you telephone.
37. Your eyes are somewhat bluer than hers.
38. Mr. Nelson was put out when he missed the train.
39. Are you one of the King's men or fine fellow?
40. In winter we go skating.
11. Treason is **betraying** when you betray your country. ............................................................

12. The officers were always on the watch for **him** and his band of outlaws. .......

13. The ice cream is **hard enough** now. .................................................................

14. Tennessee is **South** of Kentucky. .................................................................

15. When George is tardy, he always tries to **make excuses**. ...............................

16. Mr. Hale built his garage **in back of** his house. ..................................................

17. There were **quite a few** baskets left. ............................................................

18. You are **respectfully** invited to the conference. ..............................................

19. **Set** the flower in a sunny window. ...............................................................

20. John's book is different from mine. .................................................................

21. I plan to spend the summer in Maine. ..............................................................

22. No one raised their hand. .................................................................................

23. Robin Hood **accepted** his enemy's challenge to fight. ...................................

24. Every one of the puppies **has** white feet. ..........................................................
TEST 3. LITERATURE

DIRECTIONS: Each sentence has four answers which are numbered 1, 2, 3, and 4, but only one of the answers is correct. Read each sentence carefully and select the answer that you believe to be the correct one. Then place an X in the square at the right that has the same number as the answer you selected. Do not skip any sentences.

EXAMPLE: Captain Kidd was a famous
1 soldier 2 king 3 pirate 4 writer. ...........................................

1. Little Black Sambo got his fine clothes back because
   1 the tigers felt sorry for him
   2 he guessed a riddle
   3 he was a polite child
   4 the tigers fought each other. ...........................................

2. A character found in Mother Goose rhymes is
   1 Tinker Bell 2 Snow White 3 Snip 4 Jack Horner. .................

3. The Straw Ox was coated with
   1 honey 2 tar 3 black paint 4 wax. ..............................

4. The Three Wishes is the story of an old man and woman who
   1 were quarrelsome
   2 kept a lighthouse
   3 were kind to a stranger
   4 owned a mill. .............................................................

5. “Wampum” suggests
   1 Eskimos 2 Indians 3 Hindus 4 Arabs. ...........................

6. An animal fable which shows that “little friends may prove great friends” is
   1 The Town Mouse and the Country Mouse
   2 The Hare and the Tortoise
   3 The Lion and the Mouse
   4 The Fox and the Stork. ..............................................

7. The Steadfast Tin Soldier was unlike his twenty-four brothers because he had
   1 a plume in his helmet 2 only one leg 3 yellow trousers 4 a wart on his nose.

8. The Darling family are characters in the story of
   1 Peter Pan 2 A Dog of Flanders 3 The Secret Garden 4 The Willow Whistle.

9. Babar was
   1 an elephant 2 a magician 3 a clown 4 a pirate. .................

10. Cassim was Ali Baba’s
    1 brother 2 servant 3 father 4 son. ...............................

11. The Pied Piper’s long coat was
    1 of Lincoln green
    2 half of yellow and half of red
    3 lined with ermine
    4 made of deerskin. ....................................................

12. Dandie was a
    1 yellow cat 2 gray donkey 3 pet monkey 4 circus horse. .......

(GO ON TO NEXT PAGE)
3. "A Dog of Flanders" is the story of a dog named
   1 Nello  2 Hero  3 Patrasche  4 Nero.  .................................................

4. A popular monthly magazine for children is
   1 "Tom and Jerry"
   2 "Jack and Jill"
   3 "Trail Blazers"
   4 "Young Adventurers." .................................................................

5. In "Tom Sawyer," Mr. Dobbins was
   1 the mayor  2 the judge  3 the schoolmaster  4 the postman.  ..................

6. Percival William Williams was better known as
   1 Pinky  2 Red Chief  3 Bill  4 Wee Willie Winkie.  .............................

7. Dame Van Winkle was noted for her
   1 good housekeeping  2 wit and beauty  3 ill temper  4 gentleness.  ...........

8. Caddie Woodlawn's real name was
   1 Candace  2 Constance Ann  3 Cordelia  4 Caroline Augusta.  .................

9. A character in "Mutiny on the Bounty" is
   1 Captain Bligh  2 Manuel  3 Captain Ahab  4 Israel Hands.  ..................

10. "South by Thunderbird" is the story of
    1 an expedition in search of diamonds
    2 Antarctic exploration
    3 an airplane tour of South America
    4 whaling boats.  ...........................................................................

11. Reynard is the name often used to refer to the
    1 bear  2 fox  3 rabbit  4 beaver. ...................................................

12. Tom Sawyer took Becky Thatcher's punishment for
    1 spilling ink
    2 tearing the schoolmaster's book
    3 breaking a windowpane
    4 turning the clock back. ..................................................................

13. "A Jury of Her Peers" is the story of
    1 an art exhibit  2 a jewel theft  3 a political campaign  4 a murder.  .......

14. The Bremen Band was made up of
    1 animal musicians  2 elves and brownies  3 robbers  4 wooden soldiers. ...

15. Panuck was
    1 a baby panda
    2 an Eskimo sled dog
    3 an Indian guide
    4 a U. S. Army dog. .............................................................................

(GO ON TO NEXT PAGE)
26. In *Thimble Summer*, the story takes place
   1 on an island
   2 in a trailer camp.
   3 in the Maine woods
   4 on a farm in Wisconsin. .................................................. 1 2 3 4
   
27. Robin Hood and his men became outlaws to avenge the ill treatment dealt them
    by the 1 Saxons 2 Normans 3 Huns 4 Angles. .......................... 1 2 3 4
   
28. A puppet show is acted by
    1 trained dogs 2 midgets 3 children 4 marionettes ................... 1 2 3 4
   
29. The Mock Turtle is a character in
    1 *Just So Stories*
    2 *The Water Babies*
    3 *Alice's Adventures in Wonderland*
    4 *Aesop's Fables.* .......................................................... 1 2 3 4
   
30. When fire threatened the schoolhouse in *Caddie Woodlawn*, the hero of the day
    was 1 Indian John 2 Tom Woodlawn 3 Obediah Jones 4 Silas Bunn. ........ 1 2 3 4
   
31. Winnie-the-Pooh is the name Christopher Robin gave to
    1 Edward Bear 2 Rabbit 3 the old Grey Donkey 4 Piglet. ................ 1 2 3 4
   
32. The four Melendy children are characters in
    1 *The Silver Pencil* 2 *Trouble for Jerry* 3 *The Saturdays* 4 *Silver Saddles.* .... 1 2 3 4
   
33. Frank and Joe Hardy were the sons of a
    1 judge 2 doctor 3 detective 4 musician. .............................. 1 2 3 4
   
34. The queer people Rip Van Winkle met in the mountains were
    1 hunting for deer 2 playing ninepins 3 weaving rugs 4 digging for gold. .... 1 2 3 4
   
35. The Little Dressmaker's name was
    1 Lotta 2 Julietta 3 the Countess of Caramel 4 Georgiana. ............ 1 2 3 4
   
36. *Men of Iron* tells of
    1 workers in an iron foundry
    2 a covered wagon train
    3 the Incas of Peru
    4 English knights. ......................................................... 1 2 3 4
   
37. A tournament suggests 1 sailors 2 pirates 3 gypsies 4 knights. .......... 1 2 3 4
   
38. Life in a western mining camp was a favorite subject of
    1 Bret Harte 2 Mark Twain 3 Washington Irving 4 Hamlin Garland. ...... 1 2 3 4
   
39. Joyce and Mary Ware were friends of
    1 the Little Colonel 2 the March family 3 Rebecca Randall 4 the Moffats. .... 1 2 3 4
   
40. The March family are characters in
    1 *Lassie Come Home* 2 *Little Women* 3 *The Yearling* 4 *The Saturdays.* .. 1 2 3 4

(GO ON TO NEXT PAGE)
1. Moby Dick was a
   1 Maine fisherman  2 white whale  3 crocodile  4 slave trader. .................

2. The first owner of Hitty was
   1 Wendy  2 Phoebe Preble  3 Lucy Billings  4 Katie Hyman. ......................

3. The musician who was called "the Wonder Boy" was
   1 Bach  2 Haydn  3 Mozart  4 Beethoven. ...........................................

4. After King Arthur's death his sword was
   1 buried with him  2 given to Merlin  3 placed in a museum  4 returned to the Lady of the Lake. ..............

5. Jim Davis spied on a band of
   1 Indians  2 runaway slaves  3 smugglers  4 army deserters. ....................

6. Valiant is the story of a 1 horse  2 dog  3 radio operator  4 bridge builder.

7. Tom Sawyer and his friends liked to act out the stories of
   1 Robin Hood and his outlaw band  2 Joseph and his brothers
   3 famous train robbers  4 Captain Kidd's pirate crew. ..............................

8. The Little Colonel's best gift for her twelfth birthday was
   1 a saddle horse  2 a houseparty  3 a trip to Europe  4 her grandmother's harp.

9. The Lily Maid of Astolat was 1 Maid Marian  2 Guinevere  3 Enid  4 Elaine.

0. Cooper's novel The Pilot is the story of
   1 steamers on the Mississippi  2 the first voyage to America
   3 the life of John Paul Jones  4 exploring the Amazon. ............................

No. Right ......................  Score ......................
### Test 4. Spelling

<table>
<thead>
<tr>
<th>Grades</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number words credit to point of beginning</td>
<td>0</td>
<td>8</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Number words spelled correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. right</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>51</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>56</td>
<td>57</td>
<td>58</td>
<td>59</td>
<td>60</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
<td>65</td>
<td>66</td>
<td>67</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td></td>
<td>72</td>
<td>73</td>
<td>74</td>
<td>75</td>
<td>76</td>
<td>77</td>
<td>78</td>
<td>79</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>83</td>
<td>84</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**TEST 5. READING: VOCABULARY**

**INSTRUCTIONS:** Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you chose. Do not skip any of the items.

**EXAMPLE:** A lad is a 1 girl 2 pony 3 boy 4 kitten.

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER 1</th>
<th>ANSWER 2</th>
<th>ANSWER 3</th>
<th>ANSWER 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A story is for us to 1 drink 2 wash 3 read 4 pull.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. We write with a 1 window 2 hair 3 city 4 pen.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. To begin is to 1 pick 2 start 3 hurt 4 use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Soil is a part of the 1 ocean 2 sky 3 air 4 earth.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Stairs belong to 1 houses 2 fences 3 trees 4 streets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Seeds produce 1 money 2 rags 3 paint 4 plants.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. We taste with our 1 fingers 2 toes 3 tongue 4 ears.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. A journey is a 1 trial 2 ship 3 trip 4 road.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. A plum comes from a 1 table 2 tree 3 basket 4 meadow.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Quiet means 1 late 2 large 3 loud 4 still.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Noise comes from 1 heat 2 drums 3 chairs 4 boards.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Difficult means 1 hard 2 useful 3 easy 4 ugly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The price of a ball is its 1 cost 2 weight 3 color 4 size.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. A pattern is a 1 tune 2 line 3 model 4 dress.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Wine is made of 1 corn 2 apples 3 oranges 4 grapes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. A latch may be seen on a 1 chair 2 door 3 cup 4 bed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Malice means 1 manner 2 peace 3 merit 4 spite.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. To disturb is to 1 abuse 2 help 3 join 4 trouble.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. To connect is to 1 cross 2 join 3 return 4 lean.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
20. A professor 1 teaches 2 paints 3 preaches 4 sews. .................................
21. To scare is to 1 scold 2 echo 3 arrest 4 frighten. .................................
22. A dispute is a kind of 1 argument 2 meeting 3 game 4 dwelling. .................
23. A vessel is a kind of 1 lake 2 view 3 food 4 ship. .................................
24. A foreigner is a person who is outside his 1 home 2 state 3 country 4 church.
25. A smell is an 1 argument 2 idol 3 odor 4 invention. ..............................
26. Bravery refers to 1 crime 2 courage 3 football 4 country. ......................
27. Style means 1 color 2 brightness 3 fashion 4 height. ............................
28. A model is a 1 copy 2 moral 3 story 4 lamp. ...................................
29. Tedious means 1 terrible 2 tiring 3 smart 4 small. ...............................
30. Yonder refers to 1 time 2 age 3 night 4 location. ...............................
31. Frigid means 1 forsaken 2 cold 3 frail 4 exposed. ...............................
32. A shed is a kind of 1 plant 2 field 3 house 4 boat. ...............................
33. A wardrobe is a 1 weapon 2 screen 3 closet 4 battle. ............................
34. Hue refers to 1 health 2 diet 3 sorrow 4 color. .................................
35. A vow is a 1 promise 2 prison 3 process 4 veil. .................................
36. Courtesy means 1 expense 2 correspondence 3 politeness 4 constancy. ..... ...................................
37. Sympathy means 1 pity 2 mercy 3 meekness 4 happiness. ......................
38. Reckless means 1 wise 2 effective 3 unavoidable 4 rash. ......................
39. Radiant means 1 youthful 2 religious 3 bright 4 quick. .........................
40. A bayonet is used in 1 war 2 farming 3 athletics 4 printing. ...................
41. Extremely means 1 excessively 2 slowly 3 rapidly 4 wisely. ..................

