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The construction and evaluation of practice exercises for developing the ability to follow precise directions in grade five

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THE CONSTRUCTION AND EVALUATION OF PRACTICE EXERCISES FOR DEVELOPING THE ABILITY TO FOLLOW PRECISE DIRECTIONS IN GRADE FIVE

by

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CHAPTER I

STATEMENT OF PROBLEM AND REVIEW OF RESEARCH

This study is an attempt to develop and evaluate a series of twenty-four practice exercises in following precise, written directions. For experimental purposes, three fifth grades, controlled by an equated group, were selected in Wakefield, Massachusetts.

That there is a need for skillful, intensive reading of precise directions is evidenced by the lack of independence of study groups in a program of differentiated instruction. Adequate training in this study skill should help obviate the necessity for pupil dependence on the instructor's oral description of an exercise which has well defined, self-explanatory directions.

In an appraisal of the problem, Gates[1] states:

> The widespread weakness in reading of directions revealed by various studies suggests one of the reasons for the growing use of work books, that is, of books which give the pupils directions and instructions in printed instead of oral form concerning the procedure to be followed. The reason many pupils are unable to read directions efficiently is that they have relatively little experience and guidance in this type of reading.

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1 Arthur I. Gates, The Improvement of Reading, Macmillan Company, New York, 1937, p. 94.

Turning to educational psychology, implications are made that training is of value in a learning process which involves thinking. Kingsley[1] says:

> The characteristic phases in the process of thinking out the solution of a problem are: First, the difficulty is felt; second, the problem is clarified and defined; third, a search for clues is made; fourth, various suggestions for solution appear and are evaluated or tested; and fifth, a solution is accepted or the thinker gives up in defeat. The ability to solve problems by thinking can be improved. This improvement results from acquiring the means (knowledge and symbols) to think with, and also from learning the best procedures for using these materials effectively.

Davis[2] considers thinking a technique in which one may be trained. He reports: "Investigations indicate that problem-solving ability may be improved by guidance and practice."

Practice in a skill involves two phases of learning, integrative and refining. According to Burton[3]:

> The integrative phase of skill learning in which meaning is developed demands varied practice which means functional contacts and exploratory activities. The refining phase in which precision is developed demands repetitive practice. Varied practice by itself yields meaning but not proficiency; repetitive practice by itself yields efficiency but not meaning. Competent varied practices in early stages will reduce greatly the amount of repetitive practice.

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1 Howard L. Kingsley, The Nature and Condition of Learning, Prentice-Hall, New York, 1946, p. 385.

2 Robert Davis, Psychology of Learning, McGraw-Hill Company, New York, 1935, p. 198.

3 William H. Burton, The Guidance of Learning Activities, D. Appleton-Century, New York, 1945, p. 405.

In developing a reading skill, Keesey[1] recommends that the time for integrative practices is the regular reading period:

> If a teacher is aware of the difference in practice material, and is also aware of the needs and development of the pupils to engage in integrative practice for learning skills by themselves, but will supervise carefully the work at the learning stage. This is very important, and middle-grade teachers should be made aware of the fact that their pupils, too, are learning new skills and must be ready to take time out of the reading period to teach these skills and supervise the practice during the learning period.

Leaving the question of thought processes and the problem of practices, the next consideration is purposes for reading. Reporting to the National Conference on Research in English, Whipple[2] and her committee conclude:

> Studies have shown that there are many different purposes for which children should learn to read and the ability to read effectively for one of these purposes does not guarantee efficiency in reading for another purpose.

For illustration a list is presented suggesting the wide range of purposes which should guide the silent reading of children in the middle grades. Under the first topic which is: Comprehending and Retaining Ideas, item nine is: to follow directions.

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1 O. C. Keesey, "How Important Is A Skills Development Program for Middle-Grade Reading?" Tenth Yearbook, Claremont College Reading Conference, Claremont College Library, Claremont, California, 1945, p. 137.

2 Gertrude Whipple, (Chairman), Committee on Reading, Ninth Research Bulletin, National Conference on Research in English, Scott, Foresman and Company, Chicago, 1941, p. 24.

After reviewing the research on purposes for which children read in the classroom, Gray[1] has selected fourteen purposes which were repeatedly emphasized by investigators. One of these was: "to follow directions with reasonable speed and accuracy." He summarizes his findings by stating:

> When the results of various studies are combined, three conclusions stand out clearly; first, reading is used for a surprisingly wide variety of purposes; seond, the purposes of reading in one curricular field vary to a considerable extent from those in other fields; and third, the purposes change from one level of scholastic advancement to another. In view of the facts presented earlier, it is evident that teachers of all subjects from the primary grades to the university face a major responsibility in training pupils to engage effectively in the various types of reading activities in which they should participate.

Burkart[2] attempted to classify eighty-nine specific reading abilities and weight the relative importance of each in the reading process. By use of the questionnaire technique, one hundred nine reading specialists were contacted and requested to rate each ability as: "highly important," "important" or "unimportant." The items to be evaluated were classified under six headings, one of which was: "Observation" with a subheading of "Ability to follow directions." Eighty per cent of those who weighted this item described it as: "highly important." In the

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1 William S. Gray, "The Teaching of Reading - A Second Report," 36th Yearbook of the National Society for the Study of Education, Part I, Public School Publishing Company, Bloomington, Illinois, 1937, p. 35.

2 Kathryn H. Burkart, "An Analysis of Reading Abilities," Journal of Educational Research, (February, 1945), vol. 38, p. 430-39.

entire investigation, it ranked third highest in per cent of agreement on a "highly important" skill, being surpassed only by: "Ability to keep mind on reading" on which there was ninety per cent agreement and: "Ability to choose data which answers questions" on which there was eighty-seven per cent agreement.

Statistically significant gain in the skill of following directions and other study-type skills was found by Jacobs[1] and Liveright in an experiment in grades four and five of the Logan Demonstration School in Philadelphia. The experimental group received twenty to thirty minutes of instruction a week over a period of seventeen weeks. Customary reading procedures were carried on by the control group. The results showed the undoubted value of planned practices in teaching study-type reading.

Durrell[2] describes study skills as a type of thorough reading:

> Under the heading of study skills there are three separate divisions. The first category, thorough reading, includes most of the titles commonly listed under study skills. Such things as following directions, noting details, ability to select major and minor topics, the organization of ideas, etc. are merely steps in the development of the child's ability to understand clearly what the author has written

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1 E. Jacobs and A. Liveright, "The Improvement of Study-Type Reading," Tenth Yearbook, Department of Elementary School Principals, National Education Association, Washington, D.C., 1931, p. 455-59.

2 Donald Durrell, "Basic Abilities in Intermediate Reading," Education, (September, 1938), vol. 59, p. 48.

Kottmeyer[1] categorizes study skills as work-type reading which is a part of the major topic, "Assimilative Reading":

> By assimilative reading we mean the work-type reading which is the basis of the study activities in the content subjects of the traditional academic curriculum. Assimilative reading is the type in which we read accurately, carefully and with concentrated attention for any of these specific purposes:
>
> (a) To be able to recall specific and reasonably complete detail
>
> (b) To be able to get the significant or central thought
>
> (c) To follow printed directions

In his latest text, Betts[1] agrees with those who classify following directions as an independent study skill. For improving this skill, he advocates planned practices. He concludes:

> The ability to follow directions is essential to independent work habits. Where extreme mental retardation is not present, this can be developed largely through carefully made assignments. Effective classroom administration calls for adequate pupil preparation for immediate tasks. Everyone within the group or class should know why, what and how to engage in an assigned activity.

Durrell[2] feels that failure to carry out directions accurately can be attributed to vocabulary incompetence:

> Difficulties in word recognition or in word meaning ordinarily account for inattentive reading, poor understanding of details, failure in following directions, confusions in getting the central thought, inability to understand implications, and difficulties in oral and written recall.

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1 Emmett A. Betts, Foundation of Reading Instruction, American Book Company, New York, 1946, p. 289.

2 Op. cit., p. 46.

In describing the type of skill involved in performing his Silent Reading Test[1], Gates[2] says:

> The difficulty of the task lies in the exact nature of the reading required. The kind of reading sufficient to get the general drift of the passage is insufficient to enable the typical pupil to execute the directions without error. The test measures ability to read with exactness and precision, to select and retain relevant details while subordinating other facts, however interesting, which are not part of the directions to be executed.

Because of its specificity, this instrument was selected for evaluating the experiment described in this study.

Since educational psychology has found that solving problems by thinking can be improved, this experiment is an attempt to improve a specific reading skill, namely, the ability to follow precise, written directions. For the purpose of bringing about this improvement, twenty-four exercises were designed. Such an instructional plan of varied, repetitive, planned practices presented in the regular reading period to improve a skill is supported by research findings.

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1 Gates Silent Reading Test, Type C., Reading to Understand Precise Directions, Grades 3-8, Bureau of Publications, Teachers College, Columbia University, New York, 1942.

2 Op. cit., p. 49.

CHAPTER II

PLAN OF THE EXPERIMENT

Selection of the Population

In selecting the population for this study, pupils were chosen from each of the seven fifth grade classrooms in Wakefield, Massachusetts. By including pupils from every school, a sampling was made of the average socio-economic status of the community.

Wakefield, a typical New England residential town, located ten miles north of Boston, has a population of 18,677 according to the 1945 census. The total school membership as of January 1, 1949 was 2811, with 202 enrolled in grade five.

Selection of Groups

One hundred fifty pupils took part in the investigation, of which seventy-five comprised the experimental group and seventy-five comprised the control group. The experimental group, selected from three fifth grades, was controlled by an equated group selected from the remaining four fifth grades.

Construction of Practice Exercises

The material selected for this unit of lessons was designed to appeal to the varied interests of ten and eleven year olds of both sexes. Besides embodying a form of definite

directions, each had a controlling theme from a representative area of interest.

TABLE I

INTEREST THEMES OF THE PRACTICE EXERCISES

Type of Theme	Per Cent of Lessons
Diagrams	33.3
Sports and Games	12.5
Work-Study Reading	12.5
Astronomy	12.5
Geography	8.3
Music	4.1+
Natural Science	4.1+
Radio	4.1+
Aeronautics	4.1+
Miscellaneous	4.1+

The tabulation indicates that the lessons include a wide sampling of types, with emphasis on diagramatic exercises, science, recreational interests and reading skills.

For vocabulary control, words from "1a1-6" for grade five and below from the Rinsland[1] Basic Vocabulary were considered acceptable.

This vocabulary count is the result of an extensive, nation-wide study of the words written by children in grades one through eight. Six million words were sampled from at least five hundred schools in all states.

In describing his investigation, Rinsland[2] observes:

> Children's writings for children's consumption seem to be a criterion to follow within certain safeguards or conditions in choosing words and using them. Many words from many children, widely and wisely sampled from the whole country, will furnish most of the words needed for the average child and his textbooks. A broad sampling will not give all the words needed, nor will it give the correct grade placement for all words, if such a thing is possible, because successive sampling of, say, five million words each will give variations in words and frequencies. A sampling as broad as this should give reliable data for many words and their placement. Such a list will not inhibit growth, because so many more words would be found than any one child could learn, and it would not be suggestive of a philosophy or reason to confine a child's learning to this list only.

The sequence of presentation of lessons was in the same order as the exercises are arranged in Appendix A. The gradation of difficulty was made on the basis of steps involved to execute the specific directions, ranging from the simple

1 Henry D. Rinsland, A Basic Vocabulary of Elementary School Children, Macmillan, New York, 1945.

2 Ibid., p. 4.

markings on the pumpkin sketch to the complexities of a time table as presented in the twenty-fourth lesson.

Preliminary Testing

To equate the mental capacity of both groups, the California Test of Mental Maturity[1] was administered. This test yields three mental ages: total mental factors, language factors and non-language factors. These three phases of mental ability were considered individually in equating the groups to provide a more thorough analysis of mental factors than a single mental age.

For general reading ability, an average reading age was secured from the Iowa Silent Reading Tests.[2] Eight aspects of reading skill were measured by six sub-tests: Rate, Comprehension, Directed Reading, Word Meaning, Paragraph Comprehension, Alphabetizing and Use of Index. Since the investigation is concerned with a specific study skill, the median score from the Iowa Test was selected because this instrument measures the proficiency of pupils in doing silent reading of the work-study type.

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1 E. Sullivan, W. Clark and E. Tiegs, The New California Short-Form Test of Mental Maturity, Elementary S-Form, Grades 4-8, California Test Bureau, Los Angeles, 1947.

2 H. A.Greene and V.H. Kelley, Iowa Silent Reading Tests, New Edition, Elementary Test: Form Am, World Book Company, Yonkers-on-Hudson, New York, 1943.

Because of its direct relation to the problem, the Gates Basic Reading Test, Type C.[1] was selected. This test measures ability to read with accuracy and precision, to select carefully relevant details in executing specific directions.

The preliminary testing began on January 3, 1949 and was completed by January 14, 1949. The writer administered the entire testing program.

All tests mentioned above are filed in Appendix B.

Preparation of Teachers

After securing permission from the superintendent of schools to carry on the experiment, principals of schools involved were interviewed. Each expressed his willingness to cooperate with the writer and the fifth grade teachers participating.

The next step was explaining the plan of the study to the classroom teachers who had agreed to take part in the investigation. In the absence of criteria for equating teachers, a random selection of control and experimental teachers was made.

To control the variable of teaching procedure, a Manual of Directions was distributed to the experimental teachers:

> The enclosed set of practice exercises in following precise, written directions is an attempt to prove, under controlled conditions, that direct instruction is a means of improving a specific reading skill. This experiment is part of a graduate study in the field of reading in the Boston University School of Education.

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1 Arthur I. Gates, Gates Basic Reading Tests, For Grade 3 Through 8, Type C. Reading To Understand Precise Directions, Form I, Bureau of Publications, Teachers College, Columbia University, New York, 1942

The total number of lessons is twenty-four. The time limit set for each lesson is twenty minutes. The total time for the overall survey is eight weeks, allowing for three lessons a week on alternating days if possible.

Before beginning each lesson, a brief introduction involving pupil discussion is advisable. In this way interest in the lesson topic is stimulated and readiness is established.

The first half of the period is to be given for completing an exercise for following directions which has been prepared in duplicated form. The second part of the period is for discussion and correction of the lesson. Pupils may correct each other's work. Where there is a diagram, a pupil volunteer may put his sketch on the board. Discussion of key words and phrases may help clarify the technique for those who failed.

In initiating the unit, it is suggested that the class discuss the reason for acquiring this reading skill. The value of following directions in: pedestrian safety, games, securing merit badges for scouting, following recipes and many other phases of modern living can be clarified in the light of their experiences.

At the beginning of the experiment, a pre-test will be administered, Gates Silent Reading Test, Type C. Reading to Understand Precise Directions, Form I. At the end of the eight-week instruction period, Form II of the same test will be administered as a check test.

A control group, also in Wakefield will be given both tests, without benefit of directed study, in order to measure gain, if any, resulting from presenting this type of skill exercise.

For the sake of uniformity, the writer demonstrated the first of the series of lessons in each of the three experimental rooms. A conference with the teacher was held after the demonstration to clarify any problems arising from the presentation of the exercise or from aspects of the program described in the Manual of Directions. In the case of absence, teachers were instructed to leave adequate directions for a substitute to carry on with the lessons so that the sequence of the experiment need not be interrupted.

The teaching began on January 17, 1949 and continued thereafter for eight school-weeks until twenty-four lessons had been presented. In case of legal or storm holidays, teachers were told to use their own judgment in spacing the lessons as long as a reasonable uniformity was maintained throughout the study.

In checking with the experimental teachers from time to time, it was reported that the children were enthusiastic about the exercises. In some instances, teachers noticed a marked improvement in their pupils' ability to follow directions in other school subjects.

Final Testing

At the conclusion of the eight-week experimental period, a check test was administered to both the experimental and control groups to determine the effect of the variable of planned practices on a specific reading skill. For this purpose, Form II of the Gates Basic Reading Test, Type C. Reading to Understand Precise Directions was selected.

In the following chapter, the results of this test and all other tests administered are analyzed. The interpretation of these scores by means of statistical techniques determines the significance of the data recorded.

CHAPTER III

ANALYSIS OF DATA

It was the purpose of this study to determine, under controlled classroom conditions, the effect of direct teaching in improving the ability to follow precise directions. The analysis of data obtained has been organized to show:

1. The equality of the chronological ages of the groups at the beginning of the experiment.
2. The equality of the total mental factors of the mental ability of the groups at the beginning of the experiment.
3. The equality of language factors of the mental ability of the groups at the beginning of the experiment.
4. The equality of non-language factors of the mental ability of the groups at the beginning of the experiment.
5. The equality of reading ages of the groups at the beginning of the experiment.
6. The gain made by the experimental group during the period of experimentation.
7. The gain made by the control group during the period of experimentation.

8. The comparison of gains made by the control and experimental groups during the period of experimentation.
9. The comparison of gains made by boys and girls during the period of experimentation.
10. The relationship between skill in following directions and mental ability.
11. The relationship between skill in following directions and general reading ability.