(GO ON TO NEXT PAGE)
<table>
<thead>
<tr>
<th>Test 5. Reading: Vocabulary</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>42. Meager means 1 doubtful 2 farthest 3 manly 4 scanty.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43. Vicious means 1 vacant 2 evil 3 poetical 4 vexed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. A goal is an 1 expedition 2 eternity 3 aim 4 animal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45. To yearn is to 1 crave 2 seek 3 frighten 4 pretend.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46. To confer is to 1 conjecture 2 approve 3 counsel 4 detain.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47. Venomous means 1 poisonous 2 deceitful 3 delirious 4 hereditary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48. Substantial means 1 valuable 2 firm 3 sufficient 4 stubborn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. Eternal refers to 1 space 2 time 3 area 4 honesty.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. Mammoth means 1 gigantic 2 luminous 3 frivolous 4 famous.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51. Impure means 1 cordial 2 contrite 3 corrupt 4 nervous.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52. To venerate is to 1 preserve 2 reproach 3 revere 4 venture.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. Indignant means 1 indiscreet 2 unequal 3 lowly 4 wrathful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. To disdain is to 1 scorn 2 display 3 injure 4 discard.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No. Right.......... Score..........
TEST 6. READING: COMPREHENSION

DIRECTIONS: This test consists of several stories or passages. Each story or passage is followed by a few statements. Read the story or passage first. Then in each statement find the answer that makes the statement true and place an X in the square at the right that is numbered the same as the answer you chose. You will save time if you can select the right answers after having read the story or passage once. But you may look at the story or passage again if you need to do so in selecting the right answers. Do not skip any of the items.

EXAMPLE: Bob has a kitten, a puppy, and a rabbit. He feeds his kitten milk, his puppy meat scraps, and his rabbit carrots.

a. Bob has 1 one pet 2 two pets 3 three pets. .......................

□ □ □

b. He feeds meat scraps to his 1 kitten 2 puppy 3 rabbit. ......

□ □ □

I

Jane's doll had a dress for morning, a dress for afternoon, and a dress for parties. Jane had named her doll Martha. One day Polly, who lived near Jane, had a doll party. Jane dressed Martha for the party and told her that nice dolls never asked for second helpings of ice cream.

1. The doll's name was 1 Jane 2 Martha 3 Polly. ......................

□ □ □

2. The doll had 1 three dresses 2 two dresses 3 one dress. ............

□ □ □

3. The party was at 1 Polly's house 2 Jane's house 3 Martha's house. ........

□ □ □

4. Jane wanted her doll to 1 talk 2 have good manners 3 walk. ..............

□ □ □

5. When Martha went to Polly's house she wore her

1 morning dress 2 afternoon dress 3 party dress. ......................

□ □ □

II

On the day that Bobby became six years old his father gave him a little puppy named Flash. Flash soon grew up to be a smart dog. One day Bobby went to visit his grandmother in the country. Flash wanted to go too, but Bobby thought Flash would be safer at home.

When Bobby returned he found that Flash had been hit by a car and was almost dead. Bobby took Flash to the doctor, who operated on the little dog and made him well again.

When Bobby made other trips he took his dog along.

6. Flash was a 1 dog 2 pony 3 calf. ........................................

□ □ □

7. Bobby went to visit his 1 aunt 2 grandmother 3 friend. ..................

□ □ □

8. Flash was a 1 Christmas gift 2 Father's Day gift 3 birthday gift. ...........

□ □ □

9. Flash was hit by a 1 train 2 bus 3 car. ...................................

□ □ □

10. Flash 1 got well 2 died 3 remained crippled. ..............................

□ □ □

(GO ON TO NEXT PAGE)
III
Sherwood Forest was the home of Robin Hood and his band of outlaws. From a leafy shelter they rode forth, in their suits of Lincoln green with ready bows and arrows, to make daring attacks on wealthy travelers. They were not really robbers, for the money which they took from the rich and greedy, they gave to the poor and unfortunate.

1. Robin Hood's men fought with 1 bows and arrows 2 swords 3 guns. .................
2. The outlaws of Sherwood Forest were 1 greedy 2 rich 3 kind. .........................
3. Robin Hood was feared by 1 his men 2 poor people 3 wealthy travelers. ............
4. The outlaws wore 1 scarlet 2 green 3 brown. ........................................

IV
Jane and Sarah have a new baby brother. Although his name is Richard, everyone calls him by only the first four letters of his name. He was born in July. The girls like his big eyes that look like pieces of the sky.

5. The baby's birthday parties will always be in the 1 winter 2 spring 3 summer. .......................
6. Everyone calls the baby 1 Ric 2 Rich 3 Richard. .........................................
7. The baby's eyes are 1 blue 2 gray 3 brown. .............................................

V
On Monday Betty went to the toy shop with Mother, Aunt Lee, and Baby Sally, the other said, "You will be four years old tomorrow, and you may choose a gift for each year you have lived."

8. Betty's birthday was on 1 Monday 2 Tuesday 3 Sunday. ...............................
9. The number of gifts Betty chose was 1 two 2 three 3 four. .........................
10. Betty went to the toy shop 1 alone 2 with Aunt Sally 3 with three people. ............

VI
The snow-white birds glided on the lake and proudly arched their graceful necks. It was hard to imagine that these beautiful creatures had ever been awkward, half-naked, and far from pretty. The loveliest of the three swam near a small girl standing on the bank and unbent its long neck to eat the crumbs she threw. "Oh, you beautiful things," cried Alice, "I wonder if you could ever have been ugly ducklings."

11. The birds on the lake were 1 ducks 2 geese 3 swans. ............................
12. Alice fed the birds 1 grain 2 crumbs 3 insects. ......................................
13. The number of birds was 1 two 2 three 3 four. ....................................
14. The birds were 1 pretty 2 half-naked 3 ugly. ........................................

(GO ON TO NEXT PAGE)
VII

Few people are aware that there exists a causal relation between the density of population and the prevalence of mental disorders. The rate of such mental disturbances is highest in areas that represent the extremes of population density. In the localities between the extremes, people find it possible to live normal lives and to fulfill their natural desires for social contacts and wholesome recreation. Neither rural solitude nor the clamor of a great city is conducive to the maximum degree of mental health.

25. Population density affects
   1 economic prosperity  2 mental health  3 divorce rate. .................................
   □  □  □

26. The most wholesome social environment is found in
   1 towns of medium size  2 large cities  3 rural areas. ...................................
   □  □  □

27. The rate of mental disorders is highest in
   1 rural areas and large cities  2 small towns  3 towns of medium size. .......
   □  □  □

VIII

In the 1830's travel by canal boat was often engaged in for pleasure. At that time the gasoline motor was unknown and the steam engine was impracticable for canal boat power. Horses trotting along a tow path on the bank pulled the boats with long ropes. About fifteen miles per day was the normal speed. The fashionable travelers were provided meals and sleeping accommodations on the boat.

28. A canal boat trip was a fashionable pastime about  1 1730  2 1830  3 1930. 
   □  □  □

29. The canal boats were powered with
   1 gasoline motors  2 steam engines  3 horses. ..............................................
   □  □  □

30. At night the travelers slept
   1 at hotels  2 at farm houses  3 on the boat. ............................................
   □  □  □

31. The boats were moved by the method of  1 towing  2 rowing  3 pushing. .......
   □  □  □

32. A round trip to a place thirty miles away would require
   1 two days  2 three days  3 four days. ....................................................
   □  □  □

No. Right..............................................  Score............................................
TEST 7. SOCIAL STUDIES

INSTRUCTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

EXAMPLE: The capital of the United States is
1 Denver 2 Washington 3 Chicago 4 Atlanta.

1. Flint is 1 cotton fiber 2 hard rock 3 crude oil 4 brown coal.

2. The chief food of the Chinese is 1 wheat 2 beef 3 rice 4 beans.

3. Many circus animals come from 1 Mexico 2 Ecuador 3 Canada 4 Africa.

4. From the Indians the white men learned how to grow and to use
   1 cotton 2 corn 3 peaches 4 peanuts.

5. A tractor is often used by a 1 carpenter 2 janitor 3 fireman 4 farmer.

6. A tom-tom is a 1 gun 2 drum 3 tent 4 pet.

7. A combine is used in 1 farming 2 mining 3 coining money 4 printing.

8. The Indians used pemmican as 1 fuel 2 food 3 medicine 4 clothing.

9. The favorite food of silkworms is
   1 mulberry leaves 2 bamboo shoots 3 soybean meal 4 seaweed.

10. The most valuable fish found in the western part of the United States are
    1 cod 2 mackerel 3 salmon 4 flounder.

11. In a Spanish-speaking country a man is called
    1 Monsieur 2 Mister 3 Señor 4 Signor.

12. On a map the bottom usually represents 1 north 2 south 3 east 4 west.

13. Memphis is the largest city in
    1 Alabama 2 Georgia 3 Kentucky 4 Tennessee.

14. Sugar is made from one kind of 1 carrots 2 beets 3 beans 4 turnips.

15. The longest river system in the United States is the
    1 Colorado 2 Ohio 3 Mississippi 4 Hudson.

16. The Taj Mahal is in 1 India 2 Russia 3 China 4 Brazil.

17. Cathay was an old name for 1 China 2 Siberia 3 Afghanistan 4 Tibet.

(GO ON TO NEXT PAGE)
18. "The Star-Spangled Banner" was written during the
   1 War of 1812  2 Revolutionary War  3 French and Indian War  4 Civil War.

19. Maguey is a  1 plant  2 metal  3 garment  4 tool.

20. The explorer of early America who sailed under the Dutch flag was
   1 John Cabot  2 Leif Ericsson  3 Henry Hudson  4 Ferdinand Magellan.

21. The Equator runs across the middle of
   1 Africa  2 Australia  3 Europe  4 North America.

22. Nomads is a word which means
   1 savages  2 shepherds  3 mule-drivers  4 wanderers.

23. The earth is a  1 planet  2 continent  3 universe  4 constellation.

24. Kilts and tartans suggest
   1 Ireland  2 Scotland  3 Denmark  4 Peru.

25. Sakajawea was
   1 a young squaw  2 a trading post  3 a waterfall  4 the peace pipe.

26. Westminster Abbey is in
   1 Paris  2 Edinburgh  3 London  4 Dublin.

27. The pillory was a means of
   1 transportation  2 communication  3 flood control  4 punishment.

28. France gave the United States the
   1 Smithsonian Institute  2 Golden Gate Bridge
   3 Stone Mountain Monument  4 Statue of Liberty.

29. One of the natural resources of a country is its
   1 railways  2 schools  3 forests  4 factories.

30. Watch-making is an important industry in
   1 Switzerland  2 Belgium  3 Poland  4 Argentina.

31. The Irish people have long been skilled in making
   1 silver ornaments  2 perfumes  3 linen and lace  4 tapestries.

32. The automobile center of the United States is
   1 Dayton  2 Milwaukee  3 Chicago  4 Detroit.

33. A man who made steam do many kinds of work was
   1 James Hargreaves  2 John Kay  3 Richard Arkwright  4 James Watt.

(GO ON TO NEXT PAGE)
34. The Suez Canal connects
1 the Red Sea and the Mediterranean Sea
2 the Ægean Sea and the Adriatic Sea
3 the Caspian Sea and the Black Sea
4 the Persian Gulf and the Aral Sea. ................................................................. [ ] [ ] [ ] [ ]

35. One often reads about the Great Wall of
1 India 2 Babylon 3 China 4 Egypt. ................................................................. [ ] [ ] [ ] [ ]

36. A city on the Mexico-Texas border is
1 Monterrey 2 Taxco 3 Tampico 4 Laredo. ................................................................. [ ] [ ] [ ] [ ]

37. The divisions of Canada are called
1 states 2 colonies 3 dominions 4 provinces. ................................................................. [ ] [ ] [ ] [ ]

38. R. F. D. refers to
1 delivery of mail 2 insect control 3 railway express 4 telegraph service. .... [ ] [ ] [ ] [ ]

39. Mt. McKinley, the highest mountain in North America, is in
1 Mexico 2 the United States 3 Canada 4 Alaska. ................................................................. [ ] [ ] [ ] [ ]

40. Father Marquette was the companion of
1 Champlain 2 La Salle 3 Ponce de Leon 4 Joliet. ................................................................. [ ] [ ] [ ] [ ]

41. People who are part Spanish and part Indian are called
1 vaqueros 2 mestizos 3 serapes 4 siestas. ................................................................. [ ] [ ] [ ] [ ]

42. A stevedore 1 milks cows 2 makes steel 3 loads ships 4 drives buses. ............ [ ] [ ] [ ] [ ]

43. The first white men to cross our country from coast to coast were
1 Marquette and Joliet
2 Lewis and Clark
3 Jones and Perry
4 Clay and Webster. ................................................................. [ ] [ ] [ ] [ ]

44. The Union of Soviet Socialist Republics is the country formerly known as
1 Austria 2 Prussia 3 Turkey 4 Russia. ................................................................. [ ] [ ] [ ] [ ]

45. A fazenda is much like 1 a llama 2 an hacienda 3 a poncho 4 a tapir. ............ [ ] [ ] [ ] [ ]

46. Steppes are
1 terraced farm lands 2 grazing lands 3 chemical factories 4 nomadic tribes. ........ [ ] [ ] [ ] [ ]

47. Coal is formed from
1 melted rock 2 petroleum 3 natural gas 4 decayed vegetable matter. ........ [ ] [ ] [ ] [ ]

48. In the United States, metal is coined into money at places called
1 assay offices 2 banks 3 refineries 4 mints. ................................................................. [ ] [ ] [ ] [ ]

(GO ON TO NEXT PAGE)
49. The word *Vikings* suggests
   1 desert chieftains  2 wine merchants  3 Northmen  4 Alpine shepherds.

50. The word “cockney” suggests 1 Paris  2 New York  3 London  4 Mexico City.

51. The king of the Aztec Indians was
   1 Pizarro  2 Vasco da Gama  3 Montezuma  4 De Soto.

52. The French city of Lyon is noted for the manufacturing of
   1 cheese  2 silk  3 pottery  4 automobiles.

53. The Loop is the downtown shopping district of
   1 Chicago  2 St. Louis  3 Salt Lake City  4 Denver.

54. The American Revolution ended with the defeat of the British at the battle of
   1 Saratoga  2 Lexington  3 Trenton  4 Yorktown.

55. Kitty Hawk, North Carolina, was important in the development of
   1 airplanes  2 sulphur mines  3 the telegraph  4 motion pictures.

56. The Chinese developed a high degree of civilization about
   1 1000 B.C.  2 400 A.D.  3 1700 A.D.  4 1900 A.D.

57. Finland, Estonia, Latvia, and Lithuania are known as the
   1 Scandinavian countries  
   2 Balkan states  
   3 Baltic countries  
   4 Soviet republics.

58. Most of the colonial territory owned by France is in
   1 South America  2 Africa  3 Asia  4 Australia.

59. The only English king who was known as “the Great” was
   1 William  2 Richard  3 Alfred  4 Charles.

60. The Declaration of Independence and the Constitution of the United States are
   housed in the
   1 White House  2 Library of Congress  3 Capitol  4 Lincoln Memorial.

No. Right  Score
## TEST 8. HEALTH AND SAFETY

**RECTIONS:** Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

### SAMPLE:
A drink that builds body tissue is
1 coffee 2 tea 3 milk 4 ginger ale.

**ANSWERS**
1 2 3 4

<table>
<thead>
<tr>
<th>1. A car can be stopped quickly if it has good</th>
<th>1 lights 2 brakes 3 tires 4 springs.</th>
<th>1 2 3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Do not lend or borrow a 1 ball 2 notebook 3 belt 4 toothbrush.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>3. A food that is made from milk is 1 cheese 2 gelatin 3 salad oil 4 broth.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>4. A good way to grow sound, strong teeth is to 1 eat candy 2 drink water 3 use toothpaste 4 drink milk.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>5. Corns and bunions are usually caused by 1 going barefoot 2 foot perspiration 3 wearing shoes too small 4 wearing shoes too large.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>6. The warmest clothing for winter is made of 1 wool 2 cotton 3 linen 4 rayon.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>7. Sties are sores on one’s 1 lips 2 eyelids 3 fingers 4 ears.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>8. Vaccination is used to prevent 1 smallpox 2 measles 3 tuberculosis 4 itch.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>9. Disease germs most often enter the body through the 1 skin 2 blood 3 nose and mouth 4 eyes.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>0. Saliva is found in the 1 eye 2 ear 3 kidneys 4 mouth.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>1. A decayed spot in a tooth is called 1 a tumor 2 an abscess 3 an ulcer 4 a cavity.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>2. The sense of taste is closely related to that of 1 touch 2 smell 3 sight 4 hearing.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>3. It is not safe to take medicine from a bottle that 1 has no label 2 is almost empty 3 has a cork stopper 4 has been kept on an open shelf.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>4. A good body-building food is 1 chocolate 2 whole-grain cereal 3 radishes 4 pears.</td>
<td></td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

(**GO ON TO NEXT PAGE**)
15. A healthful food for a child's breakfast is
   1 doughnuts  2 sausage  3 pancakes  4 hot cereal. ...........................................
   □ □ □

16. A country noted for its healthful climate is
   1 India  2 Turkey  3 Switzerland  4 Panama. .....................................................
   □ □ □

17. The list of foods served at a meal is called a
   1 menu  2 diet  3 recipe  4 chart. .................................................................
   □ □ □

18. There is no food value in
   1 tea  2 tomato juice  3 lemonade  4 beef broth. ....
   □ □ □

19. The vocal cords produce
   1 body fluids  2 visual images  3 voice  4 hair. .......
   □ □ □

20. A cold-blooded animal is the
   1 robin  2 frog  3 horse  4 squirrel. ............................................................
   □ □ □

21. Each night a child of school age should sleep
   1 six hours  2 eight hours  3 ten hours  4 twelve hours. ..................................
   □ □ □

22. Foods that contain calcium build good
   1 teeth  2 eyes  3 muscles  4 blood vessels. ....................................................
   □ □ □

23. Parachutes have saved the lives of many
   1 sailors  2 fliers  3 factory workers  4 mountain climbers. ............................
   □ □ □

24. Water may be impure because of the presence of
   1 steam  2 oxygen  3 minerals  4 bacteria. ....................................................
   □ □ □

25. The number of players on a baseball team is
   1 five  2 nine  3 eleven  4 fifteen. .................................................................
   □ □ □

26. Safety glass in automobile windows is
   1 slightly colored  2 unusually clear  3 moisture proof  4 shatter proof. ...........
   □ □ □

27. The study of how to keep healthy is called
   1 civics  2 domestic science  3 hygiene  4 biology. ..........................................  
   □ □ □

28. When walking on a public highway a person should
   1 walk on the left side  2 walk on the right side  3 never walk alone
   4 wear dark clothing. ..........................................................................................
   □ □ □

29. Oxygen is carried to all parts of the body by the
   1 stomach  2 brain  3 blood  4 skin. ................................................................
   □ □ □

30. A good substitute for meat is
   1 macaroni  2 bananas  3 cooked fruit  4 eggs. ..................................................
   □ □ □

31. Thorough chewing of food is healthful because it
   1 develops the jaws  2 strengthens the teeth  3 stimulates the gum
   4 mixes the food with saliva. ..............................................................................
   □ □ □

(GO ON TO NEXT PAGE)
22. Digestion of starch in man is aided by 1 saliva 2 sugar 3 fats 4 coffee.  

23. A covered container outside the house is a good place to keep  
1 gasoline 2 soap powder 3 waste fats 4 rubbing alcohol.  

24. Respiration is the act of 1 eating 2 resting 3 breathing 4 bathing.  

25. On poison ivy, the number of leaves in a cluster is  
1 two 2 three 3 five 4 seven.  

26. The outside coat of the wheat seed or grain makes a food called  
1 bran 2 meal 3 wheat-germ 4 macaroni.  

27. The diet of a person who is overweight should not include much  
1 milk 2 fruit 3 bread 4 egg.  

28. A food which furnishes bulk or roughage in the diet is  
1 baked custard 2 potato soup 3 raw cabbage 4 cheese.  

29. Nutrition depends on 1 fresh air 2 temperature 3 exercise 4 food.  

30. A boy twelve years old and sixty inches tall should weigh about  
1 sixty pounds  
2 ninety pounds  
3 one hundred ten pounds  
4 one hundred twenty pounds.  

1. All stairs should be provided with  
1 carpeting 2 handrails 3 metal treads 4 rubber treads.  

2. In a burning or smoke-filled house, the best air for breathing is near the  
1 ceiling 2 doors 3 windows 4 floor.  

3. A chemical commonly used to make drinking water safe is  
1 carbon dioxide 2 chlorine 3 nitrogen 4 sulphur.  

4. Acne is a 1 hearing aid 2 skin disorder 3 serum 4 drug.  

No. Right Score
**TEST 9. ARITHMETIC REASONING**

**DIRECTIONS:** Find the answers as quickly as possible. Be sure to write each answer in the space provided for it at the right-hand margin of the page.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One hen has 4 chicks and another has 9. How many chicks do both hens have?</td>
<td></td>
</tr>
<tr>
<td>2. Ruth gave away 8 of her 17 cookies. How many did she have left?</td>
<td></td>
</tr>
<tr>
<td>3. Jane took her two dimes and one nickel to the store to get pennies for her bank. How many pennies did she get?</td>
<td></td>
</tr>
<tr>
<td>4. Mr. Wright sold 42 acres of his 88-acre farm. How many acres were left?</td>
<td>acr</td>
</tr>
<tr>
<td>5. Six dimes equal how many pennies?</td>
<td></td>
</tr>
<tr>
<td>6. Three games of baseball are being played at the same time. It takes 18 boys to play one game. How many boys are playing baseball?</td>
<td></td>
</tr>
<tr>
<td>7. How many pencils can be bought for $1.50 if they sell at 3 for 25 cents?</td>
<td></td>
</tr>
<tr>
<td>8. Walter deposited $24 in the bank each month for six months. What was the total of these deposits?</td>
<td></td>
</tr>
<tr>
<td>9. Walt Whitman was born in 1819. He died in 1892. How many years did he live?</td>
<td></td>
</tr>
<tr>
<td>10. There are 143 children in the classrooms, 26 are in the playroom, and 117 are on the playground. How many children came to school today?</td>
<td></td>
</tr>
<tr>
<td>11. There are 360 degrees in a circle. How many degrees are there in a quarter of a circle?</td>
<td></td>
</tr>
<tr>
<td>12. When Mr. Riley arrived home after his trip to the state fair, he found that the mileage registered on his car for the entire trip was 134 miles. How far is it from his home to the state fair?</td>
<td></td>
</tr>
<tr>
<td>13. A game of football requires 22 players and a game of basketball requires 10 players. If four games of each are being played at the same time, how many more are playing football than basketball?</td>
<td></td>
</tr>
<tr>
<td>14. If the first Sunday of a month is on the 3rd, the fourth Sunday will be on what day of the month?</td>
<td></td>
</tr>
<tr>
<td>15. A man worked on a certain job every day except Sundays for 102 days. How many weeks did the job require?</td>
<td></td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
6. Mr. Carson earns $372 per month and spends \( \frac{1}{6} \) of that amount for meals. How much do his meals cost him each month?