Statistical Design

Since the control and experimental groups were approximately equal on the basis of six variables at the beginning of this study, gains made can be attributed in part to the experimental factor.

In interpreting the data derived from the investigation, it was necessary to determine the level at which a difference could be considered significant. For this purpose, a critical ratio of 2.576 or better was established.

Describing this statistical technique, Mills[1] reports:

> If a given difference between hypothetical and observed values would occur as a result of chance only 1 time out of 100, or less frequently, we may see that the difference is significant. This means that the results are not consistent with the hypothesis we have set up. If the discrepancy between theory and observation might occur more frequently than 1 time out of 100 solely because of the play by chance, we may say that the

1 Frederick Mills, Statistical Methods, (Revised), Henry Holt and Company, New York, 1938, p. 471.

difference is not clearly significant. The results are not inconsistent with the hypothesis. The value of T (the difference between the hypothetical value and the observed mean, in units of the standard error of the mean) corresponding to a probability of 1/100 is 2.576. One hundredth part of the area under the normal curve lies at a distance from the mean, on the x-axis, of 2.576 standard deviations or more. Accordingly, tests of significance may be applied with direct reference to T, interpreted as a normal deviate (i.e., as a deviation from the mean of a normal distribution expressed in units of the standard deviation). A value for T of 2.576 or more indicates a significant difference, while a value of less than 2.576 indicates that the results are not inconsistent with the hypothesis in question.

TABLE 2

NUMBER OF BOYS AND GIRLS IN EACH GROUP

Group	Boys	Girls	Total
Experimental	35	40	75
Control	40	35	75

The number of girls in the experimental group exceeds the number of boys by five. The ratio is reversed in the control group, so this difference is overcome.

TABLE 3

CHRONOLOGICAL AGES IN MONTHS AS OF JANUARY 1,1949

Statistic	Experimental	Control
N	75	75
Mean	125.83	126.23
S.D.	7.89	8.07
$S.E._M$	.91	.93
Diff	.40	
$S.E._{Diff.}$	1.303	
C.R.	.31	

The mean chronological age for the control group is 126.23 as compared to 125.83 for the experimental group. The difference between the means is .40 and yields a critical ratio of .31 which is not statistically significant.

TABLE 4

CALIFORNIA TEST OF MENTAL MATURITY-JANUARY-MENTAL AGE IN MONTHS

TOTAL MENTAL FACTORS

Statistic	Experimental	Control
N	75	75
Mean	133.83	132.73
S.D.	16.84	19.54
S.E. M	1.94	2.26
Diff.	1.10	
S.E. Diff.	2.98	
C.R.	.36	

Examination of the above table shows that the difference between the means scores in mental age is 1.10 months in favor of the experimental group. The critical ratio .36 is not statistically significant. Therefore, the groups can be considered equated as to the mental age variable.

Since this test yields three mental ages, it seemed feasible to investigate the two factors, language and non-language from which the total mental capacity was derived.

The purpose of Tables 5 and 6 is to clarify the analysis of the two elements which measure the composite mental maturity presented in Table 4.

TABLE 5

CALIFORNIA TEST OF MENTAL MATURITY-JANUARY-MENTAL AGE IN MONTHS

LANGUAGE FACTORS

Statistic	Experimental	Control
N	75	75
Mean	135.17	133.97
S.D.	17.54	20.26
$S.E._M$	2.03	2.34
Diff.	1.20	
$S.E._{Diff.}$	3.09	
C.R.	.39	

The difference between the mean mental ages involving language factors on the California Test of Mental Maturity is 1.20 months. The critical ratio .39 is low and indicates that the difference in this factor of mental ability is statistically insignificant.

This table, therefore, shows that neither group was at a disadvantage at the beginning of the experiment as there was no significant difference in language facility.

TABLE 6

CALIFORNIA TEST OF MENTAL MATURITY-JANUARY-MENTAL AGE IN MONTHS

NON-LANGUAGE FACTORS

Statistic	Experimental	Control
N	75	75
Mean	129.70	131.03
S.D.	23.17	25.49
$S.E._M$	2.68	2.94
Diff.	1.33	
$S.E._{Diff.}$	3.98	
C.R.	.33	

In this non-language test of mental capacity, the mean was 129.70 for the experimental group and 131.03 for the control group which indicates that the control group had a slight advantage over the experimental group. However, an insignificant critical ratio of .33 substantiates that the groups are approximately equal in the non-language factor.

TABLE 7

IOWA READING TEST-JANUARY-READING AGE IN MONTHS

Statistic	Experimental	Control
N	75	75
Mean	132.37	131.17
S.D.	25.09	21.93
$S.E._M$	2.90	2.53
Diff.	1.20	
S.E. Diff.	3.85	
C. R.	.31	

Table 7 with a critical ratio of .31 indicates that there is no significant difference in reading ages. The groups are essentially the same and for practical purposes within the framework of this study, are considered equal.

TABLE 8

GATES TEST SCORES IN MONTHS-FOLLOWING DIRECTIONS-EXPERIMENTAL AND CONTROL GROUPS-FORM I

JANUARY

Statistic	Experimental	Control
N	75	75
Mean	141.70	143.70
S.D.	22.65	21.33
$S.E._M$	2.615	2.463
Diff.	2.0	
$S.E._{Diff.}$	1.1358	
C.R.	1.76	

A critical ratio of 1.76 indicates that the experimental and control groups were selected from the same population and any difference was due to sampling errors and did not occur because one group was superior to the other when equated because this critical ratio, although fairly high in favor of the control group, is not significant.

TABLE 9

COMPARISON OF INITIAL AND FINAL TEST SCORES IN MONTHS-GATES TEST-FOLLOWING DIRECTIONS

EXPERIMENTAL

Statistic	January	March
N	75	75
Mean	141.7	153.70
S.D.	22.65	24.60
$S.E._M$	2.615	2.725
Diff.	12.00	
$S.E._{Diff.}$	1.195	
C.R.	10.03	

The experimental group made a mean gain of 12 months growth in following directions. The critical ratio of 10.03 is statistically significant and it is definitely proven that the experimental group is superior to the control group in this reading skill.

According to the criterion set up for this study, 2.576, chances are 99 out of 100 that this is a true difference between means.

TABLE 10

COMPARISON OF INITIAL AND FINAL TEST SCORES IN MONTHS-GATES TEST-FOLLOWING DIRECTIONS

CONTROL

Statistic	January	March
N	75	75
Mean	143.70	141.73
S.D.	21.33	22.31
$S.E._M$	2.463	2.576
Diff.	1.97	
$S.E._{Diff.}$	1.126	
C.R.	1.57	

The mean loss indicated in the above table by the control group is 1.97 months in following directions. This loss might be attributed to the lack of training, other than incidental teaching, in this specific skill during the course of the experiment. Possibly if a different phase of reading were measured in the control classes at this time, gains might be shown.

In spite of this mean loss, the critical ratio of 1.57 shows this difference to be insignificant.

TABLE 11

COMPARISON OF INITIAL AND FINAL TEST SCORES IN MONTHS

GATES TEST-FOLLOWING DIRECTIONS-FORM II

MARCH

EXPERIMENTAL AND CONTROL

Statistic	Experimental	Control
N	75	75
Mean	153.70	141.73
S.D.	24.60	22.31
$S.E._M$	2.725	2.576
Diff.	11.97	
$S.E._{Diff.}$	1.212	
C.R.	10.125	

The difference in the final mean test performance of the experimental and control groups is 153.70-141.73 or 11.97. This proves that the experimental group is definitely superior to the control group. The critical ratio of 10.125, at the one per cent level (2.576), is significant.

TABLE 12

COMPARISON OF MEAN GAIN IN INITIAL AND FINAL SCORES OF BOYS AND GIRLS-GATES TEST-FOLLOWING DIRECTIONS

EXPERIMENTAL

Sex	Month	Number	Mean	Gain
Boys	Jan.	35	135.07	14.29
	Mar.	35	149.36	
Girls	Jan.	40	147.50	9.75
	Mar.	40	157.25	

This table shows that the boys were definitely handicapped compared to the girls in the initial test since there was a difference of 12.43 in their reading ages. However, once the boys were given specific drill in this skill, they made greater gain, 14.29 vs. 9.75, even though their final test mean was 7.89 months lower than that of the girls. In comparing final gains, there is a difference of 4.54 in favor of the boys.

TABLE 13

CORRELATIONS BETWEEN FINAL SCORES AND MENTAL AGE AND FINAL SCORES AND READING AGE

Comparison	r
Final Scores vs. Mental Age in Months	+.59
Final Scores vs. Reading Age in Months	+.84

This correlation table shows a higher reliability between the final scores and reading age than between the final scores and mental age which was reasonable to assume due to the closer relationship between general reading ability and a specific reading skill than between mental capacity and reading proficiency.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The purpose of this study was to construct and evaluate a unit of twenty-four lessons aimed at improving skill in following precise, written directions.

Initial and final tests were administered to 150 pupils in grade five. At the beginning of the experiment both groups, control and experimental, were equated in terms of: chronological age, mental age, average reading age and reading age derived from the scores of tests on the ability to follow precise directions. Gains made may be attributed, in part, to the variable of planned practices administered to the experimental group over a period of eight weeks.

Mental Test Data

Statistical treatment of the California Test of Mental Maturity data indicated the following results:

1. In total mental factors, a comparison of the control and experimental groups showed a critical ratio of .36 which was not significant.
2. In language factors, there was a difference in means of 1.20 in favor of the experimental group yielding an insignificant ratio of .39.

3. In non-language factors, a critical ratio of .33 proved the groups to be equated.

General Reading Ability

Similarity of the control and experimental groups in terms of reading age was indicated by a critical ratio of .31 in a comparison of means from the Iowa Reading Test.

Skill in Following Directions

Results from the Gates Test, Reading to Understand Precise Directions, were as follows:

1. At the beginning of the experiment, the control group had a slightly higher mean score than the experimental group with a difference of 2 in their favor. The critical ratio of 1.76 showed this to be insignificant.
2. At the conclusion of the investigation, the experimental group had made a gain of 12 months. A critical ratio of 10.03 was significant. The chances are 99 in 100 that this was a true gain.
3. Final scores of the control group as compared with initial scores showed a mean loss of 1.97. The critical ratio 1.57 was insignificant.
4. A comparison of gains made by both groups revealed a mean difference of 11.97. The superiority was

in favor of the experimental group. The statistical significance of this gain is substantiated by a critical ratio of 10.125.

Sex Differences

Boys showed a mean gain of 14.29 compared to the girls' gain of 9.75. However, the initial and final scores of the girls exceeded those of the boys by 12.43, and 7.89 respectively.

Correlations

The relationship between final scores and mental age was shown by a correlation of +.59. In comparing final scores and reading age the correlation was +.84

Conclusions

An analysis of the data seemed to indicate the following conclusions:

1. In comparing the mental factors of the groups, there were no statistical differences in total, language and non-language factors.
2. Differences in general reading ability in terms of reading age were not significant when the control and experimental groups were compared prior to presenting the lessons.

3. A carefully planned series of graded lessons, designed to improve the ability to follow precise, written directions, produced marked gains in the experimental group.
4. Girls were superior to boys in the skill of following directions both before and after the planned practices; however, the boys showed greater improvement as the result of direct teaching than did the girls.
5. Ability in reading bears a closer relationship to skill in following directions than does mental capacity.

CHAPTER V

SUGGESTIONS FOR FURTHER RESEARCH

As a result of this experiment, the following problems for further study might be considered:

1. Investigate the results of similar systematic teaching on the skills tested in the other three <u>Basic Reading Tests</u> by Arthur I. Gates:

   Type A. Reading to Appreciate General Significance

   Type B. Reading to Predict the Outcome of Given Events

   Type D. Reading to Note Details

2. Make a follow-up study using the same population to determine if the gains made carried over into grade six.
3. Revise and present these lessons to a larger population of the same or a different grade.
4. Construct and evaluate a set of lessons designed to improve the ability to follow precise oral directions.
5. Investigate the effect on other school subjects of improvement in the ability to follow precise written directions.

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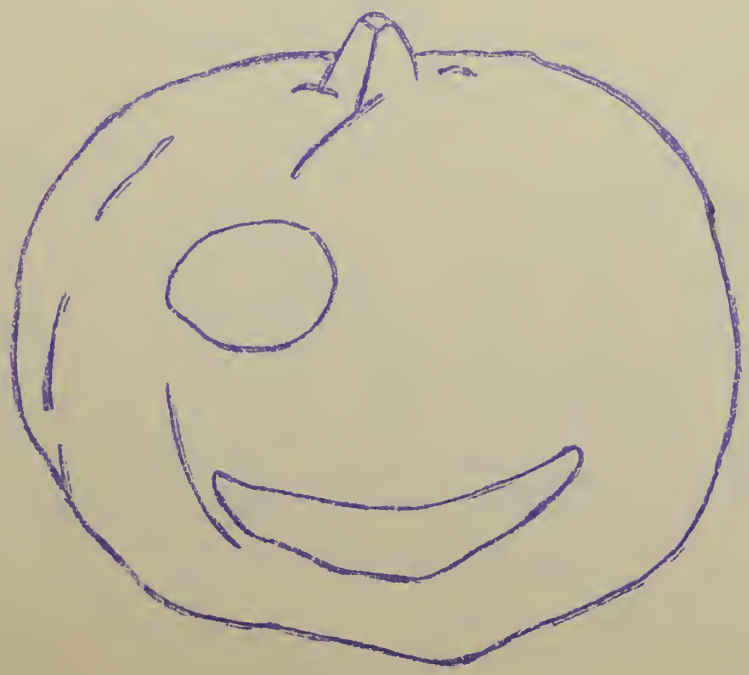
APPENDIX A

PRACTICE EXERCISES FOR FOLLOWING DIRECTIONS

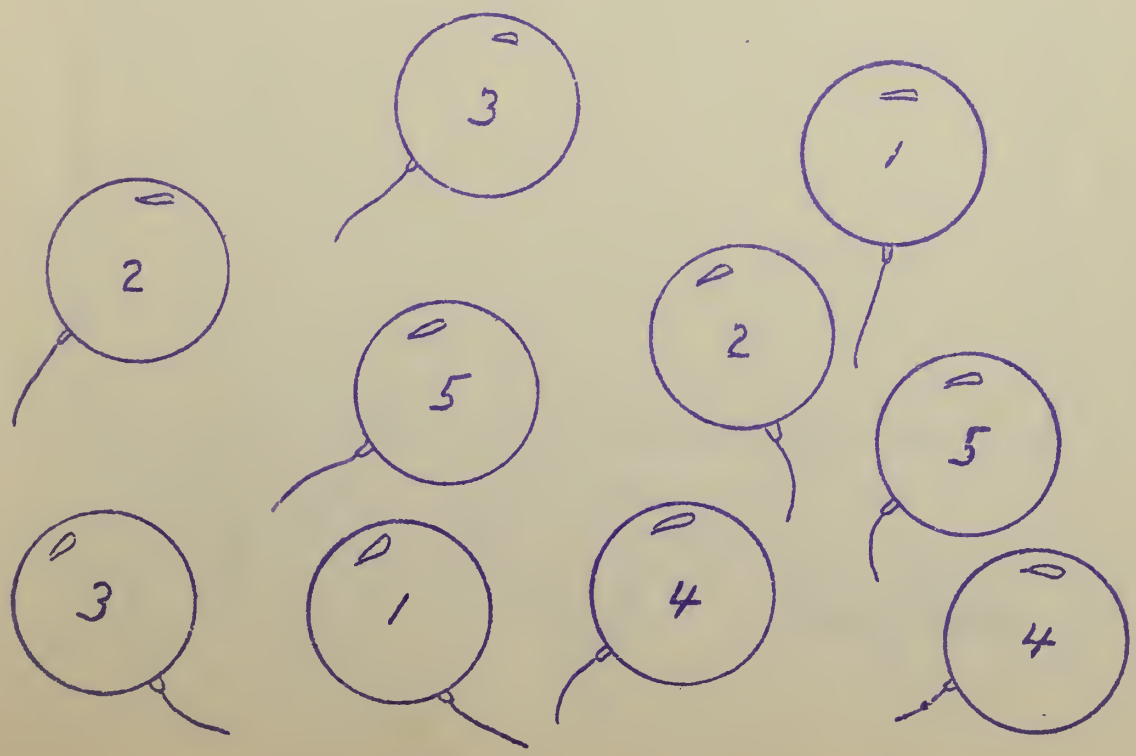
Hallowe'en is lots of fun for boys and girls. In fact, it is one of their favorite holidays. Part of the fun is cutting out a jack-o-lantern. When it is finished, it should be put on a window sill. How strange a street can look on Hallowe'en with grinning jack-o-lanterns staring out of all the windows!

1. Draw the jack-o-lantern's other eye. Have it wide open.
2. Draw in some teeth, one on top and two on the bottom of his mouth.
3. Put a hat on him.
4. Make a nose.
5. Print jack-o-lantern under the picture.
6. Count the number of letters in jack-o-lantern. Put this number above his hat.