7. Bess spent 15 cents for a tablet. What part of a quarter did she spend? (Write the answer in the simplest form of a common fraction.)

8. Carl is 12 years old, which is \( \frac{1}{4} \) the age of his father. How old is Carl's father?

9. Mr. Taylor sold eggs for $65 which cost him $45 in expenses. He divided the profits equally among his 4 sons. How much did each son get?

10. Roy's clothing allowance is $8 per month. During the school term of nine months Roy bought a hat for $4, a coat for $12, a suit for $20, and an overcoat for $24. How much did he have at the end of the school term?

1. Mrs. Miller's age is halfway between the age of her father, who is 76, and the age of her son, who is 12. How old is Mrs. Miller?

2. On an airplane trip of 6 hours, \( \frac{1}{4} \) hours were spent in stops at airports along the route. How many hours was the plane in the air?

3. Mrs. Smith bought $1.62 worth of groceries and placed two one-dollar bills on the counter in payment. How much more will she need to place on the counter in order to receive a fifty-cent piece in change?

4. Six men worked on a job for \( 3\frac{3}{4} \) hours. What was the total number of man-hours spent on the job?

5. Mr. Johnson drove his car 1426 miles in 31 hours. What was his average number of miles per hour?

6. The fourth period of classes is from 2:45 p.m. to 4:15 p.m. How long is the period?

7. A plane with an air speed of 160 miles per hour is traveling with a tail wind of 40 miles per hour. How far will the plane have travelled in one and three-fourths hours?

8. A regional chart used in flying has a scale of 16 miles to the inch. A pilot has marked two dots on his map 6\( \frac{1}{4} \) inches apart. What is the distance in miles between the places marked?

9. Ralph can pick \( \frac{5}{6} \) bushels of tomatoes per hour. How many hours will it take him to pick 3\( \frac{1}{2} \) bushels.

10. A rectangle which contains 450 square feet is 30 feet long. How wide is it? 

(GO ON TO NEXT PAGE)
31. The actual weight of a certain motor is 40 lbs., which is % of its shipping weight. (Crates add extra weight.) A 400 lb. shipment would include how many such motors?

32. An outdoor bottle cooler was made by placing a tin box 20 in. by 15 in. by 10 in. into a larger box 25 in. by 20 in. by 15 in. and by packing rock wool into the space between the walls of the boxes. How many cubic inches of space will be filled with rock wool?

33. In one month a clothing store sold $1200 worth of shirts. This was \( \frac{3}{5} \) of the total sales. What were the total sales?

34. After traveling 20 miles of a trip, Mr. Morris finds that he still has 60 miles to go. What part of the whole trip has he traveled? (Write the answer in the form of a decimal fraction.)

35. A barn lot which is 200 feet by 100 feet has a barn on it which is 40 feet by 60 feet. How many square feet of area lie outside the barn?

36. What per cent of this rectangle is shaded?
TEST 10. ARITHMETIC COMPUTATION

RECTIONS: Find the answers as quickly as possible but try to be accurate. Be sure to write each answer in the space provided for it at the right-hand margin of the page. Before beginning work on a problem be sure you understand what you are to do.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>ANS WERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Subtract</td>
<td>(2)</td>
<td>Add</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4)</td>
<td>Subtract</td>
<td>(5)</td>
<td>Add</td>
</tr>
<tr>
<td>19</td>
<td>7036</td>
<td>473</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5844</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7)</td>
<td>Subtract</td>
<td>(8)</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>6</td>
<td>324</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10)</td>
<td>Add</td>
<td>(11)</td>
<td>Add</td>
</tr>
<tr>
<td>%</td>
<td>%</td>
<td>6½%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13)</td>
<td>Add</td>
<td>(14)</td>
<td>Multiply</td>
</tr>
<tr>
<td>254.74</td>
<td>4</td>
<td>368</td>
<td>78</td>
</tr>
<tr>
<td>91.48</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>745.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(16)</td>
<td>Multiply</td>
<td>(17)</td>
<td>Subtract</td>
</tr>
<tr>
<td>3078</td>
<td>6403</td>
<td>536</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3766</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
(19) Do not solve this problem; simply make an x in the answer space exactly where you would put the first figure of the answer if you were solving the problem. 24 \ 6173

(20) Multiply

643

308

\( \frac{3}{4} = \)

(21) How many twelfths does this fraction equal?

(22) \( 9 \div 279 \)

(23) \( \frac{1}{6} \times \frac{3}{4} = \)

(24) \( \frac{7}{3} \times \frac{1}{3} = \)

(25) Find the volume of this box.

(26) 13 \ 3008

(27) 34 \ 36151

(28) Multiply

42.3

5.04

(29) Multiply

5845

537

(30) Subtract

20

14\%

(31) 473 \ 253528

(32) Multiply

368

400

(33) Add

46 \ 2668

13\%

9\%

(34) 2\% \div 1\frac{1}{4} = \)

(35) \( \frac{3}{4} \div \frac{3}{4} = \)

(36) Multiply

.48

.007

(37) \( 2\% \div 1\frac{1}{4} = \)

(GO ON TO NEXT PAGE)
(38) Subtract

\[
\begin{array}{c}
\frac{3}{4} \\
\frac{5}{2}
\end{array}
\]

(39) How many sevenths does this fraction equal?

\[
\frac{3}{8} =
\]

(40) What is the area of this garden?

38 
39 
40...........sq. ft.

130 ft.

(41)

\[
67533
\]

\[
.05 \overline{33.7665}
\]

Subtract

Place the decimal point in its proper position in the answer.

(42) Subtract

\[
\begin{array}{c}
\text{Mo.} \\
\text{Da.}
\end{array}
\]

\[
\begin{array}{c}
10 \\
16
\end{array}
\]

\[
\begin{array}{c}
6 \\
24
\end{array}
\]

This graph shows the ages of each of five children.

(43) At what hour was the day's heat most intense?

43 .............

(44) What was the lowest temperature for the 24 hours?

44 .............

(45) How old is D?

45 .............

(46) B's age is what per cent of E's age?

46 .............%
The Gray-Votaw-Rogers

GENERAL

ACHIEVEMENT

TESTS

1. Grade ... Boy or Girl?
2. What is your age?
3. When is your next birthday?
4. Name of your town or district:
5. Name of your building:

INTERMEDIATE

TEST

FOR GRADES 4—6

By

HOB GRAY
The University of Texas

DAVID F. VOTAW
Southwest Texas State Teachers College

J. LLOYD ROGERS
Southwest Texas State Teachers College

INDIVIDUAL EDUCATIONAL CHART

(Also the Means for a Class May Be Charted on This Page)

<table>
<thead>
<tr>
<th>TEST</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Elemen. Science</td>
<td></td>
</tr>
<tr>
<td>2. Language</td>
<td></td>
</tr>
<tr>
<td>3. Literature</td>
<td></td>
</tr>
<tr>
<td>4. Spelling</td>
<td></td>
</tr>
<tr>
<td>5. Reading: Vocab.</td>
<td></td>
</tr>
<tr>
<td>6. Reading: Comp.</td>
<td></td>
</tr>
<tr>
<td>7. Social Studies</td>
<td></td>
</tr>
<tr>
<td>8. Health &amp; Safety</td>
<td></td>
</tr>
<tr>
<td>10. Arith. Compu.</td>
<td></td>
</tr>
<tr>
<td>Total Average</td>
<td></td>
</tr>
<tr>
<td>Educational Grade</td>
<td></td>
</tr>
<tr>
<td>Educational Age</td>
<td></td>
</tr>
</tbody>
</table>

1. The educational grade and age scales on this Profile Chart indicate the norms for this test.
2. Ages above 14—2 and below 8—2 are extrapolated.
3. The short vertical lines are probable errors of the estimated true scores.
4. The scale of scores for all of the tests has been equated. Thus uniform achievement will be indicated for a child if the line connecting his ten score-points is approximately horizontal.

Directions given in the manual must be followed in administering this test if the results are to be compared with the norms.

Copyright © 1950 by

THE STECK COMPANY
Publishers — Austin, Texas
All rights reserved.
Printed and bound in the U.S.A.
TEST 1. ELEMENTARY SCIENCE

DIRECTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

EXAMPLE: A turkey is a 1 fish 2 fowl 3 plant.

1. Grass is a food commonly eaten by 1 man 2 cows 3 fish.
2. An animal that carries its young in a pouch is the 1 squirrel 2 kangaroo 3 fox.
3. Sugar is made from 1 beets 2 cabbage 3 spinach.
4. The telegraph is used to send 1 messages 2 packages 3 air mail.
5. The main use of rubber is in the manufacture of 1 pencil erasers 2 shoe soles 3 automobile tires.
6. A bird which can fly both forward and backward is the 1 redbird 2 hummingbird 3 mockingbird.
7. Temperature is measured by a 1 barometer 2 hygrometer 3 thermometer.
8. Dew forms 1 at night 2 at noon 3 in the afternoon.
9. The usual color of the chlorophyl of a plant is 1 green 2 red 3 blue.
10. Natural rubber is made up largely of an extract from 1 animals 2 trees 3 minerals.
11. Rayon is a product used chiefly as a substitute for 1 silk 2 leather 3 rubber.
12. A magnet attracts 1 wood 2 iron 3 glass.
13. The main purpose of a cat's fur is to 1 add beauty 2 avoid scratches 3 retain warmth.
14. Stalagmites are found in 1 rivers 2 mountains 3 caves.
15. The octopus is a sea-animal with 1 four arms 2 six arms 3 eight arms.
16. Natural gas is often used as a fuel in 1 homes 2 automobiles 3 airplanes.
17. One tree which is always green (called an evergreen) is the 1 oak 2 maple 3 pine.

(GO ON TO NEXT PAGE)
3. Sleet is frozen 1 snow  2 rain  3 fog.  

4. The wind-sock is to inform the pilot about wind 
   1 velocity  2 direction  3 height.  

5. Petroleum is refined mostly in 1 Wyoming  2 Utah  3 Texas.  

6. A gas which is poisonous to breathe is 
   1 carbon monoxide  2 oxygen  3 nitrogen.  

7. An animal which hibernates is the 1 rabbit  2 woodchuck  3 fox.  

8. The telescope is used to study 1 microbes  2 stars  3 odors.  

9. The study of plant life is called 1 geology  2 botany  3 physiology.  

10. Artificial lakes are formed by 1 dams  2 erosion  3 turbines.  

11. A good grade of paper may be made from 1 rags  2 rayon  3 rubber.  

12. Mohair is the wool of a certain breed of 1 camels  2 sheep  3 goats.  

13. A total eclipse of the moon may be caused by the shadow of 
    1 the Earth  2 Mars  3 Jupiter.  

14. An airplane which can rise or descend vertically is the 
    1 amphibian  2 jet-propelled  3 helicopter.  

15. Water in an automobile circulates to 
    1 discharge heat  2 prevent rust  3 moisten bearings.  

16. The X ray was discovered by 1 Morris  2 Bell  3 Roentgen.  

17. Cotton fiber is 1 manufactured  2 mined  3 grown.  

18. Seedless oranges are propagated by 1 pollinating  2 planting  3 grafting.  

19. Graphite is used as a 1 lubricant  2 food  3 textile.  

20. A metal that may be magnetized easily is 1 copper  2 silver  3 iron.  

21. Ball bearings are put in wheels to reduce 1 weight  2 friction  3 rust.  

22. The needle of a compass points north because of 
    1 magnetism  2 gravity  3 earth's rotation.
38. A bird of prey eats 1 flesh  2 insects  3 grain.  

39. The exhaust of an automobile engine contains a poisonous gas called  
   1 carbon monoxide  2 carbon dioxide  3 carbon disulfide.  

40. When salt is sprinkled on ice, the rate of melting is  
   1 decreased  2 increased  3 unchanged.  

41. A bullet fired from a gun on the bank of a river at the image of a fish in the water  
   will pass 1 under the fish  2 through the fish  3 over the fish.  

42. The likeness of offspring to parent is due to  
   1 variation  2 heredity  3 environment.  

43. White sunlight may be separated into colors by use of a  
   1 prism  2 cylinder  3 mirror.  

44. Airplanes that can land on either land or water are called  
   1 monoplanes  2 amphibians  3 biplanes.
TEST 2. LANGUAGE

INSTRUCTIONS: If you choose the upper word, phrase, or punctuation marks, place an X in the first square at the right of the page; if you choose the lower, place the X in the second square. Do not skip any of the items.

EXAMPLES:
a. The boys 1 are 2 playing ball.
b. The month of 1 May 2 brings flowers.
c. When did you 1 come 2 come?

ANSWERS

1. What would you have 1 did 2 done?
2. The play will be given two weeks before 1 Easter 2 Easter.
3. 1 Them 2 Those shoes are too narrow.
4. Sam 1 did 2 done the plowing in three days.
5. If anyone can 1 learn 2 teach you algebra, Miss March can.
6. Henry D. Thoreau has described the beauties of the 1 New England 2 new england seasons.
7. If the team 1 don't 2 doesn't win, don't blame the coach.
8. Mr. Shelton 1 took 2 taken our order for new tires.
9. Did you 1 fall for 2 believe his story?
10. Last night's storm 1 blew 2 blew the chimney down.
11. Do you 1 think 2 guess your parents will let you go?
12. The Bartons live in a 1 real 2 very large house.
14. Miss Davis 1 give 2 gave the test to us.
15. His selfish ways 1 make me angry 2 burn me up.
16. The postman brought letters for everyone but 1 her 2 she.
17. Have you visited the 1 smithsonian institute 2 Smithsonian Institute?
18. Where 1 was 2 were you when I called?
19. Jane wants to borrow a dollar 1 from 2 off you.

(GO ON TO NEXT PAGE)
20. I like salt on watermelon. 1 2
21. She pretends that she doesn't hear us. 1 2
22. I am very fond of hot chocolate. 1 2
23. Laura flunked the first test. 1 2
24. Are those genuine pearls? 1 2
25. It was hard for us girls to keep from laughing. 1 2
26. The tardy bell rang as I entered the building. 1 2
27. Betty's usual breakfast is fruit and cereal. 1 2
28. David and George didn't find treasure on the island. 1 2
29. Do you find French a difficult subject? 1 2
30. Someone had stolen the bonds from the safe. 1 2
31. Do you suppose she has a driver's license? 1 2
32. You must have memorized the wrong stanza. 1 2
33. The pudding is sweet enough. 1 2
34. I laugh every time I think of that joke. 1 2
35. The table top is made of one large piece of wood. 1 2
36. Mr. Allen is the person who has a bicycle for sale. 1 2
37. Did you solve all of the problems, Bill? 1 2
38. The peach ice cream is delicious. 1 2
39. My dog follows me everywhere I go. 1 2
40. Have you spent a winter in the North? 1 2
41. It's easy to learn traffic rules. 1 2
42. Our teachers seldom call the roll. 1 2
<table>
<thead>
<tr>
<th>No. Right</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

3. I read that the traffic laws are to be revised.
4. I will try to remember your friend's name.
5. We telephoned to the police station, hoping to hear that the child had been found.
6. No one would tell who had eaten the cake.
7. The hills near my home are rather high.
8. Next you sift the flour.
9. Add two cupfuls of fruit juice.
10. Sulphur water tastes bad.
11. We honor the pioneers, for it was they who developed our country.
12. That task is too hard for an eight-year-old child.
13. As I was saying, no harm has been done.
14. One of my brothers was on the debating team.
TEST 3. LITERATURE

DIRECTIONS: Each sentence has four answers which are numbered 1, 2, 3, and 4, but only one of the answers is correct. Read each sentence carefully and select the answer that you believe to be the correct one. Then place an X in the square at the right that has the same number as the answer you selected. Do not skip any sentences.

EXAMPLE: Captain Kidd was a famous
1 soldier 2 king 3 pirate 4 writer.

1. Little Toot is a story about a 1 tugboat 2 train 3 boy 4 horn.

2. On his first hunting trip with his bow and arrow, Hiawatha shot a
1 bear 2 deer 3 squirrel 4 rabbit.

3. In Field's poem, "The Duel," the fight was between
1 The Monkey and the Crocodile
2 Wynken and Blynken
3 The Owl and the Pussy Cat
4 The Gingham Dog and the Calico Cat.

4. Robin Hood's friend was
1 John Silver 2 Little John 3 Billy Bones 4 Long John.

5. The Miller's daughter had to guess a name in the story of
1 Thumbelina 2 Snow-White and Rose-Red 3 Rumpelstiltskin 4 Tamlane.

6. An animal becomes a man in the story of
1 Snow-White and Rose-Red
2 The Sleeping Beauty
3 Ugly Duckling
4 The Real Princess.

7. The mouse-colored horse that belonged to Clint was
1 Buck 2 Smoky 3 Crazy Quilt 4 Spunky.

8. Loopy tells about an airplane that wanted to be a
1 fighter 2 skywriter 3 passenger plane 4 bird.

9. Besides his lamp, Aladdin had a magic
1 cloak 2 ring 3 rug 4 wand.

10. The person with a monkey which became an actor was
1 Mr. Poppin 2 Peter Peppercorn 3 Mr. Bumps 4 Christopher Robin.

11. Paddle-To-The-Sea is a story about 1 a duck 2 a boat 3 a seal 4 a fish.

12. The story which teaches that it pays to be friendly to animals is
1 Ask Mr. Bear
2 Make Way for Ducklings
3 Ferdinand the Bull
4 Andy and the Lion.
3. Peter Pan and his friends flew to
   1 Spider Monkey Island
   2 The Jumping-off Place
   3 Never-Never Land
   4 Pooh Corner. ......................................................... 1 2 3 4

4. The shepherd boy and the king's son who became good friends in the Bible story
   were
   1 Moses and Aaron
   2 Shadrach and Meshach
   3 Joseph and Potiphar
   4 David and Jonathan. .................................................... 1 2 3 4

5. "Babe the Blue Ox" is in the story of
   1 Paul Bunyan 2 Johnny Appleseed 3 Gulliver's Travels 4 Pecos Bill. ................. 1 2 3 4

6. You would expect to read of heralds in a story about
   1 pirates 2 knights 3 fairies 4 farmers. .................................. 1 2 3 4

7. Most of O'Brien's stories are about
   1 dogs 2 horses 3 sports 4 cowboys. ........................................ 1 2 3 4

8. Heidi became lonesome for
   1 her mother 2 her toys 3 the mountains 4 her brother. ........................ 1 2 3 4

9. The fable, "The Grasshopper and the Ants," teaches the lesson that you should
   not 1 be greedy 2 pretend 3 try to do too much 4 play all the time. .............. 1 2 3 4

10. What the children found in the secret garden was
    1 silver 2 health 3 jewels 4 a lost will. ................................... 1 2 3 4

11. The Wizard in King Arthur's Court was
    1 Pellimore 2 Lancelot 3 Merlin 4 Allan. .................................... 1 2 3 4

12. A boy who dressed in girl's clothes as a disguise was
    1 Huckleberry Finn 2 Homer Price 3 Jim Hawkins 4 Penrod Schofield. ............ 1 2 3 4

13. Shadrach, Meshach and Abednego were friends of
    1 David 2 Daniel 3 Joseph 4 Samson. ........................................... 1 2 3 4

14. A fairy story teaching that kindness pays is
    1 Toads and Diamonds 2 Thumbelina 3 The Half-Chick 4 Tom Thumb. .............. 1 2 3 4

15. Andrewshek gave Poppy Seed Cakes to
    1 his pups 2 his little sister 3 a goose 4 a kitten. ............................ 1 2 3 4

16. The term "Trojan horse" has come to represent any act of
    1 magic 2 trickery 3 stealing 4 helpfulness. .................................. 1 2 3 4

17. Elin was a little girl from
    1 Switzerland 2 Sweden 3 Holland 4 Ireland. ...................................... 1 2 3 4

18. Little Men is the story about the sons of
    1 Jo 2 Beth 3 Meg 4 Amy. .................................................. 1 2 3 4

(GO ON TO NEXT PAGE)
29. The Little House wanted
1 to move to the country  2 to grow bigger  3 to be painted  4 a new roof.
30. What Ho-Ming wanted most was
1 jewels  2 money  3 education  4 adventure.
31. Brobdingnag, the land of giants, is described in
1 The Voyages of Doctor Dolittle
2 Arabian Nights' Entertainment
3 The Great Gatsby
4 Gulliver's Travels.
32. A myth usually tries to
1 make the reader laugh  2 teach a lesson  3 give the history of a country  4 explain something in nature.
33. The lesson of trying again is taught in the poem
1 "Wise Men of Gotham"
2 "Blind Men and the Elephant"
3 "King Bruce and the Spider"
4 "The Mountain and the Squirrel."
34. The poem about the little boy who forgot his hat and tie is
1 "The Raggedy Man"
2 "The Runaway"
3 "They Didn't Think"
4 "Jonathan Bing."
35. The Lydian girl who was turned into a spider because she boasted of her weaving
was  1 Minerva  2 Arachne  3 Juno  4 Diana.
36. Toby became an actor in
1 a Punch and Judy show  2 a circus  3 the movies  4 a tent show.
37. The Quaker boy who had to wear his grandfather's old hats was
1 Dirk  2 Martin Pippin  3 Bob Cratchett  4 Benjie.
38. According to the myth, the woman who let trouble loose in the world was
1 Diana  2 Minerva  3 Arachne  4 Pandora.
39. William Tell helped give freedom to
1 Holland  2 Switzerland  3 England  4 America.
40. A short poem telling a story to be sung is a
1 lyric  2 limerick  3 ballad  4 myth.
41. The poem about "The Walrus and the Carpenter" is in
1 Just-So Stories
2 Wind in the Willows
3 Through the Looking Glass
4 Child's Garden of Verses.
2. George and Uncle Analdas are characters in
   1 *Rabbit Hill*
   2 *Crazy Quilt*
   3 *Willow Whistle*
   4 *Little House in the Big Woods.*

3. *Little Pear* is a story about
   1 a pet monkey  2 a fruit ranch  3 a Chinese boy  4 an Indian girl.

4. The alley cat who was adopted by a little girl was
   1 Chessie  2 Mittens  3 Buttons  4 Ping.

5. The little boy Diamond was visited by
   1 the blue fairy  2 the north wind  3 a goblin  4 a brown bear.

6. A penguin was received as a gift by
   1 Mary Poppins  2 Mr. Bumps  3 Christopher Robin  4 Mr. Popper.

7. Piglet and Tigger are characters in
   1 *Little Lost Pigs*
   2 *The Friendly Animals*
   3 *House at Pooh Corner*
   4 *The Lion Hearted Kitten.*

8. A sieve was used for a boat by
   1 The Owl and the Pussy Cat
   2 The Walrus and the Carpenter
   3 Three Wise Men of Gotham
   4 The Jumblies.