Children like to go to parades for many reasons. Some like the bands and the marching. Others like to see the bright uniforms and gaily decorated floats. Still others like to eat ice cream and have a balloon to take home. The man who sells balloons has lost his bunch. They are floating away up in the sky. Can you follow directions by marking the sketch below?

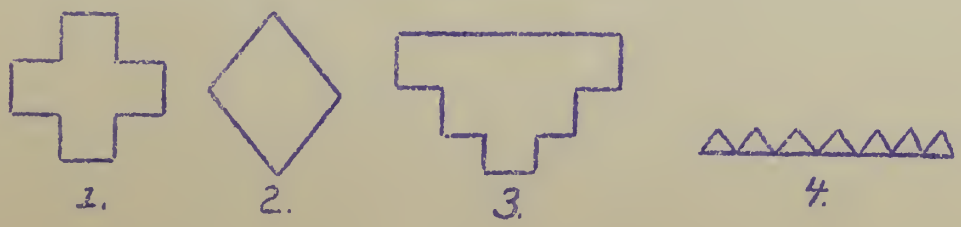
1. Put an X on the balloons which have even numbers on them.
2. Put a line under the balloons which have odd numbers on them.
3. Draw a line connecting the balloons marked <u>one</u>.
4. Make the strings longer on the balloons marked <u>two</u>.
5. Find the sum of the even numbers marked on the balloons. Put your answer on this line. _____
6. Find the sum of the odd numbers marked on the balloons. Put your answer on this line. _____



The Indians of North America have shown great skill in designing and weaving beautiful blankets. They weave their own cloths and make their own patterns and dyes. Many of the designs they use are symbols of events in their lives or natural events such as weather or seasons.

The square below is a blanket. The designs are to be drawn inside the blanket as directed:

1. Put design number 3 in the upper right hand corner and in the lower left hand corner.
2. Put design number 1 in the center of the blanket.
3. Put design number 2 in the upper left and lower right corners.
4. Put design number 4 around the blanket to make a border.

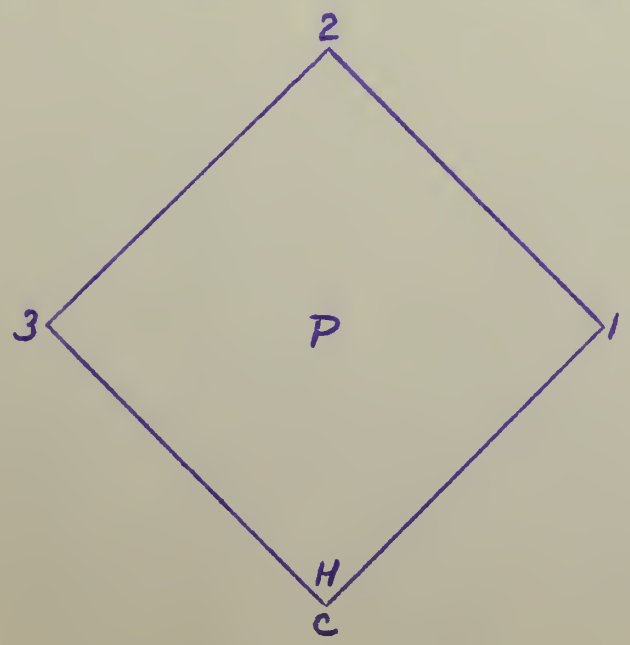


Baseball is a game for all! Both boys and girls like it. Parents and grandparents like it, too. Do you play or watch others play?

The diagram below is a baseball playing field called a baseball diamond. Read carefully what the letters and numbers stand for and then follow the directions below.

P - pitcher	1 - first base
C - catcher	2 - second base
H - home plate	3 - third base

1. Draw a dotted line from pitcher to home plate.
2. Draw a circle around the base that comes between first and third.
3. Put an X on the letter which stands for the player who stands in back of home plate.
4. Put the letter S halfway between home plate and first base.
5. Put the letter Z halfway between home plate and third base.



Here are some lists of words. These words are food, places, and animals. Can you follow these directions?

A. Draw a line around things to eat.

B. Put an X on animals.

C. Put a line under the names of places.

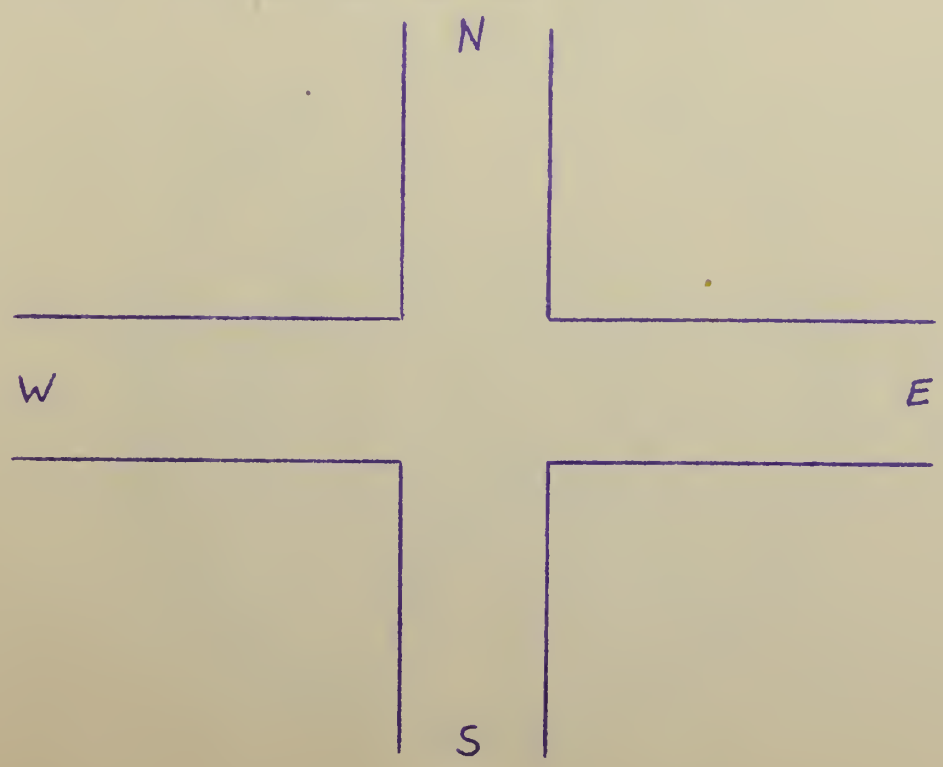
zebra	country	lion
orange	cereal	room
man	rabbit	apple
bread	potato	toast
school	elephant	girl
pony	city	panther
home	theater	town
sandwich	horse	egg
church	ice cream	lettuce
cake	farm	monkey

1. How many words are names of things to eat? _____
2. How many words are names of animals? _____
3. How many words are names of places? _____

In our city there are two main streets, Central Avenue and Main Street. The sketch below shows how these streets look at the place where they cross each other. Main Street runs east and west. Central Avenue runs north and south.

In the sketch below, follow directions by marking it correctly.

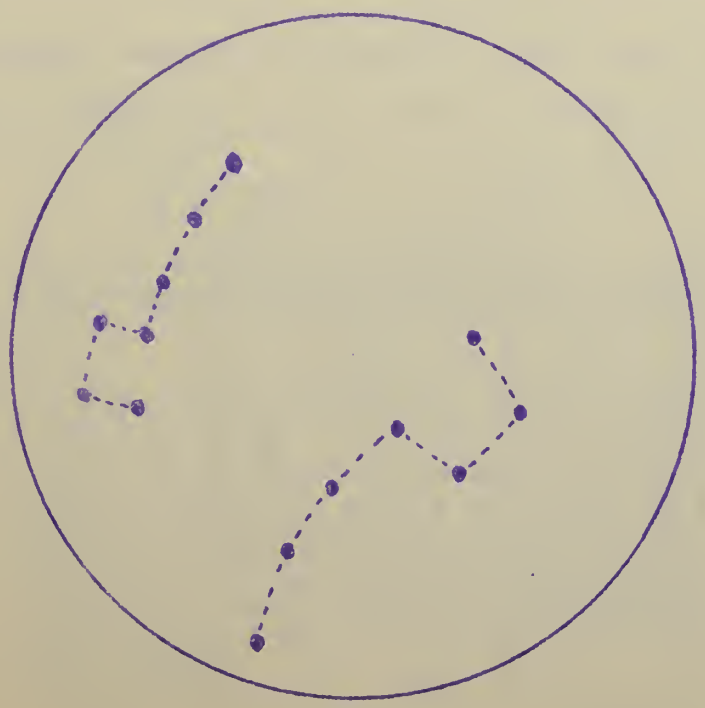
1. Find Main Street. Print its name on it.
2. Find Central Avenue. Print its name on it.
3. In the northeast corner, facing Central Avenue and Main Street is the Post Office. Draw a square showing where it would come and print P. O. on it.
4. In the southwest corner, facing Central Avenue and Main Street is the City Hall. Draw a square showing where it would come and print C. H. on it.



Do you like to gaze up at the stars? Sometimes the stars look as if they make pictures in the sky. One group of stars called the Big Dipper looks just like a big dipper. Another group is called Little Dipper because it looks like one.

The two stars in the front of the cup of the Big Dipper are called pointers. If you follow the pointers you will find the North Star which is at the end of the handle of the Little Dipper.

1. Print N. S. above North Star.
2. On the handle of the Big Dipper, print the word BIG.
3. On the handle of the Little Dipper, print the word LITTLE.
4. Put an X in the bowl of the Big Dipper.
5. Put a Y in the bowl of the Little Dipper.



February is a very interesting month for many reasons. As Americans we are proud of our presidents' birthdays, Lincoln's on the 12th and Washington's on the 22nd. We all enjoy getting valentines on the 14th. On the 2nd, the ground hog comes out of hiding to see if winter is over. This day is called Ground-hog Day.

Unlike the rest of our months, every four years or leap year, February gains a day and has 29 instead of its usual 28 days.

1. Draw a circle around the birthday of our first president.
2. Put an X on the birthday of another president.
3. Put a capital g on a day when an animal peeks out to see if winter is over.
4. Draw a heart on Valentines Day.
5. If this February comes during Leap Year, put L on the last day of the month. If it does not, put N on the last day of the month.
6. If your birthday comes in February, underline the name of this month. Otherwise, put a circle around it.

FEBRUARY

SUN.	MON.	TUES.	WED.	THURS.	FRI.	SAT.
		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					

The Monarch butterfly has many stages to its life. First it is a tiny egg. Then a caterpillar hatches from the egg. While the butterfly is a caterpillar, it is called a larva. At this time it eats milkweed leaves. It then starts a resting stage when it is called a pupa. After two weeks, it becomes an adult butterfly.

Answer with a number to show which sketch is described:

1. The stage when milkweed leaves are eaten ____
2. The adult _____
3. The first stage of the butterfly's life _____
4. The pupa _____
5. The larva _____

By placing notes of music on a staff, songs may be played or sung. However, there are letter names to the lines and spaces of the staff which must be learned first. Starting from the bottom, the spaces are: F A C E and the lines are: E G B D F.

Here are the four kinds of notes:

♪ - eighth note 𝅗𝅥 - half note

♩ - quarter note 𝅝 - whole note

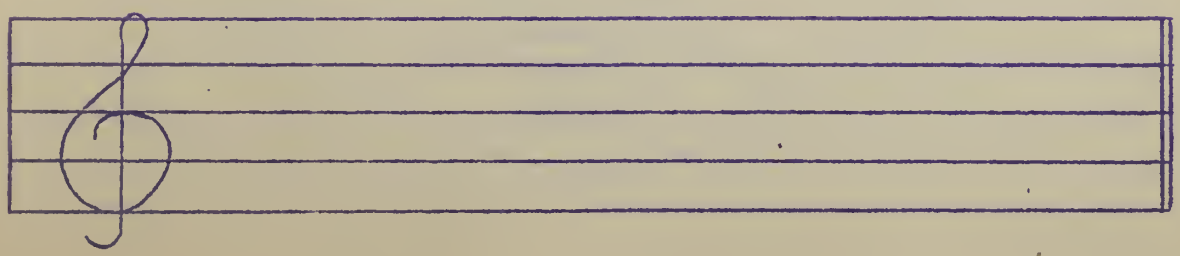
On the staff below, do the following:

1. Put a whole note on the G line.
2. Put two quarter notes on the F space.
3. Put a half note on the line E and the space E.
4. Put three eighth notes in the C space.
5. If the notes you have made add up to more than nine, put a zero under the staff. If there are less than nine, put an X under the staff.
6. Now write the names of the spaces by placing the letters in the right order in the blanks below:

   ___ ___ ___ ___

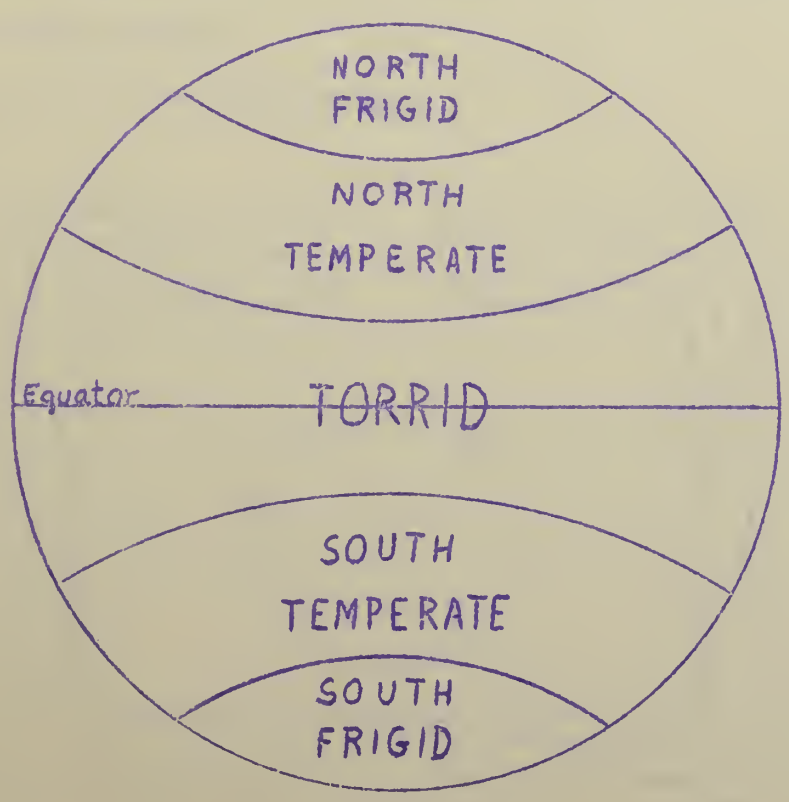
7. Write the letters of the lines in the order which they come on the staff, starting with the first or bottom line:

   ___ ___ ___ ___ ___



Some geography books have diagrams like the one below of our earth divided into zones. The two coldest zones are the North and South Frigid Zones. The equator passes through the part of the world which is the hottest. On either side of the equator is the Torrid Zone. We live in the North Temperate Zone. The South Temperate Zone is below the Torrid Zone.

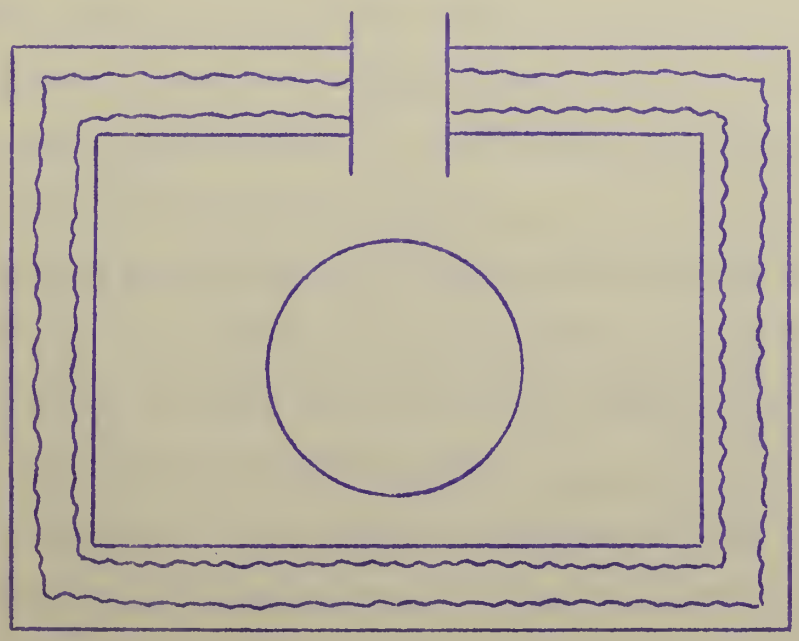
1. Mark with an X the zone in which you live.
2. Put a C on the two coldest zones.
3. Put an H on the line that passes through the warmest climate in the world.
4. Draw a line under the name of the zone which is south of the Torrid Zone on the diagram.
5. Draw a line around the name of the hottest zone.



Many years ago, in the days of knights and great adventure, noblemen lived in castles. To protect themselves from enemies they had a moat, which is a trench filled with water, around their castles. The castle was usually in the center of their property with a space around the castle for a yard or field. Around this field was the moat. Over the moat, a drawbridge was raised or lowered according to whether the visitor was a friend or an enemy.