9. Wagtail was a
   1 puppy  2 tadpole  3 beaver  4 chipmunk.

10. You can read about how the elephant got his trunk in
   1 *Wonder Tales*
   2 *Story of Doctor Dolittle*
   3 *Wild Animals I Have Known*
   4 *Just-So Stories.*
### TEST 4. SPELLING

<table>
<thead>
<tr>
<th>Grades</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number words credit to point of beginning</td>
<td>0</td>
<td>8</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Number words spelled correctly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Sum | 0 | 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 |
TEST 5. READING: VOCABULARY

INSTRUCTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you chose. Do not skip any of the items.

EXAMPLE: A lad is a 1 girl 2 pony 3 boy 4 kitten. ........................................ 1 2 3 4

1. Tea is to 1 wear 2 drink 3 eat 4 see. ........................................ 1 2 3 4
2. Lumber is made from 1 leather 2 hats 3 corn 4 logs. ......................... 1 2 3 4
3. A coin is a piece of 1 money 2 stone 3 wood 4 paper. ....................... 1 2 3 4
4. Logs come from 1 lakes 2 flowers 3 trees 4 factories. ...................... 1 2 3 4
5. Anger often results in 1 hope 2 justice 3 smiles 4 fights. .................. 1 2 3 4
6. Tuesday comes once each 1 year 2 month 3 week 4 day. ..................... 1 2 3 4
7. We enjoy things we 1 like 2 have 3 hate 4 lose. .............................. 1 2 3 4
8. A signature must be 1 worn 2 cooked 3 observed 4 written. ............... 1 2 3 4
9. Thankful means 1 grateful 2 thoughtful 3 fateful 4 sorrowful. .......... 1 2 3 4
10. A shout can be 1 seen 2 heard 3 felt 4 tasted. .................................. 1 2 3 4
11. Skin covers 1 tables 2 hands 3 houses 4 books. .............................. 1 2 3 4
12. Freedom means 1 darkness 2 friendship 3 fullness 4 liberty. .......... 1 2 3 4
13. Beef comes from 1 hogs 2 sheep 3 cattle 4 poultry. ....................... 1 2 3 4
14. Medicine is for our 1 garden 2 health 3 dinner 4 delight. ............... 1 2 3 4
15. Usual means 1 plane 2 common 3 still 4 pretty. ............................. 1 2 3 4
16. To hasten is to 1 heal 2 row 3 march 4 hurry. .............................. 1 2 3 4
17. Wicked means 1 wealthy 2 understanding 3 sinful 4 social. ............ 1 2 3 4
18. To reply is to 1 return 2 answer 3 join 4 free. .............................. 1 2 3 4
19. Miserable means 1 unhappy 2 overcome 3 numerous 4 occasionally. .... 1 2 3 4

(GO ON TO NEXT PAGE)
20. To exclaim is to 1 govern 2 cry out 3 look 4 whisper.

21. To plunge means to 1 sink 2 dive 3 wade 4 swim.

22. Robust means 1 real 2 just 3 strong 4 square.

23. To instruct is to 1 teach 2 gain 3 learn 4 test.

24. To gleam means to 1 collect 2 glance 3 shine 4 stare.

25. Entire means 1 slow 2 small 3 all 4 secure.

26. To wound is to 1 wind 2 tear 3 hurt 4 save.

27. To wonder means to be 1 lost 2 boastful 3 curious 4 cross.

28. Rulers usually 1 govern 2 deceive 3 obey 4 beg.

29. Prompt means 1 quick 2 alone 3 lazy 4 nervous.

30. To deny is to 1 refuse 2 destroy 3 deport 4 include.

31. To hesitate means to 1 listen 2 partake 3 occupy 4 pause.

32. Elastic means 1 everlasting 2 efficient 3 springy 4 visible.

33. To counsel is to 1 oppress 2 advise 3 grant 4 grab.

34. Ample means 1 sufficient 2 splendid 3 satisfied 4 selfish.

35. To detain means to 1 desire 2 limit 3 delay 4 plead.

36. A gem is something that is 1 bright 2 old 3 pretty 4 precious.

37. A groom is a kind of 1 bird 2 brace 3 explosive 4 manservant.

38. To bleach is to 1 whiten 2 wash 3 cook 4 prepare.

39. Curiosities may be found in 1 food 2 banks 3 museums 4 operas.

40. To jest means to 1 fight 2 starve 3 shout 4 joke.

41. A choice article is always 1 ugly 2 costly 3 splendid 4 complete.

(GO ON TO NEXT PAGE)
2. To conceal means to 1 hide 2 conduct 3 remain 4 remove.

3. Lacquer is a type of 1 lace 2 vegetable 3 vehicle 4 varnish.

4. To submit means to 1 surrender 2 worry 3 fight 4 organize.

5. A motive is a 1 purpose 2 machine 3 argument 4 opportunity.

6. Majestic means 1 horrible 2 stately 3 gloomy 4 contented.

7. A flaw is a 1 habit 2 defect 3 flap 4 strap.

8. An entreaty is a 1 delegate 2 request 3 agreement 4 episode.


10. Random means 1 recent 2 firm 3 uncooked 4 aimless.

1. Mode means 1 growth 2 fashion 3 substance 4 motion.

2. Censure refers to 1 distress 2 sermons 3 criticism 4 impatience.

3. To lament means to 1 endure 2 desire 3 sympathize 4 mourn.

4. Stagnant means 1 sorry 2 still 3 stooped 4 straight.

No. Right Score
TEST 6. READING: COMPREHENSION

DIRECTIONS: This test consists of several stories or passages. Each story or passage is followed by a few statements. Read the story or passage first. Then in each statement find the answer that makes the statement true and place an X in the square at the right that is numbered the same as the answer you chose. You will save time if you can select the right answers after having read the story or passage once. But you may look at the story or passage again if you need to do so in selecting the right answers. Do not skip any of the items.

EXAMPLE: Bob has a kitten, a puppy, and a rabbit. He feeds his kitten milk, his puppy meat scraps, and his rabbit carrots.

a. Bob has 1 one pet 2 two pets 3 three pets. ........................................
   1 2 3

b. He feeds meat scraps to his 1 kitten 2 puppy 3 rabbit. ..............
   1 2 3

I

Long-Ears and White-Tail, his sister, were baby rabbits who lived with their mother in a nice hole in the ground. Mother Rabbit took good care of them. She was careful to keep them close to their home. One day when Mother Rabbit was away from home, the young rabbits went out to play and hopped far away. Suddenly they heard the bark of a dog in the distance. Although the little rabbits had never heard this sound before they were afraid of it and ran back to their home.

1. Long-Ears was the 1 father 2 sister 3 brother. ........................................
   1 2 3

2. The rabbits' home was in 1 the ground 2 a tree 3 a cave. ......................
   1 2 3

3. The sound they heard was the bark of a 1 wolf 2 squirrel 3 dog. ............
   1 2 3

II

There is one movie actor who never gets older although he has appeared in the movies and comic strips for twenty years. That actor is Mickey Mouse. Some of the live stars, like Roy Rogers, are well known, but without a doubt Mickey is the best known the world over. He has more than a dozen different names in as many different countries where he appears. He is liked by young and old. He has been popular partly because he is funny, of course, but also because, unlike some loud and bold movie animals, he is quiet and kind.

4. The best known character of movies and comics is
   1 Peter Rabbit 2 Roy Rogers 3 Mickey Mouse. ......................................
   1 2 3

5. Mickey Mouse is always 1 noisy 2 the same age 3 disliked. ....................
   1 2 3

6. Mickey is known all over 1 his state 2 America 3 the world. ..................
   1 2 3

7. Mickey is liked by 1 everyone 2 only young people 3 only old people. .......
   1 2 3

8. Mickey is 1 loud 2 quiet 3 bold. .........................................................
   1 2 3

9. Mickey has been in movies and comics for
   1 five years 2 ten years 3 twenty years. ...........................................
   1 2 3

(GO ON TO NEXT PAGE)
III

Last spring Joe was not very happy in school, because he was such a poor ball player. Although he could throw well, he could not catch a ball very well. His last skill was at bat. He was the youngest boy in the room and was usually left out of the game when the other boys chose their baseball teams. So when school ended, he got Jack to help him, and all summer, the two boys practiced batting and catching. By the time school started again, Joe was nearly as good as the other boys in his room. He was highly pleased to be able to surprise them.

1. Joe did not need to practice 1 throwing 2 batting 3 catching. 
2. The other boys were 1 poorer ball players 2 younger 3 older. 
3. Joe needed to practice most on 1 throwing 2 catching 3 batting. 
4. At first, Joe was 1 unhappy 2 angry 3 pleased. 
5. When school began again, the other boys were 1 unhappy 2 surprised 3 angry.

IV

Dick wants very much to be a Boy Scout but he will not be old enough to become one for another year. He is ten years of age and has been a Cub Scout for nearly two years. Cub scouting is divided into three periods. Dick is now a Bear Cub. He has been a Wolf Cub and will still have to be a Lion Cub before he can be a Tenderfoot Scout.

6. Dick has been a 1 Tenderfoot 2 Wolf Cub 3 Lion Cub. 
7. He can be a Scout when he is 1 ten years old 2 eleven years old 3 twelve years old. 
8. He has been a Cub for nearly 1 one year 2 two years 3 three years. 
9. He wants to become a 1 Bear Cub 2 Wolf Cub 3 Tenderfoot.

V

Mrs. Hill, who has three children, John, William, and Jane, wanted some fresh buns from the bakery. She also wanted some sugar from the grocery store, and a measuring cup from the hardware store. Knowing that buns were not safe when being carried by boys and knowing that sugar was in peril when in the custody of William, she made her shopping assignments accordingly, charging each child with the responsibility of securing one item.

10. Mrs. Hill has 1 one boy 2 two boys 3 three boys. 
11. The oldest child is 1 John 2 Jane 3 not stated. 
12. Mrs. Hill requested that the buns be brought by 1 Jane 2 William 3 John. 
13. The measuring cup was to be brought by 1 Jane 2 William 3 John. 
14. The sugar was to be brought by 1 Jane 2 William 3 John.

(GO ON TO NEXT PAGE)
VI

Amanda arrived on the scene in the barn lot just in time to see the rebellious calf, a rope dangling from his neck, dash through the open gate. She approached him, spoke softly, and thrust her thumb into his mouth. Immediately his violence disappeared and he followed her, mouth grasping thumb, up the ramp into the trailer which was to carry him to a distant field.

In one minute, Mrs. Brown's new domestic had accomplished with modest poise what Mr. Brown, the experienced cattleman, had failed to accomplish in one hour of grim and determined effort.

They exchanged glances: his, one of boundless admiration; hers, one of wise tolerance.

24. Amanda was Mrs. Brown's 1 servant 2 daughter 3 visitor. ........................................ 1 2

25. Mr. Brown had been trying to load the calf into the trailer by
   1 persuasive kindness 2 the lure of food 3 strength and awkwardness. ............. 1 2

26. Amanda's appraisal of Mr. Brown's efforts was one of
   1 admiration 2 delight 3 disdain. .......................................................... 1 2

27. The calf was being taken to 1 market 2 pasture 3 his mother. ............................. 1 2

28. Amanda possessed a profound knowledge of the
   1 mechanics of trailers 2 nature of young animals 3 management of ranches. ......... 1 2

VII

Although reminiscences often give pleasure to those who indulge in them, there are several factors that render them invalid. In the first place, we tend to remember pleasant things longer and more clearly than unpleasant things. Secondly, with repeated memory recalls we tend to build up exaggerations and modifications of things and happenings of the distant past. Thirdly, we remember things and happenings as they appeared to us at the time. For example, a snow knee-deep to a child is only half knee-deep to an adult, but it is always remembered as a knee-deep snow. Similarly, to children, trees are taller, distances are greater, and houses are larger.

These are some of the means by which romance and magic are injected into childhood.

29. When an old resident says, "When I was a boy we had snow on the ground all winter," he is probably
    1 failing to remember weeks of no snow 2 deliberately lying 3 stating a fact. .......... 1 2

30. When an adult returns to scenes of his childhood it will appear to him that
    1 fences are higher 2 houses are larger 3 sidewalks are narrower. .................. 1 2

31. An adult is most likely to remember vividly from childhood
    1 Wednesday house-cleaning 2 Friday lawn-mowing 3 Sunday visiting. ............... 1 2

32. The best way to get accurate information about an event of long ago is to
    1 make assumptions 2 consult records 3 interview old people. ........................ 1 2

No. Right........................... Score
TEST 7. SOCIAL STUDIES

DIRECTIONS: Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

EXAMPLE: The capital of the United States is
1 Denver 2 Washington 3 Chicago 4 Atlanta.

1. A harpoon is used in
   1 weaving cloth 2 hunting whales 3 making music 4 forecasting weather.

2. Lands put aside for Indians to live on are called
   1 reservations 2 territories 3 provinces 4 homesteads.

3. A pest which cotton growers have to fight the most is the
   1 cutworm 2 chinch bug 3 boll weevil 4 grasshopper.

4. In the United States, the days are longest in
   1 autumn 2 winter 3 spring 4 summer.

5. Silk fiber comes from
   1 a plant 2 a worm 3 a tree 4 an animal.

6. A pueblo was a type of Indian
   1 clothing 2 medicine man 3 food 4 home.

7. The Swiss people are noted for being
   1 warlike 2 independent 3 lazy 4 cowardly.

8. Cocoa comes from
   1 a bean 2 the leaves of a plant 3 the roots of a plant 4 the sap of a tree.

9. A deep valley is a
   1 prairie 2 cave 3 plateau 4 canyon.

10. Loose, flowing robes are worn by people in
    1 cold regions 2 desert regions 3 mountainous countries 4 lowlands.

11. The discovery that lightning is the same as electricity was made by
    1 Thomas Edison 2 Eli Whitney 3 Benjamin Franklin 4 Robert Fulton.

12. The largest republic in South America is
    1 Argentina 2 Brazil 3 Chile 4 Ecuador.

13. Tobacco is an important crop in
    1 Louisiana 2 Ohio 3 Virginia 4 California.

14. The rubber tree produces
    1 chicle 2 sisal 3 resin 4 latex.

15. The first child born of English parents in America was
    1 Virginia Dare 2 Molly Stark 3 David Crockett 4 John Smith.

16. The Atlantic and the Pacific Oceans are joined by the
    1 Panama Canal 2 Gulf of Mexico 3 Great Lakes 4 Yucatan Strait.

ANSWERS
1 2 3 4
X X X X

(GO ON TO NEXT PAGE)
17. "Upstream" on a river is
1 away from the mouth
2 toward the mouth
3 away from the source
4 always north. ......................................................... 1 2 3 4

18. A wrangler would be found
1 at a coal mine
2 at a lumber camp
3 on a grain farm
4 at a cattle round-up. ................................................ 1 2 3 4

19. Parkas are worn by
1 Eskimos
2 Navajos
3 desert people
4 Chinese. ................................................................. 1 2 3 4

20. Ships from Rio de Janeiro to New York would probably carry
1 rice
2 pineapples
3 coffee
4 tea. ................................................................. 1 2 3 4

21. Pygmies are found in
1 Africa
2 China
3 India
4 Central America. .................................................. 1 2 3 4

22. The newest way of transporting oil is by
1 truck tanks
2 pipe lines
3 ocean tankers
4 freight cars. .................................................. 1 2 3 4

23. "Elevation" on a map refers to
1 distance north of the equator
2 height above sea level
3 distance from the prime meridian
4 distance from the sea coast. .................................... 1 2 3 4

24. A stream that flows into another is called its
1 source
2 mouth
3 inlet
4 tributary. ........................................................... 1 2 3 4

25. The telegraph was invented by
1 Morse
2 Bell
3 Marconi
4 Whitney. ..................................................... 1 2 3 4

26. Oleomargarine may be made from
1 cottonseed oil
2 butterfat
3 mineral oil
4 petroleum. ....................................................... 1 2 3 4

27. The state of Florida is
1 an isthmus
2 a peninsula
3 a strait
4 a key. ............................................................. 1 2 3 4

28. Sulphur is obtained
1 as a manufactured product
2 by mining
3 as a by-product of oil fields
4 from a plant. ..................................................... 1 2 3 4

29. One article of clothing is a
1 hacienda
2 metate
3 serape
4 charro. .......................................................... 1 2 3 4

30. The latitude of a place is measured from the
1 North Pole
2 Greenwich Meridian
3 equator
4 Tropic of Cancer. ................................................ 1 2 3 4

31. Birmingham is often compared to
1 New York
2 Pittsburgh
3 St. Louis
4 Detroit. ............................................................ 1 2 3 4

(GO ON TO NEXT PAGE)
2. A group of people traveling together through dangerous country is called  
1 a posse  2 nomads  3 a caravan  4 migrants.  

3. The U. S. Census is taken every  
1 year  2 five years  3 ten years  4 twenty-five years.  

4. Until a proposal before Congress becomes a law it is called  
1 a bill  2 a statute  3 an amendment  4 a resolution.  

5. The first beginnings of democracy were in ancient  
1 Abyssinia  2 Babylonia  3 Greece  4 Egypt.  

6. Steep roofs made of palm tree leaves would be found in  
1 cold, dry lands  2 lowlands  3 desert regions  4 hot, wet lands.  

7. In size, Canada is  
1 smaller than the U. S.  
2 as large as the U. S. and Alaska together  
3 twice as large as the U. S.  
4 one-half as large as the U.S.  

8. The inventor of the sewing machine was  
1 Elias Howe  2 Eli Whitney  3 James Watt  4 Robert Fulton.  

9. The “Low Countries” is a term usually applied to  
1 Spain and Portugal  
2 Norway and Sweden  
3 Belgium and Holland  
4 China and Japan.  

10. Tepees were built by the Indians who lived  
1 on the desert  2 in the forests  3 in the lake region  4 on the prairie.  

1. A “jenny” would be used in  
1 cutting lumber  2 spinning cloth  3 tanning leather  4 ginning cotton.  

2. Tibet is a country which  
1 is little known  
2 is unusually progressive  
3 is much like America  
4 is popular with tourists.  

3. The canal connecting the Red Sea and the Mediterranean Sea is  
1 the Erie Canal  2 the Kiel Canal  3 the Suez Canal  4 the Grand Canal.  

4. Pyramids similar to those in Egypt are found in  
1 Mexico  2 Canada  3 Italy  4 Scotland.  

5. Women have been voting in the U. S. since soon after the  
1 Revolutionary War  
2 War of 1812  
3 Spanish-American War  
4 First World War.  

(GO ON TO NEXT PAGE)
46. The Senate of the United States is presided over by the 
   1 Vice-President  2 majority leader  3 Chief Justice  4 oldest senator.  
47. Lewis and Clark had as a guide, an Indian woman named 
   1 Pocahontas  2 Sacajawea  3 Laughing Water  4 Nokomis.  
48. Ships from Buenos Aires to Boston would be most likely to be carrying 
   1 fish  2 hides  3 machinery  4 cloth. 
49. The Bill of Rights is contained in the 
   1 preamble to the Constitution 
   2 Declaration of Independence 
   3 Articles of Confederation 
   4 first ten amendments to the Constitution. 
50. Marshy plains in northern countries are called 
   1 steppes  2 pampas  3 glaciers  4 tundras. 
51. A state that was created from territory in the Louisiana Purchase is 
   1 Georgia  2 Florida  3 Missouri  4 Texas. 
52. A leader in the Crusades was King 
   1 George  2 Alfred  3 Albert  4 Richard. 
53. The people who reclaimed the desert region around Salt Lake City were 
   1 Jewish  2 former slaves  3 Indian scouts  4 Mormons. 
54. The capital of the Confederacy was 
   1 Atlanta  2 Chattanooga  3 Nashville  4 Richmond. 
55. The most important single invention in the history of transportation was the 
   1 steam engine  2 wheel  3 airplane  4 gasoline engine. 
56. Minneapolis is noted chiefly for 
   1 making automobiles 
   2 weaving cloth 
   3 flour milling 
   4 making heavy machinery. 
57. The Dred Scott Decision pertained to 
   1 taxes  2 tariff  3 slavery  4 boundaries. 
58. "Fish ladders" are devices to 
   1 trap fish 
   2 load fish on fishing boats 
   3 help hatch fish 
   4 help salmon over dams. 
59. A section of land contains 
   1 40 acres  2 80 acres  3 160 acres  4 640 acres. 
60. The most direct route to fly from Chicago to Japan would go through 
   1 California  2 Missouri  3 Alaska  4 Mexico.
### TEST 8. HEALTH AND SAFETY

**DIRECTIONS:** Find the answer that you believe makes the statement true and then place an X in the square at the right that is numbered the same as the answer you choose. Do not skip any of the items.

**EXAMPLE:** A drink that builds body tissue is
1 coffee 2 tea 3 milk 4 ginger ale.

<table>
<thead>
<tr>
<th><strong>ANSWERS</strong></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

| 1. It is dangerous to start a fire with |
| 1 paper 2 pine shavings 3 gasoline 4 kindling wood. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 2. To help prevent tooth decay, we should avoid eating too much |
| 1 meat 2 sweet food 3 bread 4 protein. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 3. When clothing catches fire, a good thing to do is |
| 1 run for help 2 take it off 3 lie down and roll 4 hunt a fire extinguisher. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 4. Right after a meal, a good activity would be to |
| 1 play marbles 2 play football 3 go swimming 4 run races. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 5. A safe place from which to fish is |
| 1 a highway bridge 2 a boat (standing) 3 an open space 4 a railroad trestle. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 6. A good help toward getting to sleep easily is to |
| 1 take a warm bath 2 take a sleeping pill 3 exercise hard at bedtime 4 listen to a radio thriller. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 7. To cross a street after getting off a bus, you should |
| 1 stop traffic with your hand signal 2 wait until the bus leaves 3 go behind the bus 4 go in front of the bus. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 8. A small amount of bleeding from a cut is good because the bleeding causes the wound to |
| 1 hurt less 2 heal faster 3 be cleansed of germs 4 remain open. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 9. Children need to go to the dentist |
| 1 every six months 2 every year 3 every three years 4 only when their tooth aches. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 10. An excellent food to provide iron is |
| 1 fish 2 nuts 3 butter 4 liver. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 11. When riding a bicycle at night, you should wear clothes that are |
| 1 well-padded 2 light in color 3 light weight 4 dark or red. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 12. Hydrophobia or rabies comes from |
| 1 improper food 2 an animal bite 3 a deep wound 4 insects. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 13. Anything that is sterile is |
| 1 pleasant to taste 2 free from germs 3 contagious 4 poisonous. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

| 14. Vitamin D is especially important in helping build |
| 1 bones and teeth 2 good digestion 3 good eyes 4 good blood. |
| 1 coffee 2 tea 3 milk 4 ginger ale. |
| 1 2 3 4 |
|         | X | X | X |   |

(GO ON TO NEXT PAGE)
15. A disease calling for quarantine is
   1 influenza  2 pneumonia  3 smallpox  4 tuberculosis.

   1 2 3
   □ □ □

16. When left-handed children write, the light should come from their
   1 right rear  2 left rear  3 front  4 back.

   1 2 3
   □ □ □

17. “Skim” milk is milk without
   1 germs  2 water  3 dirt  4 butterfat.

   1 2 3
   □ □ □

18. Raw fruits should be washed before eating because of
   1 spider webs  2 insect eggs  3 vitamins  4 poisonous sprays.

   1 2 3
   □ □ □

19. A good rule concerning the summer sun is
   1 get a suntan fast  2 get as dark as possible
   3 stay out of the sun entirely  4 get a gradual tan.

   1 2 3
   □ □ □

20. For mild burns, the best treatment is
   1 wet pads  2 ointment  3 iodine  4 alcohol.

   1 2 3
   □ □ □

21. To remove a cinder from the eye, you should
   1 pull the eyelid down  2 remove it with your finger
   3 wash it out with soap and water  4 rub the eye vigorously.