On the diagram below, do the following:

1. Put a C on the castle.
2. Put an M on the outside of each of the four sides which are bordered by the moat.
3. Put an F anywhere on the space which is the field or castle yard.
4. Put a D on the drawbridge.



BASEBALL

Major League Standing

National League

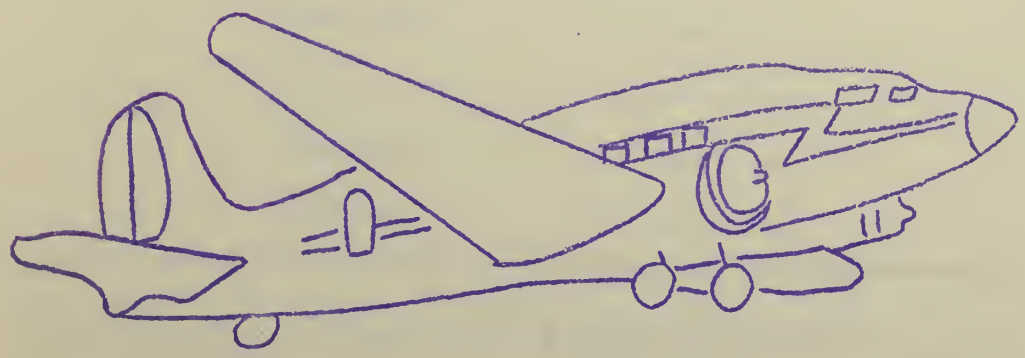
Standing of the Clubs	Games Won	Games Lost	Games Behind
1. Boston	57	43	-
2. Brooklyn	51	44	3
3. St. Louis	52	45	3
4. New York	51	46	3
5. Pittsburgh	46	46	7
6. Philadelphia	48	50	8
7. Cincinnati	44	57	13
8. Chicago	41	59	16

1. Which team is in fourth place? _____
2. How many games has Philadelphia lost? _____
3. How many games behind is the team in last place? ____
4. What team has won 51 games? _____
5. How many games has the team in first place won? _____
6. What is the difference in the number of games won by the team in first place and the number of games won by the team in second place? _____
7. Somewhere on this sheet is the name of the league to which these teams belong. Find it. Draw a line around it.

Every day huge planes skim above our cities taking passengers on their way. Many people prefer this means of travel because it is so swift.

Have you ever seen a passenger plane? The sketch below should help you remember how it looked.

1. Put an X on the wing nearest you.
2. Put a D on the door where the passengers entered.
3. Put an N on the nose of the plane.
4. Put the numbers 1, 2, 3 on the windows which the passengers will use for sightseeing.
5. Put the small letter p on each of the windows out of which the pilot and copilot may look.



The volumes of books below have letters on the backs of them. These books are called encyclopedias. Perhaps you have used them. The letters on the back of each book stand for the beginning letters of words that are in the book.

If you look up a person, remember to look under the first letter of his last name.

After each of the following topics, put the number of the encyclopedia in which you could find information about it.

Napoleon _____

California _____

Abraham Lincoln _____

wheat _____

schooner _____

Theodore Roosevelt _____

reaper _____

Thomas Edison _____

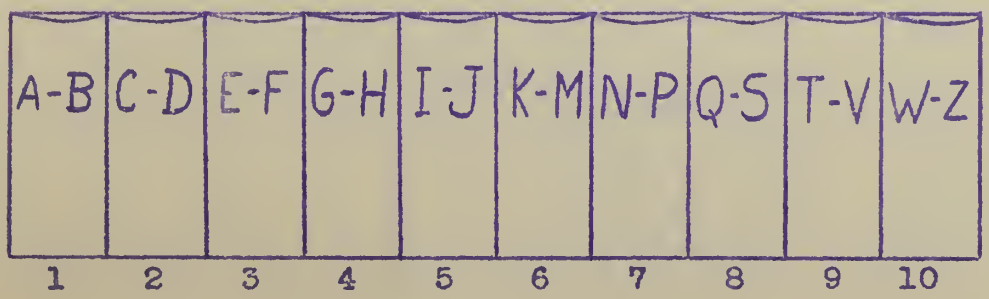
television _____

Honolulu _____

atom _____

military _____

Quebec _____

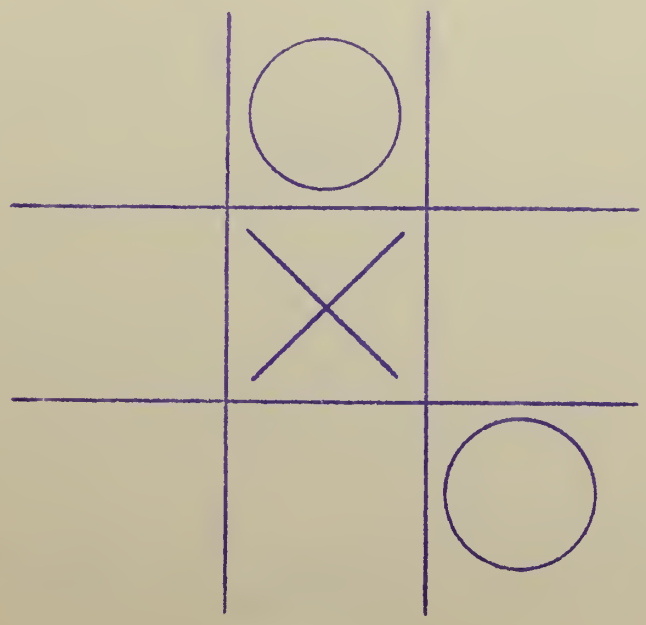


Have you ever played Tit Tat Toe? It is lots of fun for rainy days. Maybe you have played it when you were ill and had to stay in bed.

Taking turns, two players fill nine squares with crosses and circles until all spaces are filled, or until one player has three crosses or circles in a row.

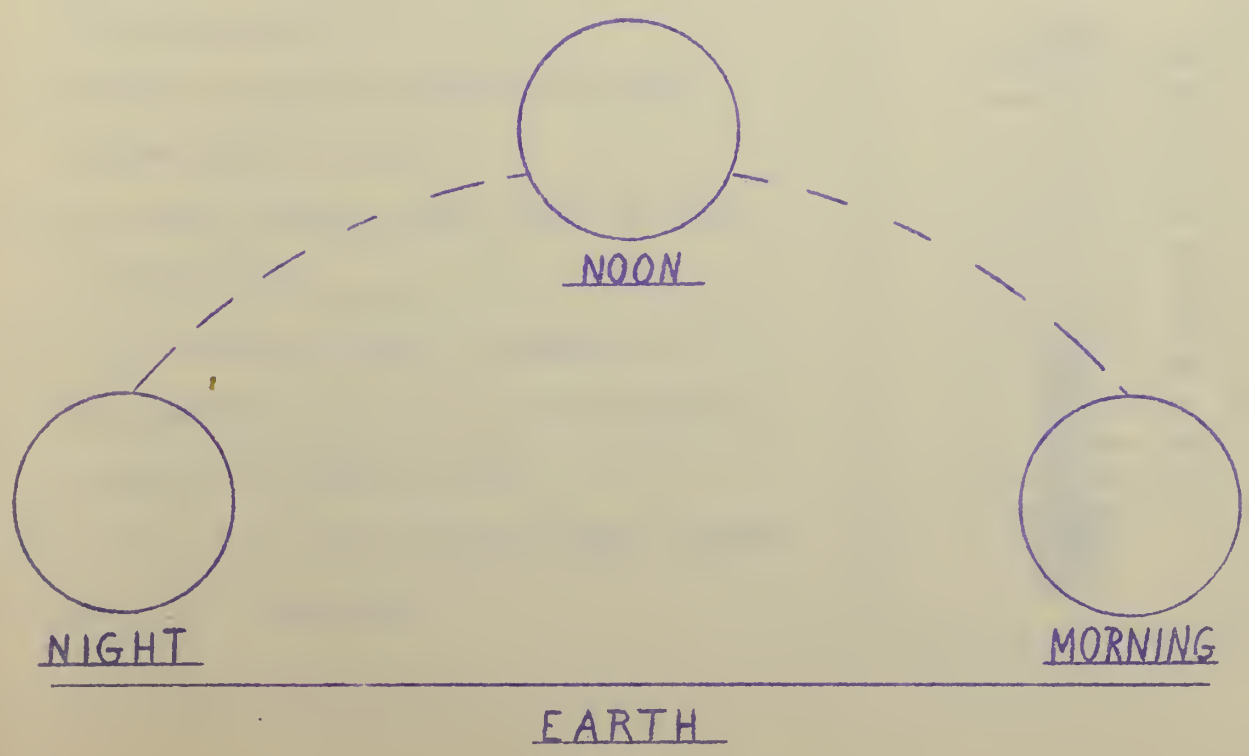
In the diagram below, the players had had three turns. You can finish the game for them by following these directions:

1. Put an X in the upper left corner.
2. Put a O in the upper right corner.
3. Put an X in the middle, right space.
4. Put a O in the lower left corner.
5. Put an X in the middle space at the bottom.
6. Now which can win, X or O? Show which answer you choose by putting the winning mark in the left row, middle.



As the earth turns, it makes the sun look as though it were moving. Therefore, in the morning the sun may be seen in the East. At noon it is high in the sky. At night it sets in the West.

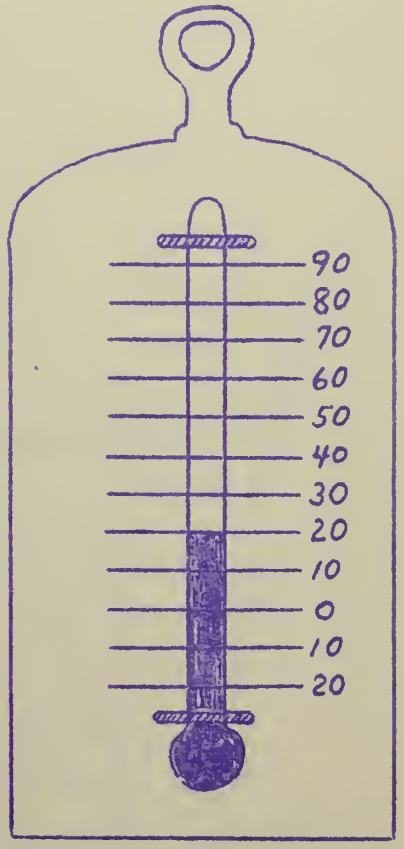
1. Put an E on the sun which is in the East.
2. Put a W on the sun which is in the West.
3. Put an X on the broken line where you think the sun would be in the middle of the afternoon.
4. Put a Z on the broken line where you think the sun would be in the middle of the morning.
5. Put the number twelve under the word which tells where the sun is in the middle of the day.
6. Put an X on the word which tells the place where we all live.



A thermometer tells us how hot or cold it is. In other words it tells us the temperature. A thermometer can be used both indoors and outdoors.

The numbers on a thermometer stand for degrees. Thirty-two degrees is freezing temperature. Ice will form when it is this cold. Sixty-eight or seventy is a good temperature for our school room. When the thermometer is ninety degrees or above, it is very warm. When the thermometer is zero or below, it is very cold.

To tell the temperature, notice where the liquid in the tube stops. The place where it stops tells the temperature at that time.



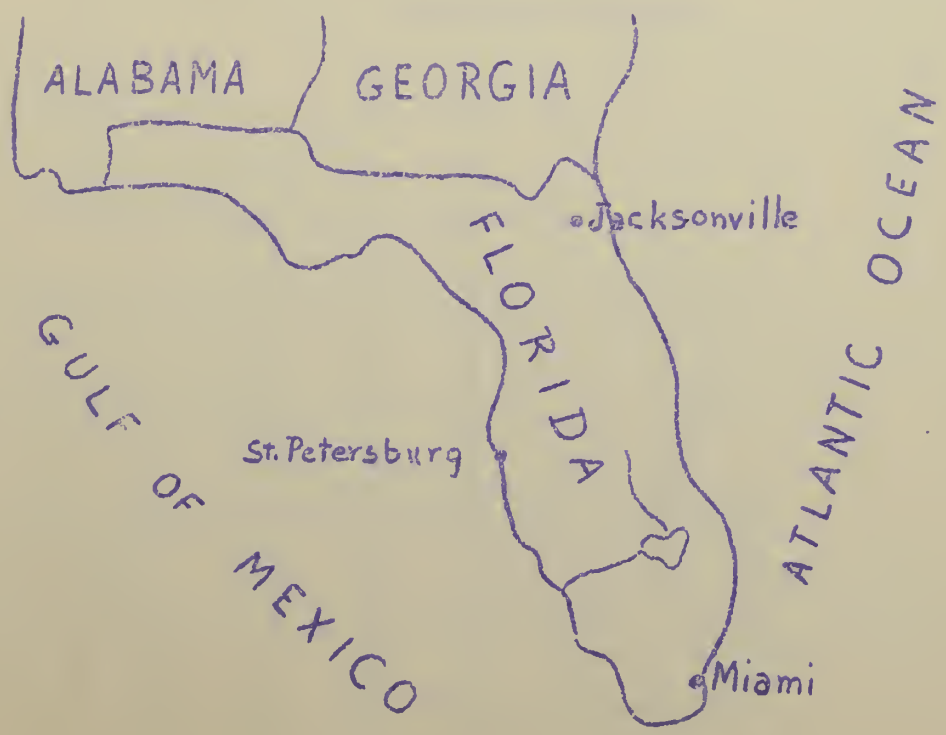
1. What is the temperature shown on this thermometer? _____
2. Could you go ice skating at this temperature? _____
3. How many degrees above zero is this temperature? _____
4. Put a circle around a number on the thermometer which is a good temperature for a school room.
5. Put an X on the coldest degree marked on this thermometer.

Florida is a peninsula. There is water on three of its boundaries and land on the fourth.

The two states north of Florida are Georgia and Alabama. Three important cities are: Jacksonville, St. Petersburg and Miami.

On the map below, follow these directions.

1. Draw a dotted line outside the boundaries of Florida which face the water.
2. Print a large N on the boundary which is on land.
3. Draw a line around the names of the two states north of Florida.
4. Draw a line under the name of an ocean.
5. Put an X on the name of a gulf.
6. Draw a line connecting Florida's three main cities.



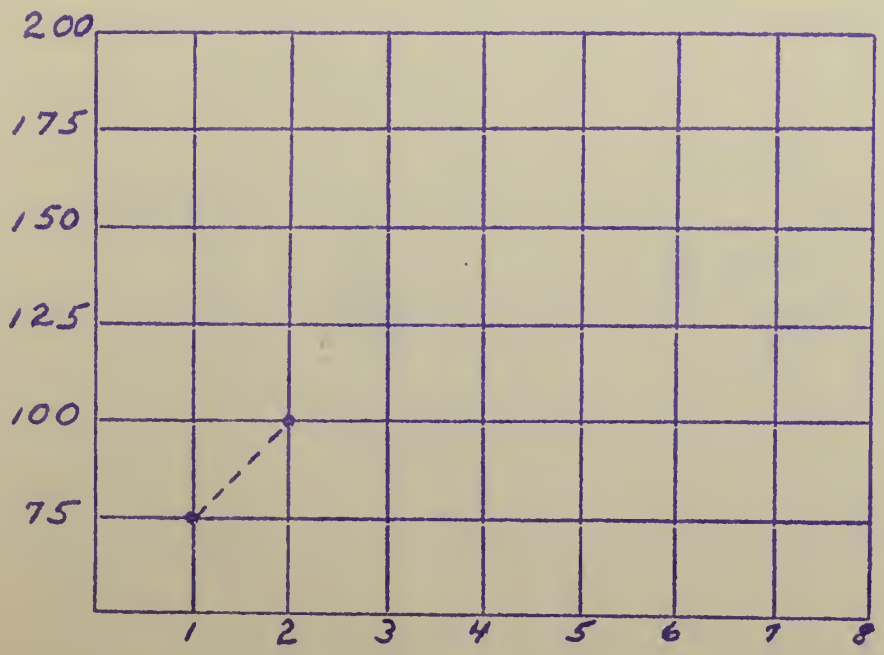
Richard has been working very hard this year to improve his rate of speed in reading. The graph below shows his improvement after doing special lessons.

The numbers on the left are his words per minute. The numbers on the bottom are the months he practiced. The number 1 stands for the first month, 2 for the second, etc.

The first month he read 75 words per minute, the second month he read 100 words per minute. Put large dots to show his speed. Be sure these dots are on the line of the correct month. Connect these dots with a broken line such as this — — —

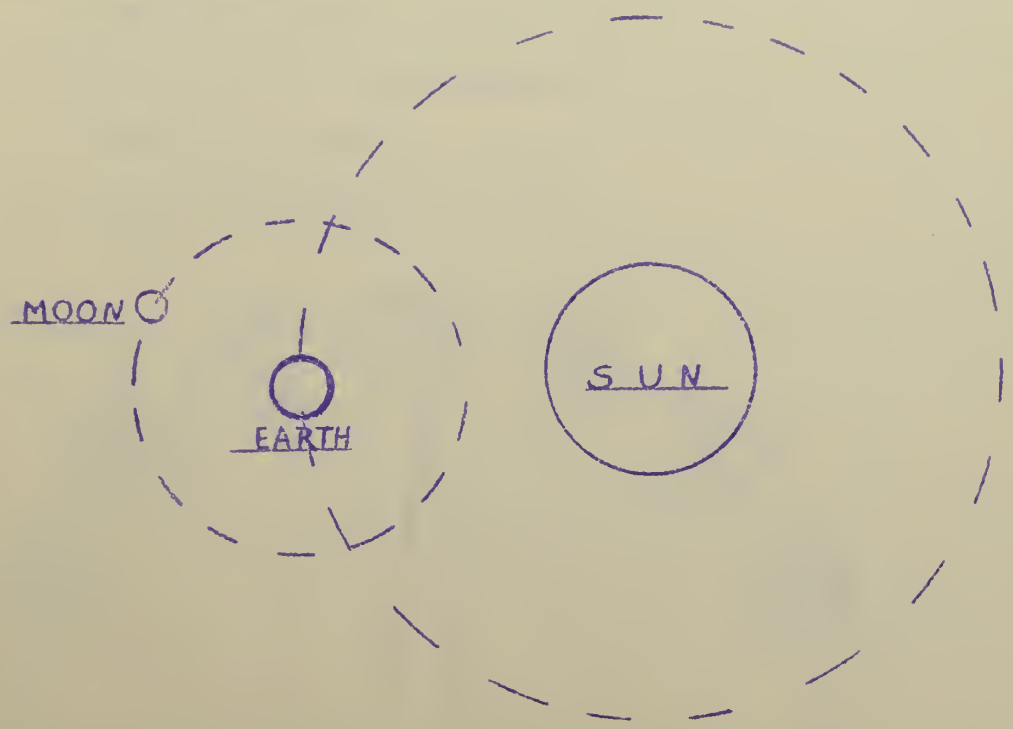
First month: 75 w.p.m.	Fifth month: 150 w.p.m.
Second month: 100 w.p.m.	Sixth month: 175 w.p.m.
Third month: 125 w.p.m.	Seventh month: 175 w.p.m.
Fourth month: 125 w.p.m.	Eighth month: 200 w.p.m.

w.p.m. stands for <u>words per minute</u>



The sun is the center of the diagram below. The earth travels in a path around the sun. The moon travels in a path around the earth. When the moon comes between the earth and the sun, it is called an eclipse.

1. Draw the moon on its path so that an eclipse is made.
2. Now draw a line connecting the moon you just drew and the sun.
3. With your pencil, color in your moon so that the half nearest the sun is left white.
4. Color the earth so that the half nearest your moon is dark.
5. Put an X on the moon on the diagram, the one you did not draw.



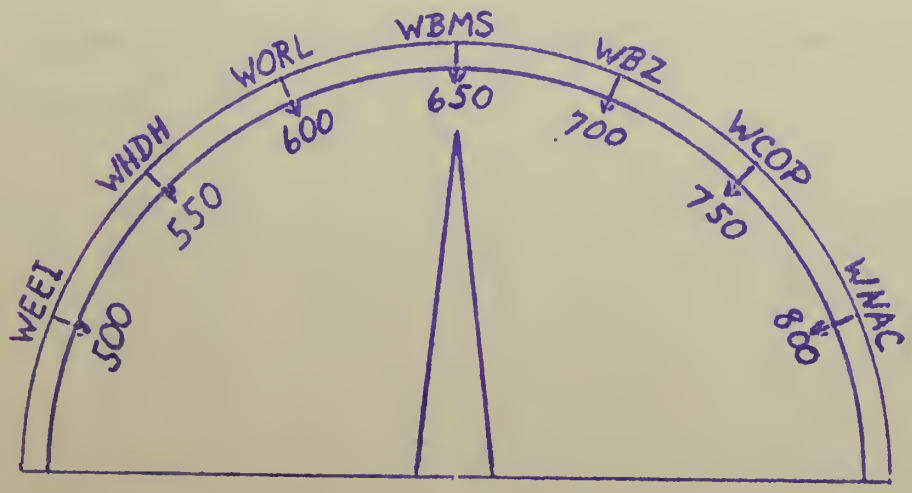
The evening newspaper is our best guide for radio listening. We can tell the name of the program and what station is broadcasting it. This is how a program list is printed in the paper.

Today's Radio Headliners

Time	Station	Program
6:00	WHDH	World News Round-up
6:35	WHDH	Jim Britt's Sport Round-up
7:30	WCOP	The Lone Ranger
8:00	WBZ	Lowell Institute- Our Weather
8:00	WNAC	Boston Blackie
8:30	WCOP	On Stage America
9:00	WEEI	County Fair

The diagram below is a radio dial. The numbers show you where to turn the dial to get the stations which are printed outside the half circle. To which number would you turn the dial to get the following programs:

1. The Lone Ranger _____
2. Boston Blackie _____
3. Jim Britt's Sport Round-up _____
4. On Stage America _____
5. World News Round-up _____



Little children like to play with blocks. They think it is fun to pile them high and watch them topple over.

You can have fun with blocks, too. Each of the five blocks below has a letter on it. By putting certain blocks together, words can be made. However, instead of using the blocks and their letters, try making words from the numbers over the blocks. For example, to spell LATE, write: 1524.

1. Using numbers, write the following words:

   1.) DEAL _____

   2.) LET _____

   3.) EAT _____

   4.) DATE _____

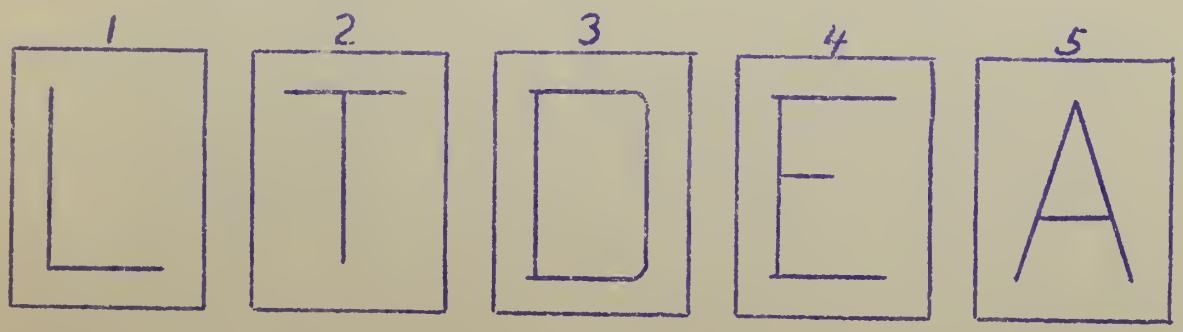
   5.) TED _____

   6.) TALE _____

2. Draw a line around the block whose letter is the first letter of the alphabet.

3. Put an X on the block whose letter is the 4th letter of the alphabet.

4. Draw a line under each of the three blocks whose letters together spell LET.



Can you read a timetable? Here is a copy of part of the Wakefield to Boston timetable. Be very careful to notice if the train you want to take is a.m. or p.m. It is also a good idea to notice if it comes under Leave or Arrive. One more word of advice, read carefully what the letters H and S mean.

Wakefield to Boston

	Leave	Arrive		Leave	Arrive
A	8:01 a.m.	8:28	G	12:34 p.m.	1:00
B	8:24 a.m.	8:46	H	1:15 p.m.	1:32
C	H8:38 a.m.	9:05	I	S2:35 p.m.	2:56
D	H9:32 a.m.	9:55	J	5:00 p.m.	5:25
E	H10:20 a.m.	10:45	K	6:03 p.m.	6:23
F	11:39 a.m.	12:04	L	7:36 p.m.	8:06

H--Will not run holidays S--Will run except Saturdays

The questions below are to be answered with the letters on the left of the time of the train. For your answers, use only these letters.

1. Which train would you take to get to Boston at 9:05? _____
2. What trains could you take to Boston on Christmas morning? _____
3. Which train leaves Wakefield at 10:20 a.m.? _____
4. What trains could you take to Boston Saturday afternoon between twelve and four o'clock?

   _____
5. What trains arrive in Boston after five in the evening? _____

APPENDIX B

SAMPLES OF TESTS USED

NEW CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY
ELEMENTARY '47 S-FORM

Devised by Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs

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

School..... Age..... Birthday.....

Teacher..... Date.....

DIAGNOSTIC PROFILE
(Chart pupil's scores here)

TEST FACTOR	Possible Score	Pupil's Score	Mental Age (Mo. 72 84 96 108 120 132 144 156 168 180 192 204 216 / Yr. 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0)	Percentile Rank
Spatial Relationships	35		10 15 20 25 30 35	
1. Sensing Right and Left*	20	*	6 10 11 12 13 14 15 20**	
2. Manipulation of Areas*	15	*	3 5 6 7 8 9 10 11 12 13 14 15	
Logical Reasoning	30		5 10 15 20 25 30	
3. Similarities*	15	*	5 9 12 13 14 15**	
4. Inference	15		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	
Numerical Reasoning	25		1 5 10 15 20 25	
5. Number Series*	10	*	1 2 3 4 5 6 7 8 9 10	
6. Numerical Quantity	15		1 2 3 4 5 6 7 8 9 10 12 13 14 15	
Vocabulary (Test 7)	50		1 5 10 15 20 25 30 35 40 45	
Total Mental Factors	140		20 31 41 53 64 74 85 94 105 113 123 129 134	
Language Factors (4+6+7)	80		1 7 14 20 26 32 39 46 55 61 67 72 75	
Non-Language Factors (1+2+3+5)	60		19 24 27 33 38 42 46 48 50 52 56 57 59	
Chronological Age			72 84 96 108 120 132 144 156 168 180 192 204 216	
Actual Grade Placement (Grade pupil is in)			1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0	

Yr. 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0

Mental Age Mo. 72 84 96 108 120 132 144 156 168 180 192 204 216

*Language tests.
**Upper limits of test.

SUMMARY OF DATA	Score	M. A. ÷	C. A. =	I. Q.
Total Mental Factors				
Language Factors				
Non-Language Factors				

TEST 1.

Directions: Draw a ring around the letter R under all right hands and feet. Draw a ring around the letter L under all left hands and feet.

Test 1. Score (number right).....

TEST 2.

Directions: In each row find a drawing which is the same as the first drawing. Put an × under it and write its number on the line to the right.

A

1 ____ 2 ____ 3 X ____ 4 ____ ____ A

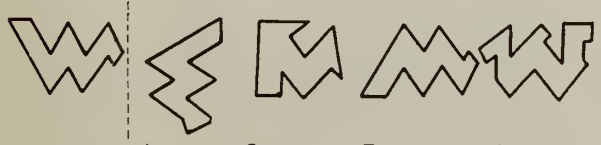
1

1 ____ 2 ____ 3 ____ 4 ____ ____ 1

2

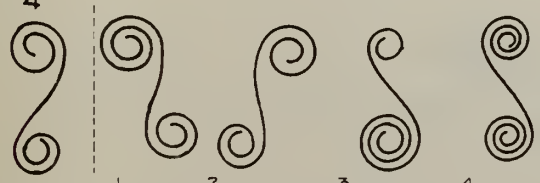
1 ____ 2 ____ 3 ____ 4 ____ ____ 2

3



1 ____ 2 ____ 3 ____ 4 ____ ____ 3

4



1 ____ 2 ____ 3 ____ 4 ____ ____ 4

5

1 ____ 2 ____ 3 ____ 4 ____ ____ 5

6

1 ____ 2 ____ 3 ____ 4 ____ ____ 6

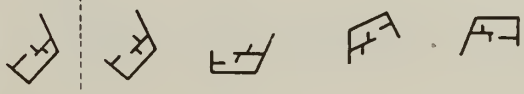
7

1 ____ 2 ____ 3 ____ 4 ____ ____ 7

8

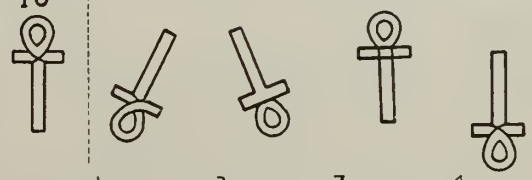
1 ____ 2 ____ 3 ____ 4 ____ ____ 8

9



1 ____ 2 ____ 3 ____ 4 ____ ____ 9

10



1 ____ 2 ____ 3 ____ 4 ____ ____ 10

11

1 ____ 2 ____ 3 ____ 4 ____ ____ 11

12

1 ____ 2 ____ 3 ____ 4 ____ ____ 12

13

1 ____ 2 ____ 3 ____ 4 ____ ____ 13

14

1 ____ 2 ____ 3 ____ 4 ____ ____ 14

15

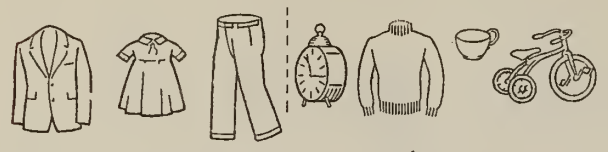
1 ____ 2 ____ 3 ____ 4 ____ ____ 15

Test 2. Score (number right) .....

TEST 3.

Directions: The first three things in each row are alike in some way. Find another thing in the same row which belongs with them. Put an X under it, and write its number on the line to the right.

A



1 2 X 3 4 2

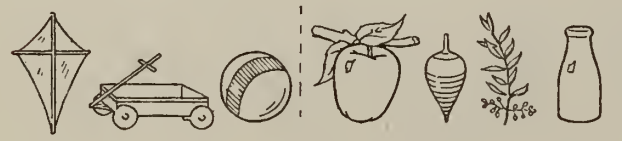
1

1 2 3 4 ___

2

1 2 3 4 ___

3



1 2 3 4 ___

4

1 2 3 4 ___

5

1 2 3 4 ___

6

1 2 3 4 ___

7

1 2 3 4 ___

8

1 2 3 4 ___

9

1 2 3 4 ___

10

1 2 3 4 ___

11

1 2 3 4 ___

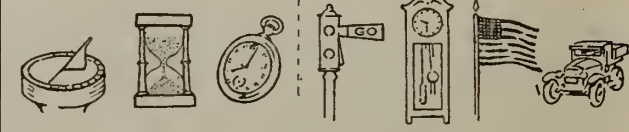
12

1 2 3 4 ___

13

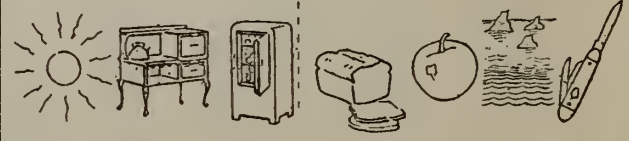
1 2 3 4 ___

14



1 2 3 4 ___

15



1 2 3 4 ___

Test 3. Score (number right).....

TEST 4.

Directions: Read each group of statements and draw a line under the correct answer. Write the number of the answer on the line to the right. See sample 0.

0. If the sun shines it is day.
The sun shines. Therefore

1 It will not rain 2 It is day
3 The moon may shine tonight 2 0

1. All four-footed creatures are animals
All horses are four-footed. Therefore

1 Creatures other than horses can walk
2 All horses can walk
3 All horses are animals ____ 1

2. Either the sun moves around the earth or the earth moves around the sun.
But the sun does not move around the earth. Therefore

1 The earth moves around the moon
2 The earth moves around the sun
3 The sun is larger than the earth ____ 2

3. Manuel runs faster than Harry.
Burt runs faster than Harry.
Which is the slowest of the three?

1 Burt 2 Manuel 3 Harry ____ 3

4. Jane is taller than Helen. Helen is taller than Barbara.
Which is the tallest: Jane, Helen, or Barbara?

1 Helen 2 Jane 3 Barbara ____ 4

5. All mammals are vertebrates
The cow is a mammal. Therefore

1 Some vertebrates live on land
2 Some mammals live in water
3 The cow is a vertebrate ____ 5

6. A is either B or C.
A is not C. Therefore

1 A is not B 2 A is B 3 C is B ____ 6

7. Either your cousin is older than you, or the same age, or younger.
But your cousin is not older, nor is he younger. Therefore

1 Your cousin is younger than you
2 Your cousin is older than you
3 Your cousin is the same age as you ____ 7

8. All circles are round figures.
The figure is not round. Therefore

1 It is not a circle 2 It is oval
3 It is either a square or a triangle ____ 8

9. All metals are solids.
Gold is a metal. Therefore

1 Gold is valuable 2 Gold is a solid
3 Metals are usually heavy ____ 9

10. Some fishes fly.
No birds are fishes. Therefore

1 All creatures that fly are fishes or birds
2 No fishes resemble birds
3 Creatures other than birds can fly ____ 10

11. Three boys are up on a ladder.
Tom is farther up the ladder than Paul.
Jim is farther up than Tom.
Which boy is in the middle position on the ladder?