   1 2 3
   □ □ □

22. Flies are suspected of helping to spread
   1 polio  2 typhus  3 yellow fever  4 malaria.

   1 2 3
   □ □ □

23. There are no nerves in
   1 tooth enamel  2 tooth pulp  3 the roots of teeth  4 the gums.

   1 2 3
   □ □ □

24. To clean between the teeth, it is best to use
   1 a toothpick  2 a sterilized needle  3 a straight pin  4 dental floss.

   1 2 3
   □ □ □

25. “It makes my mouth water” refers to
   1 gastric juice  2 plasma  3 pancreatic juice  4 saliva.

   1 2 3
   □ □ □

26. An X ray will indicate whether a person has or has had
   1 tetanus  2 tuberculosis  3 diphtheria  4 scarlet fever.

   1 2 3
   □ □ □

27. Growing children should avoid drinks which contain
   1 caffeine  2 chocolate  3 soda  4 vitamins.

   1 2 3
   □ □ □

28. The best time for hard play is just
   1 after lunch  2 before bedtime  3 after getting up  4 before swimming.

   1 2 3
   □ □ □

29. One uses the least energy of all when he is
   1 busy  2 sleeping  3 resting  4 walking.

   1 2 3
   □ □ □

30. Bacteria are most like
   1 tiny plants  2 insects  3 bugs  4 very small animals.

   1 2 3
   □ □ □

31. If teeth could be brushed only once a day, the time should be
   1 after breakfast  2 after lunch  3 before breakfast  4 before going to bed.

   1 2 3
   □ □ □
1. Separation of the two skin layers caused by friction results in a
   1 blister  2 bunion  3 callus  4 pimple.

2. It is bad to wear clothing so heavy that it will affect one's
   1 growth  2 appetite  3 posture  4 strength.

3. Children under age 16 need milk daily; at least
   1 one glass  2 three glasses  3 six glasses  4 two quarts.

4. The bones are held together at the joints by
   1 tendons  2 muscles  3 ligaments  4 skin.

5. It is better to take a whole apple in your lunch than to take a sliced apple because of
   1 loss of vitamins  2 cleanliness  3 loss of minerals  4 loss of water.

6. The switches for lighting the stairway should be located
   1 at the bottom of the stairway  2 at the top
   3 halfway up the stairway  4 at both bottom and top.

7. The best time to get the summer sun is
   1 mid-afternoon  2 late evening  3 very early in the morning  4 mid-morning.

8. How you grow is determined largely by your
   1 heart  2 nervous system  3 glands  4 sense organs.

9. Disease bacteria live best in
   1 a vacuum  2 steam  3 the throat  4 ice.

10. Accidents that occur most often in homes are
    1 burns  2 poisonings  3 electric shocks  4 falls.

11. The killing of rats helps to stop the spread of
    1 tuberculosis  2 typhoid  3 typhus  4 malaria.

12. A sprain is an injury to a
    1 bone  2 muscle  3 tendon  4 joint.

13. Another name for the "voice box" is the
    1 ventricle  2 palate  3 diaphragm  4 larynx.

No.  Right  Score
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bob has 6 marbles in one pocket and 9 in another. How many marbles has he in all?</td>
<td></td>
</tr>
<tr>
<td>2. There were 15 blackbirds in a tree when 7 of them flew away. How many were left?</td>
<td></td>
</tr>
<tr>
<td>3. Six children are sitting at each of the 4 tables in the school workroom. How many children are sitting at the tables?</td>
<td></td>
</tr>
<tr>
<td>4. On their vacation trip to the lake, the Carter family drove 132 miles on a U. S. highway, 44 miles on a state highway, and 16 miles on a county road. How far was it to the lake?</td>
<td></td>
</tr>
<tr>
<td>5. Joe had $67 in the bank and drew out $43 to buy clothing for school. How much did he have left?</td>
<td></td>
</tr>
<tr>
<td>6. If the first day of a month is on Sunday, on what day of the month is the fourth Sunday?</td>
<td></td>
</tr>
<tr>
<td>7. On March 1, Mr. Brown’s water meter registered 44,560 gallons. On April 1, it registered 49,880 gallons. How many gallons did the Brown family use during March?</td>
<td></td>
</tr>
<tr>
<td>8. Four gallons of water weigh about 32 pounds. How much does one gallon weigh?</td>
<td></td>
</tr>
<tr>
<td>9. Mary is 9 years old and her brother Donald is 6. What will be the sum of their ages five years from now?</td>
<td></td>
</tr>
<tr>
<td>10. How many yards of Christmas paper can be bought for a half dollar if 3 yards can be bought for a dime?</td>
<td></td>
</tr>
<tr>
<td>11. A post which was 9 feet long was driven into the ground to a depth of one yard. How many feet of the post remained above ground?</td>
<td></td>
</tr>
<tr>
<td>12. Five dozen pennies equals how many dimes?</td>
<td></td>
</tr>
<tr>
<td>13. John put $16 in the bank each week for 8 weeks. How much did he then have in the bank?</td>
<td></td>
</tr>
<tr>
<td>14. Bob has spent 1/2 of his week’s allowance for paper and 1/3 of it for a book strap. What part of the allowance has he spent?</td>
<td></td>
</tr>
<tr>
<td>15. Ralph owes Joe 92 cents. Joe has only a dime with which to make change. How much more than a dollar bill must Ralph hand to Joe?</td>
<td></td>
</tr>
<tr>
<td>16. A rope 86 feet long runs through pulleys at the top and the bottom of a flagpole. How high is the flagpole?</td>
<td></td>
</tr>
<tr>
<td>17. Mrs. Green’s deep-freeze box has 6 cubic feet of space. She has stored 3 1/3 cubic feet of food in the box. How much space is not used?</td>
<td></td>
</tr>
</tbody>
</table>
Dorothy received an allowance of 85c per week for 12 weeks during which time she had school expenses of $1.25, $2.10, $1.75, and $1.35. How much did she have left?

The Carter family drinks an average of 1 2/3 quarts of milk per day. How many quarts does the family drink in 6 days?

A highway map of a certain state was made to a scale of 24 miles to the inch. Two cities 60 miles apart will be shown on the map how many inches apart?

The temperature reports at 5:00 p.m. for a week were 75, 78, 83, 73, 72, 81, and 84. What was the average temperature of the week?

There were 200 children on the school ground. Then three buses arrived with 12 children each and two buses left with 15 children each. How many children were then at school?

In the series of numbers from 1 to 10 inclusive, the sum of the even numbers is how much more than the sum of the odd numbers?

Mr. Campbell's home has an assessed value of $6000. The school tax rate is $1.50 per $100 assessed value. How much school tax will Mr. Campbell pay?

Mr. Smith is in his office 272 hours during eight weeks. How many hours will he be in his office during two weeks?

John started mowing the lawn Saturday morning at 7:40 and finished the work at 10:20. How long had John worked?

Roy made a profit of $126.50 on his fat pigs. The profit was 1/6 of the selling price. What was the selling price?

Mr. Roberts bought 17 pecks of feed. He put two bushels of it in the feed bin and left the remainder in the sacks. How many pecks were in the sacks?

Temperatures below zero are recorded as minus and temperatures above zero as plus. If the lowest temperature for a certain day was $-8^\circ$ and the highest was $+46^\circ$, how many degrees did the temperature rise that day?

Fifteen per cent discount was made to schools on the purchase of books. How much did the Horace Mann School save on an order of books priced at $400?

In eight weeks of vacation time John earned $70 but spent $30. What was his average saving per week?

In this figure how long is the line AB?

A factory has two smokestacks, one 76 feet high and the other 58 feet high. A brace wire connects their tops. How many feet high is the midpoint of the brace wire?
34. Roy has $28 and Jack has $40. Roy's money is what fraction of Jack's money? (Write the answer in the form of a decimal fraction.)

35. At $2 per square yard, what will be the cost of the floor covering of a room that is 15 feet by 21 feet?

36. How many yards of picture molding will be required for the walls of a room that is 15 feet square?
## Test 10. Arithmetic Computation

**Directions:** Find the answers as quickly as possible but try to be accurate. Be sure to write each answer in the space provided for it at the right-hand margin of the page. Before beginning work on a problem be sure you understand what you are to do.

### Answers

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>27 ÷ 3 =</td>
<td>Add</td>
<td>7 ( \overline{567} )</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 ÷ 4 =</td>
<td>Add</td>
<td>Subtract</td>
</tr>
<tr>
<td>68</td>
<td>37</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract</td>
<td>7 ( \overline{378} )</td>
<td>Subtract</td>
</tr>
<tr>
<td>18</td>
<td>26</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(10)</th>
<th>(11)</th>
<th>(12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract</td>
<td>Add</td>
<td>Subtract</td>
</tr>
<tr>
<td>470</td>
<td>5065</td>
<td>6033</td>
</tr>
<tr>
<td>198</td>
<td>756</td>
<td>3676</td>
</tr>
<tr>
<td>6847</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(3) How many ninths does this fraction equal? \( \frac{7}{9} = \)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(14)</td>
<td>(15)</td>
<td>(16)</td>
</tr>
<tr>
<td>Add</td>
<td>Multiply</td>
<td>Subtract</td>
</tr>
<tr>
<td>32.38</td>
<td>4706</td>
<td>( \frac{1}{2} )</td>
</tr>
<tr>
<td>86.44</td>
<td>8</td>
<td>( \frac{1}{2} )</td>
</tr>
<tr>
<td>563.85</td>
<td></td>
<td>%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(17)</th>
<th>(18)</th>
<th>(19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Multiply</td>
<td>Subtract</td>
</tr>
<tr>
<td>( \frac{1}{2} )</td>
<td>725</td>
<td>( \frac{7}{2} )</td>
</tr>
<tr>
<td>( \frac{3}{4} )</td>
<td>64</td>
<td>( \frac{4}{2} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(20)</th>
<th>(21)</th>
<th>(22)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract</td>
<td>Add</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>( \overline{3605} )</td>
<td>( \frac{5}{2} )</td>
</tr>
<tr>
<td>( \frac{7}{4} )</td>
<td></td>
<td>( \frac{4}{2} )</td>
</tr>
</tbody>
</table>

(GO ON TO NEXT PAGE)
(23) Add
12% 6 yr. 10 mo.
9% 5 yr. 7 mo.

(26)
.14 \times \frac{644}{60} = \frac{60}{18} = 42 \times \frac{2053}{42} = \frac{2053}{2053} = 2053

(29) Multiply
8 \times 24.64 = 283 \times 141783 = 283 \times 141783

(32) When this car is traveling 52 miles per hour about what mileage per gallon of gasoline will it be making?

(33) In order to get 21 miles to the gallon of gasoline, at what speed should the car be driven?

(34) \frac{\%}{\%} = \frac{26}{884} = \frac{6}{306}

(37) \frac{18}{3006} = \frac{43858}{0.7} \approx 30.7006 \quad \text{Place the decimal point in its proper position in the answer.}

(GO ON TO NEXT PAGE)
(39)  
6) Multiply  
$35 \div 1\%$  
.47  
.006  

(40)  

(41)  

39
40
41

(42) What is the area of this rectangle?  

42

(43)  

(44)  

Multiply  
$3643$  
$325$

43
44

45

24 per cent of 440 =

(45) This chart shows the number of men living (of 100 born) at each age indicated.

<table>
<thead>
<tr>
<th>Age</th>
<th>Number Living</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>92</td>
</tr>
<tr>
<td>20</td>
<td>90</td>
</tr>
<tr>
<td>30</td>
<td>87</td>
</tr>
<tr>
<td>40</td>
<td>84</td>
</tr>
<tr>
<td>50</td>
<td>77</td>
</tr>
<tr>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>70</td>
<td>44</td>
</tr>
<tr>
<td>80</td>
<td>18</td>
</tr>
<tr>
<td>90</td>
<td>3</td>
</tr>
</tbody>
</table>

(46) What per cent of the men who live to age twenty will continue living to age eighty?

46

No. Right Score