1 Tom 2 Paul 3 Jim ____ 11

12. George Washington was a skillful general.
George Washington was President of the United States. Therefore

1 Skilled generals make good presidents
2 One President of the United States was a skillful general
3 Good presidents make skillful generals ____ 12

13. A is situated to the east of B.
B is situated to the east of C. Therefore

1 C is situated close to A
2 A is situated to the east of C
3 C is nearer to A than to B ____ 13

14. He is either honest or dishonest.
But he is not dishonest. Therefore

1 He is desirable for a position
2 He comes of honest people
3 He is honest ____ 14

15. A is equal to B.
B is equal to C. Therefore

1 B is larger than C 2 A is equal to C
3 A is equal to B plus C ____ 15

Test 4. Score (number right).....

TEST 5.

Directions: In each row of numbers below, there is one that is wrong. Find this wrong number among the answers to the right. Draw a line under it and write the letter on the line to the right. In Sample A, the correct answer is 9 and letter b is written on the line to the right.

		Answers	
Sample: A. 2 4 6 8 9 10	Sample: A.	a 8 b 9 c 4 d 10 e 2	*b* A
(1). 5 10 15 20 22 25 30		a 5 b 10 c 15 d 20 e 22	_____ 1
(2). 18 15 13 12 9 6 3		a 15 b 13 c 12 d 9 e 3	_____ 2
(3). 2 5 8 10 11 14 17		a 5 b 8 c 10 d 11 e 17	_____ 3
(4). 1 2 4 8 14 16 32		a 2 b 4 c 8 d 14 e 16	_____ 4
(5). 27 9 3 1 0 ⅓		a 9 b 3 c 1 d 0 e ⅓	_____ 5
(6). 3 4 7 8 11 12 14 15		a 3 b 14 c 15 d 7 e 8	_____ 6
(7). 3 9 27 76 81 243		a 9 b 27 c 76 d 81 e 243	_____ 7
(8). 25 24 22 19 18 16 13 12 9 10 7		a 25 b 22 c 19 d 13 e 9	_____ 8
(9). 1 2 4 7 11 15 16 22		a 15 b 16 c 22 d 2 e 4	_____ 9
(10). 12.5 11.4 10.3 9.8 9.2 8.1 7.0		a 11.4 b 9.8 c 9.2 d 8.1 e 7.0	_____ 10

Test 5, Score (number right).....

TEST 6.

Directions: Work these problems. Use the side of this page to figure on if you need to See sample problem A. (Read the problem.) The correct answer is 8, so the letter *b* is written on the line to the right.

A. There are 5 birds in the tree and 3 birds on the fence. How many birds are there?

Ans.: a 2 b 8 c 15 d 7 b A

1. Tom has 5 marbles. Bob has 4 marbles. Bill has 3 marbles. How many marbles do all three boys have

Ans.: a 1 b 2 c 12 d 60 ____ 1

2. Tickets to the kite show cost 10 cents. Jim's big brother bought 2 tickets. How much did he pay for them?

Ans.: a 20¢ b 2¢ c 12¢ d 8¢ ____ 2

3. Ben earns 4 dollars each month helping his father after school. He has earned 16 dollars. How many months has he been working?

Ans.: a 20 b 64 c $4 d 4 ____ 3

4. Seventy girl scouts were divided into 5 groups of equal size. How many girls were there in each group?

Ans.: a 15 b 14 c 20 d 3 ____ 4

5. How many marbles can you buy for 25 cents at the rate of 3 for 5 cents?

Ans.: a 15 b 75 c 33 d 40 ____ 5

6. Two boys had a watermelon stand at the ball game. They had 50 cents in the cash box to start with. They sold 40 slices of melon at 5 cents a slice. How much should they have in the cash box at the end of the day?

Ans.: a $2.00 b 80¢ c $3.00 d $2.50 ____ 6

7. Baseball mits which usually sold for 65 cents were sold for a short time for 25 cents less. Frank bought a mit at the lower price and gave the clerk 50 cents. How much change should he get back?

Ans.: a 25¢ b 20¢ c 10¢ d 5¢ ____ 7

8. At Camp No. 9 it took 10 boy scouts 3 days to set up camp. At Camp No. 12 the camp must be set up in one day. How many boys will be needed to do the work?

Ans.: a 3 b 30 c 27 d 13 ____ 8

9. George lives one-fourth of a mile from school. He goes home at noon for lunch. How far does he walk each day going to and from school?

Ans.: a ½mi. b 1mi. c ¾mi. d 1½mi. ____ 9

10. A newsboy delivered papers to 30 customers for a month. At the end of the month he collected $15. How much did each customer pay?

Ans.: a 50¢ b $2.00 c 5¢ d $5.00 ____ 10

11. There are 20 girls in the Sunday school class. Each week each girl gives 5 cents to go toward a fund for needy families. How much will all the girls give in 5 weeks?

Ans.: a $1.00 b 25¢ c $5.00 d $7.50 ____ 11

12. Richard saw a bicycle advertised for $21 at one-third off for cash. How much money will he need to buy it?

Ans.: a $14.00 b $7.00 c $18.00 d $9.00 ____ 12

13. How much will your mother have to pay for the cleaning of a rug 9 ft. wide and 12 ft. long at the rate of 20 cents a square foot?

Ans.: a $8.40 b $1.08 c $4.20 d $21.60 ____ 13

14. In a field meet, 20 events were listed for the day. Pupils from your school won 60 per cent of the events. How many events did you lose?

Ans.: a 4 b 3 c 8 d 12 ____ 14

15. A swimming pool is 60 ft. long and 30 ft. wide. The water in the pool is 4 ft. deep on the average. How long will it take to fill the pool if the water runs in at the rate of 90 cubic feet a minute?

Ans.: a 80min. b 5min. c 26min. d 45min. ____ 15

Test 6. Score (number right).....

TEST 7.

Directions: Draw a line under the word which means the same or about the same as the first word. Write the number of this word on the line to the right, as:

0. **blossom** [1] tree [2] vine [3] flower [4] garden *3* 0
1. **journey** [1] state [2] travel [3] end [4] fair ____ 1
2. **law** [1] rules [2] power [3] able [4] help ____ 2
3. **always** [1] larger [2] forever [3] know [4] apart ____ 3
4. **almost** [1] rarely [2] never [3] now [4] nearly ____ 4
5. **alarm** [1] blame [2] signal [3] address [4] comfort ____ 5
6. **damage** [1] manage [2] collect [3] injure [4] recover ____ 6
7. **announce** [1] keep [2] publish [3] reform [4] destroy ____ 7
8. **improve** [1] make [2] better [3] satisfy [4] admit ____ 8
9. **difficult** [1] different [2] pleasant [3] hard [4] task ____ 9
10. **despair** [1] mind [2] time [3] past [4] hopeless ____ 10
11. **consent** [1] occur [2] offer [3] oppose [4] agree ____ 11
12. **portion** [1] collect [2] part [3] make [4] refer ____ 12
13. **amuse** [1] afford [2] gift [3] game [4] please ____ 13
14. **lack** [1] use [2] want [3] admit [4] apart ____ 14
15. **cease** [1] consent [2] concert [3] stop [4] strain ____ 15
16. **disguise** [1] reveal [2] declare [3] show [4] mask ____ 16
17. **distinct** [1] success [2] clear [3] interest [4] noticed ____ 17
18. **sincere** [1] satisfactory [2] genuine [3] hopeful [4] noble ____ 18
19. **lofty** [1] tone [2] high [3] example [4] toil ____ 19
20. **extend** [1] refuse [2] remain [3] lengthen [4] revert ____ 20
21. **condemn** [1] false [2] blame [3] oppose [4] alarm ____ 21
22. **humble** [1] secure [2] dwelling [3] lowly [4] proud ____ 22
23. **expert** [1] average [2] master [3] business [4] student ____ 23
24. **apply** [1] piece [2] use [3] correct [4] mean ____ 24
25. **legal** [1] lawful [2] court [3] lawyer [4] humane ____ 25
26. **endeavor** [1] help [2] hero [3] attempt [4] harm ____ 26
27. **conclusion** [1] settlement [2] end [3] journey [4] right ____ 27
28. **obscure** [1] clear [2] hidden [3] odd [4] quaint ____ 28
29. **extraordinary** [1] prefer [2] unusual [3] particular [4] favorable ____ 29
30. **location** [1] relieve [2] choice [3] view [4] situation ____ 30
31. **imaginary** [1] existing [2] trifling [3] unreal [4] substantial ____ 31
32. **escort** [1] avoid [2] occasion [3] attend [4] remain ____ 32
33. **merit** [1] deserve [2] merry [3] desire [4] just ____ 33
34. **compile** [1] aid [2] ample [3] collect [4] answer ____ 34
35. **console** [1] empower [2] reduce [3] order [4] comfort ____ 35
36. **legislator** [1] elector [2] lawmaker [3] minor [4] citizen ____ 36
37. **revert** [1] persist [2] perplex [3] return [4] unknown ____ 37
38. **significance** [1] prevention [2] treatment [3] meaning [4] certainty ____ 38
39. **petulant** [1] oppressive [2] stagnant [3] sprightly [4] peevish ____ 39
40. **dispute** [1] disturb [2] question [3] subdue [4] disguise ____ 40
41. **deplete** [1] complete [2] final [3] exhaust [4] fearless ____ 41
42. **compassionate** [1] respectful [2] free [3] sly [4] kind ____ 42
43. **deter** [1] meddle [2] applaud [3] hinder [4] reline ____ 43
44. **complex** [1] simple [2] compliment [3] complexion [4] mixed ____ 44
45. **dispatch** [1] discount [2] mood [3] relieve [4] haste ____ 45
46. **venerable** [1] admirable [2] aged [3] youthful [4] reliable ____ 46
47. **conceited** [1] variable [2] connected [3] vain [4] conquest ____ 47
48. **malign** [1] insure [2] slander [3] muffle [4] invade ____ 48
49. **facile** [1] fragile [2] futile [3] easy [4] remote ____ 49
50. **empower** [1] enlarge [2] permit [3] surpass [4] indulge ____ 50

Test 7. Score (number right).....

IOWA SILENT READING TESTS

NEW EDITION

By H. A. Greene
Director, Bureau of Educational Research and Service, University of Iowa

and V. H. Kelley
University Appointment Office, University of Arizona, Tucson, Arizona

Median Score	
Grade Percentile	
Grade Equiv.	
Age Equiv.	

Elem.

AM

(Revised)

New Edition

ELEMENTARY TEST : FORM AM
(Revised)

Name.....Age.....Grade.....
Years Months

Sex.....Date.....19....Teacher.....
Boy Girl

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

No.	Test	Stand. Score
1	Rate: A + B	
	Comprehension: A + B	
2	Directed Reading	
3	Word Meaning	
4	Paragraph Comprehension	
5	Sentence Meaning	
6	Location of Information A. Alphabetizing	
	B. Use of Index	

PROFILE CHART

Score Scale	TEST 1R	1C	2	3	4	5	6A	6B	Median Score
220									
210									
200									
190									
180									
170									
160									
150									
140									
130									
120									
110									
100									
90									

Published 1943 by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois

Edition a

TEST 1. RATE-COMPREHENSION — PART A

DIRECTIONS. Read the story below very carefully so that you can answer questions about it. At the end of *one minute* you will hear the word "Stop." Put a circle around the word you are then reading and wait for further instructions.

SLATE

[1] Slate is a name which is used to include many different kinds of rock. [2] The most common kind is that made up of clay and silex and is generally known as clay slate. [3] Slate is found in layers below the surface of the earth. [4] Geologists call these layers strata. [5] The sheets of slate are lying in almost all positions, ranging from horizontal to vertical. [6] In some places they appear to have been folded like cloth or paper before the rock was hardened. [7] Millions of years of changes within the earth were probably required for the slate to reach its present state. [8] Slate splits easily into slabs and thin sheets. [9] It is very hard, although it varies in hardness and structure, depending upon the quarries from which it is taken. [10] Many different colors of slate have been found, but most of it is bluish black.

[11] The principal slate quarries of the country are located in the states of Pennsylvania and Vermont. [12] The Pennsylvania quarries are the larger. [13] Those of Vermont furnish the finer quality of slate. [14] A slate quarry differs from that of any other kind of rock quarry. [15] Since the stone is in thin layers, it must be taken out very carefully or it will be worthless. [16] The loosening of the layers is usually done with wedges. [17] Blasting is sometimes necessary to loosen the rock. [18] However, slate is rarely blasted out except at the opening of the quarry. [19] The quarry follows the dip of the strata and in time may become quite deep. [20] Grooves are cut in the rock to limit the size of the slabs split off.

[21] The greatest use made of slate is in roofing buildings. [22] It is very desirable for this purpose because it resists all actions of the weather and is also fireproof. [23] The slate is put on the roof in much the same way as shingles. [24] From a distance it closely resembles the shingle roof, except for the difference in color. [25] Almost all the blackboards found in schoolrooms are made from slate. [26] It is especially suitable for this purpose because the surface is smooth and can be easily cleaned and because it naturally splits into thin sheets or layers. [27] The softest varieties of slate are used for making pencils.

2 ← *Wait for further directions. Do not answer any of the questions until you are told to do so.*

DIRECTIONS. Without looking at the story you have just read, answer these questions about it. You will have *two minutes* for this work.

Read each question and the three answers given below it. Select the answer you think is correct. Notice the number of this correct answer. In the answer spaces at the right fill in the space under this number. The sample is answered correctly. ←

SAMPLE. Why are grooves cut in the slate?
1 to test its hardness 2 to limit the size of the pieces 3 to smooth the surface 1 2 3

1. In what part of the United States is most of the slate found?
1 West 2 South 3 East 1 2 3
2. To which of these natural forms is the name *slate* applied?
1 metal 2 rock 3 earth 1 2 3
3. What are the places called from which slate is taken?
1 quarries 2 mines 3 caves 1 2 3
4. What variety of slate is most suitable for making pencils?
1 medium 2 soft 3 hard 1 2 3
5. Blasting is used only when —
1 small pieces are wanted 2 surface rocks are being removed 3 the slate layers run deep ... 1 2 3
6. In what form is slate taken from the earth?
1 slabs 2 rolls 3 chunks 1 2 3
7. Slate is suitable for blackboards because it is —
1 smooth and easily cleaned 2 fireproof 3 soft and easily grooved 1 2 3
8. What is the most common use made of slate?
1 pencils 2 blackboards 3 roofing 1 2 3
9. How long has it taken slate to reach its present state?
1 a thousand years 2 a short time 3 millions of years 1 2 3
10. Slate is considered desirable for use instead of shingles because it — ←
1 looks like shingles 2 resists fire and weather 3 is heavy 1 2 3

RATE: A + B	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
Standard Score	79	81	84	86	88	90	92	94	97	99	102	105	108	111	115	119	122	125	128	131	133	135	138	140	142	144	147	149	151	153	155	156	158	160	162	163	165	167

RATE: A + B	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
Standard Score	168	170	171	172	174	175	176	178	179	180	181	182	183	185	186	187	188	190	191	193	195	197	200	203	206

DIRECTIONS. Without looking at the story you have just read, answer these questions about it. You will have *two minutes* for this work.

Read each question carefully. Then fill in the answer space in the margin under the number of the answer you think is right. The sample is answered correctly.

SAMPLE. Where was the castle bakery usually located?
1 in the cellar 2 in the tower 3 in the court

1. What was sometimes found in the outer court of a large castle?
1 musician's gallery 2 hunting grounds 3 village 1
2. In the large castles of the very wealthy the knight and his family usually slept in —
1 the great hall 2 bedrooms 3 the gallery 2
3. What often covered the floor of a castle belonging to a wealthy knight?
1 carpet 2 tapestries 3 tile 3
4. What was the most important use of a castle in olden times?
1 protection 2 town center 3 home for owner 4
5. Where did the servants of the castle household sleep?
1 outer court 2 great hall 3 bedrooms 5
6. In the very old castles the smoke from fires for cooking escaped through —
1 a hole in roof 2 a chimney 3 windows 6
7. How would life in an ancient castle be considered today?
1 simple 2 uncomfortable 3 comfortable 7
8. In the older castles, where was the food cooked?
1 flat stones 2 fireplace 3 large ovens 8
9. What caused the rooms in the castle to be so dark?
1 tapestries over windows 2 walls not painted 3 small windows 9
10. The furnishings of small castles may be best described as —
1 ornamental 2 simple 3 elaborate 10

Wait for further directions. Do not answer any of the questions until you are told to do so.

LIFE IN A CASTLE IN OLDEN TIMES

1 In olden times a knight's castle was planned mainly for the protection of his family and his followers. 2 However, many of the richer noblemen built splendid castles which became the real homes of their families. 3 Around the castle and close to it for protection, the followers of the lord of the castle made their homes. 4 In this way a village grew up, often within the outer court of the castle. 5 Here would be found the forge or blacksmith shop where horses were shod and where swords and armor were made. 6 In the court also were the bakery, the carpenter shop, the stables, and usually the church. 7 In some castles the outer court was often large enough to include the village, a garden, a water mill, a poultry yard, and cultivated fields. 8 Many had lakes of fresh water for use in time of siege. 9 In such a castle life was not as simple and dull as one might think.

10 The daily life of the castle was centered in the large main room known as the hall. 11 In the earlier days and in the castles of the less wealthy knights the hall was only a large, bare room. 12 On some flat stones in the center meat was cooked, and the smoke found its way out through a hole in the roof as best it could. 13 As time passed or the owners became richer and more powerful, towers of more than one story were built. 14 Sometimes fireplaces with flues were made. 15 The floors were tiled. 16 The walls were hung with rich tapestries, cloth of gold, banners, and shields. 17 Long oaken tables with wooden benches stood ready for use at mealtime. 18 The table of the master of the castle usually stood on a platform at one end of the hall. 19 At the opposite end was a gallery for the musicians.

20 When bedtime came, the people of the household slept in the castle hall. 21 For the servants coarse mattresses were laid on the hard floors. 22 The bed of the master of the castle and his lady commonly stood at the farther end of the hall, usually separated from the rest of the room by curtains. 23 In the larger castles separate bedrooms were built on the upper floors.

24 In the smaller castles the furnishings of these rooms were very simple. 25 In the homes of the wealthy there was great display. 26 The high posts of the beds were sometimes overlaid with gold, inlaid with ivory, or ornamented with precious stones. 27 The bed coverings were of rich silk or fur with golden fringe. 28 The chests for clothing were handsomely carved. 29 Jewels were kept in smaller chests covered with leather.

30 In spite of the rude magnificence which was found in many of these castles, there was little that people today would call comfort. 31 The heavy stone walls must have been cold, since they were so thick. 32 The rooms were not as light as we would wish our rooms to be. 33 It was not safe to have the windows very large. 34 Even large windows would not let in much sunlight if cut into a wall ten or fifteen feet thick. 35 The rooms were often made more cheerful, therefore, by painting the walls with crude but bright and cheery designs.

TEST 1. RATE-COMPREHENSION — PART B

DIRECTIONS. Read this story very carefully so that you can answer questions about it. When you hear the word "Stop," put a circle around the word you are reading and wait for further instructions.

COMPREHENSION

No. RIGHT: A + B	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Standard Score	93	98	103	109	114	118	123	128	132	136	140	144	148	152	157	162	167	172	178	185	192

TEST 6. PART B: USE OF AN INDEX

DIRECTIONS. The answers to the questions in Column 2 are found in the index below. First read the question and then find the desired answer by looking under the proper topic in the index. Then locate your answer among the possible answers given with the question and fill in the answer space in the margin which is numbered the same.

Study the samples carefully before you try to answer the questions.

Look at Sample A. In the index under "Oregon" you will find the word "lumber" and the page reference, 173. 173 is second among the answers given with the question; so the second answer space has been filled in.

Look at Sample B. See if you can find the page reference in the index. The correct answer space is marked.

Answer the remaining exercises the same way.

INDEX

Canada: 45–53; coal, 244; dairying, 157; flax, 153; forests, 97; fur farms, 176–177; industrial regions, 263; map, 47; trapping, 176; wheat, 95–98.

China: 22–24; deserts, 216; farming, 125, 129–131; lack of dairy cattle, 130; lack of manufacturing, 262; plains, 129; population, Fig. 24, page 126; rice, 131; silk, 131, 142; troubled condition, 124.

Cotton: 147–152; Australia, 151; bales, 149; bolls, 149; Egypt, 150; Korea, 150; mills, 149–150; Russia in Asia, 152; South Africa, 154; Sudan, 156; United States production, Fig. 42, page 148.

Dairying: 156; in Holland, 158.

Geology: 20–24; defined, 21; important divisions, 22; fields, 24.

Germany: 83–85, 235; cities, 82; dairying, 158; farming, 83; fisheries, 205; manufacturing, 267; potatoes, 82; rainfall, 82; sugar beets, 82.

Grapefruit: California, 135; Florida, 133–134; Texas, 136.

Herding: Persia, 219; reindeer in Alaska, Fig. 25, page 192; reindeer in Lapland, 192; Russia in Asia, 219; semi-deserts, 213–214. *See also* Grazing.

India: 22–27; animals, 93; barley, 90; cotton, growth of, 151; crowding, 90; dairying, 161; fakirs, 91; farmhouses, 92; farming, 90; governed by England, 90–91; rainfall, 90; rice, 90; seasons, 90; silk, 141.

Japan: 267–269; cherries, 132; farming, 127–128; fisheries, 206; forests, 127; map opposite page 269; poverty, 128; rice, tea, 142; temperate belt, 127.

Oregon: apples, 138; automobiles, 99; horses, 99; irrigation, 138; lumber, 173; salmon, 205, 207; wheat, 98.

Railroads: 41–45; Alaska, 185; deserts, 211–212; east of Caspian Sea, 104; Lapland, 194; number of miles in United States, 45; Moscow, 196; spur track, 39. *See also* Transportation.

Scandinavian Peninsula: 195–196; mountains, 193. *See also* Norway.

Science: defined, 18; American Men of, 22.

South Africa: 94, 105–110; cotton, 151; oranges, 138; ranching, 163; sisal, 155.

Texas: map of, 75; admission to Union, 78.

Trade: 282–288; advantages for, 283–284; Arctic Ocean, 196; Eskimos with white people, 188; Hawaiian sugar, 115.

Venice: 23, 280–282; Grand Canal, 280; manufacturing, 282.

SAMPLES.

A. What page discusses lumbering in Oregon?
1 **138** 2 **173** 3 **92** 4 **98** 5 **185** . . A

B. What page gives information about fisheries in Germany?
1 **156** 2 **235** 3 **83** 4 **205** 5 **82** . . B

1. Next to what page can you find a map of Japan?
1 **127** 2 **142** 3 **206** 4 **269** 5 **282** 1
2. What page tells about dairy products in Holland?
1 **127** 2 **131** 3 **156** 4 **157** 5 **158** 2
3. Does the index tell where to find the number of miles of railroad in the United States?
1 Yes 2 No 3
4. What is the number of the figure which tells about cotton production in the United States?
1 **24** 2 **39** 3 **42** 4 **45** 5 **196** . . . 4
5. Where is there a reference to grapefruit in Texas?
1 **trade** 2 **grapefruit** 3 **Texas** 4 **fruit** 5
6. On what page can a definition of geology be found?
1 **21** 2 **22** 3 **23** 4 **24** 5 **25** 6
7. What page tells about the wheat crop in Oregon?
1 **95** 2 **98** 3 **99** 4 **138** 5 **205** . . 7
8. Where is English government in India discussed? 1 **22–27** 2 **83–85** 3 **90–91** 4 **92–93** 5 **133–134** 8 **12**
9. Where (on what page) will you find a map of Canada? 1 **22** 2 **45** 3 **47** 4 **97** 5 **176** 9
10. Does the index tell where to find something on the schools of India? 1 Yes 2 No 10
11. On what page will you find a figure showing how many people live in China?
1 **24** 2 **124** 3 **125** 4 **126** 5 **129** 11
12. On what page can you find a figure about herding reindeer in Alaska?
1 **192** 2 **194** 3 **213** 4 **214** 5 **219** 12
13. On what page is ranching in South Africa discussed? 1 **105** 2 **138** 3 **151** 4 **155** 5 **163** 13
14. What topic gives another reference to herding?
1 **cattle** 2 **dairying** 3 **farming** 4 **grazing** 14
15. Where (on what page) is a map of Texas given?
1 **47** 2 **75** 3 **78** 4 **92** 5 **193** . . . 15
16. Where will you find out about cotton in Egypt?
1 **147** 2 **148** 3 **149** 4 **150** 5 **154** 16
17. Is there a reference in this index to British Men of Science? 1 Yes 2 No 17
18. Where are the industries of Canada referred to?
1 **153** 2 **157** 3 **176** 4 **263** 5 **277** 18

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

NUMBER RIGHT: B	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Standard Score	100	107	114	120	125	130	134	139	143	147	152	156	160	164	168	172	176	180	188

TEST 2. DIRECTED READING—FIRST SELECTION

DIRECTIONS. A story is given below. Read each question and find the sentence in the story which answers it. Notice the number of this sentence. Find this number among the answer spaces at the right of the question and fill in the space under it.

Look at Sample A below. Space No. 2 is filled because the question asked in the sample is answered in sentence No. 2 in the story. Study Sample B. Read the question. Sentence No. 1 gives the answer to the question; so space No. 1 should be filled in. Do it now. Answer the other questions in a similar manner.

You will have *five minutes* for this work. You may read parts of the story again if you need to do so.

SUGAR CANE

[1] Sugar is made from several different kinds of plants. [2] In the United States, sugar cane is one of the important plants from which we get sugar. [3] In the sugar-cane plant, the stalks or canes are jointed like those of the Indian corn. [4] For this reason it is sometimes called a cousin of the Indian corn. [5] The plant grows best in a tropical or very warm climate.

[6] In preparing the land for the planting, it is first plowed. [7] Ridges are then thrown up from six to eight feet apart. [8] A shallow ditch is made in the top of each ridge. [9] Two or three rows of jointed sections cut from the main stalk are laid end to end in this trench. [10] On large plantations machines cover the stalks. [11] In the smaller fields men with hoes do the work.

[12] Several canes bearing grass-like leaves grow from each root. [13] The plants grow rapidly under the heat of the Southern sun. [14] By harvest time they reach a height of from five to twenty feet and a diameter of about two inches. [15] For a number of years the cane will spring up from the same roots, but gradually it becomes poorer in quality. [16] The old root is then plowed up and new cuttings are planted. [17] Where labor is plentiful, the planting is done each year. [18] In Louisiana the stubble will produce a good crop the second or even the third year.

[19] Harvesting usually begins in October. [20] It is better to let the cane have just as long as possible to grow, for sugar forms in the juice of the cane most rapidly in the latter part of the life of the cane stalk. [21] However, it must be cut before frost injures the quality of the juice in the stalk. [22] When the canes are cut, they are taken in bundles to the mills, where the juice is taken out by running the stalks through heavy rollers. [23] The crushed stalks are used as fuel for the engines which run the mills.

[24] The juice, which is a yellowish-green liquid having a pleasant odor, is then strained and boiled until it thickens. [25] The molasses which we use in our homes is obtained from the first boiling of the juice. [26] Raw sugar is not secured until a more careful refining of the juice has taken place.

SAMPLES.

A. What plant produces much of the sugar made in the United States? . . . . . A

B. Do many kinds of plants produce sugar? . . . B

1. Which sentence tells one way in which sugar cane and corn stalks are alike? 1
2. Does sugar cane grow better in a hot or a cold country? 2
3. What relation is the sugar-cane plant to corn? 3
4. How far apart are the rows of cane planted? . 4
5. What is the first step in getting land ready for planting sugar cane? 5
6. How do owners of large sugar-cane fields cover the cane stalks when planting? 6
7. What kind of leaves does the sugar-cane plant grow? 7

4

8. How tall does sugar cane sometimes grow? . . . 8
9. Does the sugar-cane plant grow fast or slowly? 9
10. Under what conditions are new cane stalks planted each year? 10
11. When the old plants fail to produce, what is done to get a better crop? 11
12. Where could a man who raises sugar cane get results without planting each year? 12
13. When is the cutting of sugar cane usually begun? 13
14. What danger is there in waiting too long before harvesting sugar cane? 14
15. When does the cane juice become richest in sugar? 15
16. How is the juice removed from the stalks? . . 16
17. What color is the cane juice? 17
18. What product is made after the cane juice has been cooked only once? 18
19. What are the stalks used for after the juice has been removed? 19
20. What is the process called by which the raw sugar is obtained? 20

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

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
2	3	4	5	6
3	4	5	6	7
5	6	7	8	9
6	7	8	9	10
8	9	10	11	12
10	11	12	13	14
10	11	12	13	14
13	14	15	16	17
13	14	15	16	17
15	16	17	18	19
17	18	19	20	21
18	19	20	21	22
20	21	22	23	24
20	21	22	23	24
21	22	23	24	25
22	23	24	25	26
22	23	24	25	26
23	24	25	26	27

TEST 6. PART A: ALPHABETIZING; USING GUIDE WORDS

Column 1

Directions. This test will show how well you are able to locate words in an alphabetical list such as in the dictionary.

Study the sample below. List A contains the words to be located. List B is made up of guide words such as are placed at the top of a page of a dictionary to tell you which words are included on that page.

For each word in List A you are to find the pair of guide words between which the word would be found in an alphabetical list. Notice the number of this pair of words. Then fill in the answer space under this same number at the right of the word in List A.

Sample

List B (Guide Words)	List A (Words to Be Located)	1	2	3	4	5
1. and — are	bed			▮		
2. arm — ask	car					▮
3. bad — big	any	▮				
4. bill — bird						
5. cab — cat						

For example, *bed*, the first word in List A in the sample, will be found in the dictionary between *bad* and *big*. This pair is No. 3 in List B; so the third answer space after *bed* is filled in. The second word in List A, *car*, is found between *cab* and *cat*, the fifth pair in List B. Therefore, answer space No. 5 has been filled in after *car*. Where would the third word, *any*, be found? This sample exercise is answered correctly by filling in answer space No. 1.

Do the exercises in Column 2 in a similar way. Notice that some guide words may be used more than once and some may not be used at all.

Column 2

List B (Guide Words)	List A (Words to Be Located)
1. able — action	apples 1
2. after — agree	ail 2
3. aid — also	about 3
4. apart — applied	authority . . . 4
5. apply — autumn	again 5
6. bill — bite	call 6
7. bitter — blind	birds 7
8. cake — called	cars 8
9. care — cart	hands 9
10. comb — coming	general 10
11. gem — gentle	heard 11
12. gently — get	kitchen 12
13. give — goose	read 13
14. half — hang	know 14
15. head — heart	saw 15
16. kind — knee	road 16
17. knob — known	upon 17
18. make — most	undress 18
19. rain — rat	yeast 19
20. reach — ready	worked 20
21. reason — roll	
22. sack — said	
23. sail — salt	
24. sat — say	
25. uncle — union	
26. unite — use	
27. well — who	
28. words — worm	
29. yard — yarn	
30. year — yes	

11 ➔

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

Number Right: A	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Standard Score	116	121	126	129	132	134	137	139	141	143	146	149	151	154	157	160	164	168	172	177	182

TEST 2. DIRECTED READING—SECOND SELECTION

DIRECTIONS. A story is given below. Read each question and answer it just as you did in the first selection. The sample is answered correctly. You will have *five minutes* for this work. ➜

STORMING A CASTLE IN OLDEN TIMES

[1] In olden times, no man was safe unless he could protect himself with his own strong arm or the arms of his followers. [2] Thus the home of a knight had to be well fortified. [3] Most of the great castles of that time were located on high, rocky points near a river or lake. [4] In this way they could be entirely surrounded by a moat, or deep ditch filled with water. [5] This moat could be crossed only by means of a drawbridge. [6] The enemy thus would find it very difficult to reach the castle. [7] The castle walls were usually built of heavy stone and were very high and thick.

[8] After looking at the ruins of one of these ancient castles and seeing how they were fortified, it is easy to see why only the bravest enemy ever tried to capture one of them. [9] The easiest way, if the foe could spare the time, was to lay siege to the castle. [10] This meant surrounding it, cutting off its food supply, and waiting until those within were starved into surrendering. [11] However, if the enemy could not wait to take the castle by siege, there were three common and usually quicker methods.

[12] One way was to try to batter down the walls or gates by means of a machine called a battering-ram. [13] This usually consisted of a heavy iron-headed beam slung on chains between towers on wheels. [14] These towers were moved up close to the walls by the enemy. [15] Then the iron head of the beam was crashed into the gates or against the walls.

[16] Often the walls were too strong to be broken down by this battering-ram. [17] Then the enemy must use his second method of attack. [18] This meant that he must get to the top of the walls and overpower the defenders. [19] For this purpose a tall wooden tower as high as the castle walls was built and set on rollers. [20] The moat was then filled with rocks and trees to make a roadway. [21] Then the tower, filled with men, was rolled across the moat and up to the wall. [22] The moment it was near the walls, a drawbridge was let fall from the top of the tower to the wall. [23] The attackers rushed across, and the battle was on. [24] Of course, the defenders of the castle were not idle. [25] Heavy stones were hurled upon the tower to wreck it. [26] Often they tried to burn it and the men by throwing blazing tar and pitch upon the tower.

[27] Another method of attack was to try to undermine the walls of the castle. [28] If the walls rested on rock, this method of attack was usually not successful. [29] But if the walls were built on soft soil, it was often possible for the enemy to dig an underground passage under the very base of the walls. [30] The top of the passage was supported by heavy beams. [31] These kept the roof from caving in while the digging was going on. [32] Later these beams were set on fire, with the result that the top of the passageway would fall in and with it the portion of the wall above it. [33] Through this break in the wall the enemy would rush, with a good chance of winning a victory.

SAMPLE. Which sentence tells how a knight protected himself in olden times? .....

1. What kind of place was usually chosen for a castle? 1
2. How did a friendly visitor get across this deep ditch to the castle gate? 2
3. What name was given to the water-filled ditch around the castle grounds? 3
4. Of what were the castle walls usually made? . 4
5. What was the easiest way of taking a castle in olden times? 5
6. What word describes the man who would try to take a large castle? 6
7. What is meant by laying siege to a castle? . . 7
8. How was a battering-ram made? 8
9. Were castle walls sometimes difficult to crush with a battering-ram? 9
10. What part of the battering-ram was used to break down the walls? 10

5➜

11. What was a second method of attack, used when the walls could not be crashed? 11
12. What did the enemy usually use to get to the top of the castle walls? 12
13. What did the enemy use to get across from the tower to the castle wall? 13
14. What was used to make a roadway close up to the castle when the attack was made? 14
15. What did the defenders often use to try to burn the enemy? 15
16. How did the men in the castle try to crush the movable towers? 16
17. What was the third common method of attack? 17
18. Was undermining a good method when the castle was built on soft soil? 18
19. How did the enemy keep the tunnel from caving in while it was being dug? 19
20. What made the castle wall cave in when the enemy was ready to attack? 20

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

Number Right	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Standard Score	100	105	110	114	118	121	124	127	129	132	134	137	139	141	143

➜

Number Right	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Standard Score	146	148	150	152	154	156	158	160	163	165	167	170	172	174	176

Number Right	30	31	32	33	34	35	36	37	38	39	40
Standard Score	178	180	182	184	186	189	191	194	197	201	205

1	2	3	4	5
1	2	3	4	5
2	3	4	5	6
4	5	6	7	8
5	6	7	8	9
8	9	10	11	12
8	9	10	11	12
10	11	12	13	14
12	13	14	15	16
15	16	17	18	19
15	16	17	18	19
18	19	20	21	22
18	19	20	21	22
20	21	22	23	24
20	21	22	23	24
24	25	26	27	28
24	25	26	27	28
27	28	29	30	31
29	30	31	32	33
30	31	32	33	34
31	32	33	34	35

TEST 5. SENTENCE MEANING

DIRECTIONS. Read each question. If the answer is "Yes," fill in the space under YES in the margin. If the answer is "No," fill in the space under NO. Study the sample. Do not guess.

SAMPLE. Are all people dishonest? ..... YES [ ] NO [■]

1. Is a dime less in value than a nickel? 1
2. Can we see things clearly in a thick fog? 2
3. Is geography studied in public schools? 3
4. Are appearances sometimes deceiving? 4
5. Could some accidents be prevented? 5
6. Do newspapers ever print untrue statements? 6
7. Do good students make a habit of missing class? 7
8. Will a difficult task be performed easily? 8
9. Do all problems deal with arithmetic? 9
10. Will a man usually be anxious to work if he is very tired? 10
11. Does superior intelligence always insure the success of a person? 11
12. Is an index the same as a table of contents? 12
13. May it become a habit for a person to impose on others? 13

10

14. May great care help to prevent mistakes? 14
15. Does it take courage to volunteer to perform a very dangerous task? 15
16. Does the friendship of a cheerful person usually make us unhappy? 16
17. Are all celebrations characterized by extravagance? 17
18. Can one become accustomed to doing difficult tasks? 18
19. Does an increase in population require a greater food supply? 19
20. Should free people be expected to work for nothing? 20
21. Are there ever objectionable people in a democratic country? 21
22. Will a person always be insulted if he is stopped on the street? 22
23. Is it always a good thing to know the rules when playing a game? 23
24. Do most children attend the public school in the summer time? 24
25. Will a person who is seriously ill be likely to seek medical aid? 25
26. Do good deeds sometimes result in satisfactory rewards? 26
27. Should a diligent worker ever be given a satisfactory reward for his work? 27

Do not turn this page until you are told to do so. *No. Right*..... *No. Wrong*..... *Right minus Wrong*.....

Right minus Wrong	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
Standard Score	104	108	112	115	118	121	123	126	129	131	133	136	138	140	143	145	148	150	153	156	159	163	166	170	174	178	183	188

TEST 3. WORD MEANING

6

DIRECTIONS. One of the four numbered words in each exercise means almost the same as the first word. Find the word. Note its number. Then mark the answer space in the margin which is numbered the same.

SAMPLE. *Little* — 1 real 2 light 3 small 4 brittle

1. *Quick* — 1 fast 2 away 3 quiet 4 thick 1
2. *Silently* — 1 madly 2 nightly 3 quietly 4 quickly 2
3. *Sound* — 1 words 2 noise 3 talk 4 lesson 3
4. *Slope* — 1 boast 2 level 3 slant 4 scope 4
5. *Allow* — 1 make 2 do 3 place 4 permit 5
6. *Power* — 1 strength 2 storm 3 powder 4 engine 6
7. *Frock* — 1 sheep 2 dress 3 flock 4 ducks 7
8. *Calm* — 1 cold 2 balmy 3 quiet 4 warm 8
9. *Slam* — 1 solve 2 bang 3 perform 4 shout 9
10. *Brave* — 1 honest 2 smart 3 bold 4 skillful 10
11. *Arouse* — 1 believe 2 stand 3 awaken 4 notice 11
12. *Expert* — 1 unusual 2 expensive 3 honest 4 skillful 12

6

13. *Amount* — 1 some 2 sum 3 many 4 part 13
14. *Pause* — 1 think 2 look 3 stop briefly 4 breathe slowly 14
15. *Lawfully* — 1 carefully 2 legally 3 manfully 4 improperly 15
16. *Misuse* — 1 disturb 2 use 3 mistake 4 mistreat 16
17. *Sovereign* — 1 state 2 law 3 country 4 ruler 17
18. *Abominable* — 1 violent 2 right 3 horrible 4 sure 18
19. *Clergyman* — 1 salesman 2 storeman 3 preacher 4 teacher 19
20. *Desolation* — 1 condition 2 destination 3 prosperity 4 destruction 20
21. *Entice* — 1 attract 2 endure 3 enter 4 advise 21
22. *Assert* — 1 send 2 state positively 3 look carefully 4 desert 22
23. *Violate* — 1 transgress 2 fail 3 relate 4 visit 23
24. *Judicious* — 1 happy 2 foolish 3 free 4 wise 24
25. *Diligent* — 1 funny 2 busy 3 skillful 4 pretty 25
26. *Abridge* — 1 condense 2 lengthen 3 end 4 cross 26
27. *Defile* — 1 lose 2 find 3 file 4 soil 27

Go right on to the next page.

TEST 4. PARAGRAPH COMPREHENSION

DIRECTIONS. Read each paragraph carefully, and then study the questions *A*, *B*, and *C* at the right. Select the correct answer. Notice the number of this answer. In the margin at the right, fill in the answer space under this number.

1. A pencil makes a mark when the surface on which it is scratched is rough and hard enough to wear off a part of the lead. A pencil will not write on a pane of glass, because it is so smooth that the pencil will glide over the surface. It will not write on anything very soft, because it will not wear off enough of the lead to make a mark. When in use, a pencil keeps getting shorter and shorter, because a part of the lead is being left on the paper.

1

A. Choose the best title for the paragraph.
1 How a Pencil Is Made 2 How a Pencil Writes 3 Writing on a Hard Surface .... A

B. Why is it difficult to write on a pane of glass with a lead pencil? 1 Glass is too smooth. 2 Pencil is too hard. 3 Lead is too soft. ..... B

C. The lead in a pencil wears down faster when writing on a — 1 pane of glass 2 sheet of smooth white paper 3 piece of wrapping paper .. C

2. The Boy Scout movement has spread from its first organization in 1907 until fifty-seven countries, representing over 90 per cent of the population of the world, have adopted the Scout program. Scout troops dot every corner of our own country. More than 800,000 Scouts from Maine to California are doing their daily good turns.

2

A. Choose the best title for the paragraph. 1 Spread of the Boy Scout Movement 2 Importance of Scouting 3 First Organization of Boy Scouts A

B. In how many countries are Boy Scout troops organized? 1 the United States only 2 90 countries 3 57 countries ..... B

C. The number of Scouts in the United States is more than — 1 300,000 2 800,000 3 1,600,000 C

3. Flax grows in the cold-temperature belts. Flax can stand cold and drought pretty well; but a fair amount of rain is necessary in order to have a good quality of flax. Growing flax and getting the fiber from it when it is grown are both hard, slow tasks. Fields of flax have to be weeded carefully by hand. The stalks also have to be softened under water by letting them decay before the fibers can be pulled off the woody core of the stalk.

3

A. Choose the best title for the paragraph.
1 The Nature of Flax 2 Temperature Needed for Flax 3 Conditions for Growing Flax A

B. Why is the production of flax slow and expensive? 1 It must be protected from cold. 2 It must be cultivated by hand. 3 It must have plenty of water..... B

C. The fibers of flax can be separated only — 1 during the rainy season 2 when the stalks have been soaked in water 3 after they have been frosted C

4. Hot springs often bring large amounts of fine rock waste to the surface with the steaming water. This waste is then deposited around the opening of the spring, where in time it forms a hard mound several feet high with a crater in the center. Although seldom over sixty feet in height, the resemblance of these mounds to true volcanoes has given them the name of "mud volcanoes."

4

A. Choose the best title for the paragraph.
1 How Hot Springs Are Formed 2 How Mud Volcanoes Are Made 3 Height of Volcanoes A

B. What forms the crater-like openings around hot springs? 1 rock deposits 2 soft mud 3 petrified wood ..... B

C. Few mud volcanoes exceed a height of —
1 sixty feet 2 six inches 3 six feet .. C

5. Before 1880 only a few thousand immigrants came to this country from Italy. After the above year they began to come in large numbers. The number varied from year to year, but often it ran into the hundreds of thousands. Most of the Italian immigrants came from southern Italy, where the population is very dense and where living conditions are very poor. Today there are more Italians in New York City than in Naples. The Italian immigrants do not all remain in New York but may be found in almost every American city.

5

A. Choose the best title for the paragraph. 1 Italian Immigration to America 2 How Italians Come to This Country 3 Why Italians Come to New York A

B. Which of these cities has the largest Italian population? 1 Naples 2 San Francisco 3 New York B

C. Italian immigration to this country was heaviest from — 1 southern Italy 2 northern Italy 3 central Italy C

Go right on to the next page.

GATES BASIC READING TEST

For Grade 3 (Second Half) Through Grade 8

TYPE C. Reading to Understand Precise Directions

FORM 1

Write your name here . . . . . .

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

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

This is to be a reading test. You are to read a number of paragraphs. Each paragraph tells you to make some sort of mark with your pencil to show that you have understood the paragraph. Do exactly what the paragraph tells you to do. Make the marks quickly—do not waste any time trying to make pretty drawings. The purpose of the test is to see how many of the paragraphs you can read in a short time. Don't waste any time. Don't look at anyone else's paper. Remember, you must do exactly what the paragraph tells you to do. Don't make any marks other than those the paragraph tells you to make. Wait until you are told to "Begin," and then turn the page and work as quickly and as accurately as you can until you are told to "Stop!"

Do Not Turn the Page Until You Are Told to Begin.

To the Examiner. 1. See that each child has a pencil. If colored pencils are used the tests will be much easier to score. 2. Distribute the papers. 3. Have children fill in the blanks on this page. 4. Read the directions aloud. Hold up one of the inner pages to show the test paragraphs. Tell the children they are to read, in order, as many paragraphs as they can in the time allowed. (Demonstrate the order on all three pages.) 5. This page should be face up when the signal "Begin" is given. The pupils then turn the page and begin. 6. **Say "Stop" at the end of exactly ten minutes in grades 3 and 4 and at the end of eight minutes in grades 5 and above.** 7. Collect papers immediately. 8. See Manual of Directions for method of scoring and norms.

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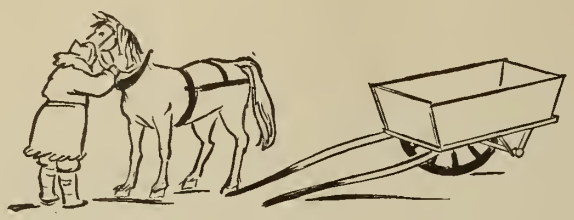
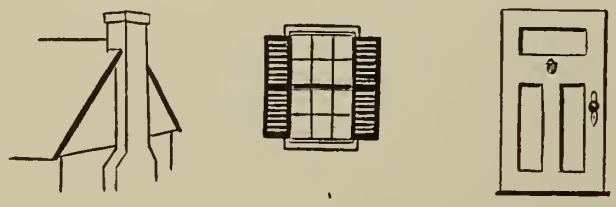
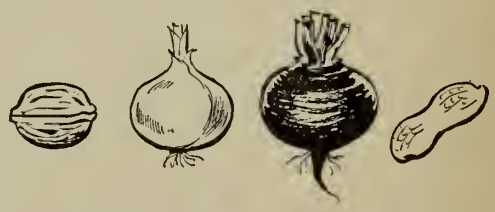


1. This is a two-wheeled cart such as the people of a northern country sometimes use. This cart has lost a wheel, and the man cannot go to market until it is put on. Draw a circle where the wheel should be so that the man can go to market in his cart.

5. This lady does certain work on certain days. On Mondays she does the washing and hangs out the clothes. She irons on Tuesday. With this work out of the way she is free on Wednesday to bake cakes or pies. Put an X on the picture that shows what work the lady does on Tuesday.



2. Different materials are used for different parts of the house. The chimney is usually brick or stone. Windows are made of glass set in a wooden frame and, in most cases, doors are made of wood. Put an X on a part of a house that might be made of stone.

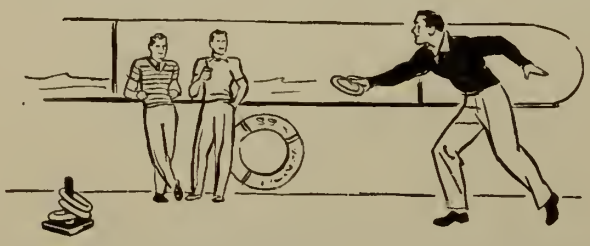


6. Some things grow in the ground and some things grow on trees. Here are a nut, an onion, a beet, and a peanut. The onion, the beet, the peanut grow in the ground and the other nut grows on a tree. Draw one line under each thing that grows in the ground.

CHRISTMAS
EASTER
HALLOWE'EN
FOURTH OF JULY

3. The Brown children invited everyone in the Fourth Grade to a party. On the invitations was a picture of a witch riding on a broomstick. Draw a line from the witch to the word that tells the day on which the Brown children were giving their party.

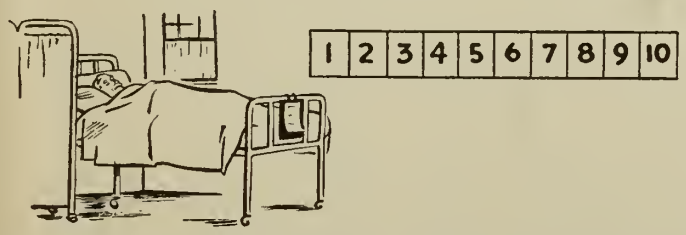
7. Grandmother sits in a rocking chair all day and makes hooked rugs. Grandfather thinks the nicest one she ever made was black with two white kittens and the word, "Welcome," done in red. Draw a line under the rug that Grandfather thinks is the nicest.



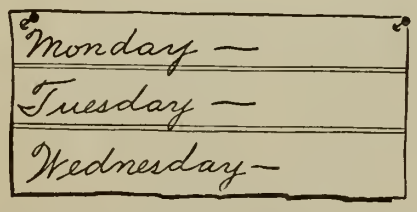
4. These men are playing ring toss on the deck of a ship. They take turns throwing the rings. They try to see who can throw the rings over the pin the greatest number of times. Draw a line from the ring in the man's hand to the top of the pin. Three rings are on the pin now.

8. Father and the boys like swimming at high tide. But Mother thinks the waves are too rough at that time. She would rather sit on the beach under her umbrella and then take her swim when the tide is low. Draw a line under the ones who like swimming at high tide.

9. The Weather Bureau hangs out flags of different colors to show what the weather will be. A white flag with a black square in the middle means a cold wave. A white flag means fair weather. A blue flag means bad weather. Draw a line below the flag that means cold weather.



10. This old man is sick. A nurse gives him his cough medicine every hour. Then she leaves. She is a bright, cheerful person and the old man enjoys her visits. She just gave him his medicine at three o'clock. Draw a line around the number that tells when the nurse will return.



11. William wants to keep his score in arithmetic for Monday, Tuesday, and Wednesday. The first day he worked eight examples, the second day nine, and Wednesday ten. Put the score by the day on which he did best so William will know how well he has done.

12. A boy owns a yellow bird. In the bird's cage are two white cups, the smaller holding seeds and the larger holding water. The cage also contains a swing on which the little bird likes to perch. Draw a line from the bird to the cup where he will find his breakfast.

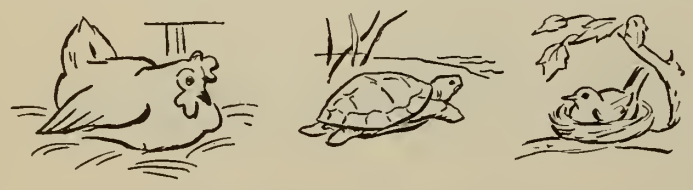
13. Now and then a clever mouse manages to get his piece of cheese without being caught in the trap set for him. How gently this bold little fellow must touch the cheese, if it comes off without disturbing the spring! Draw a line from the cheese to the one who wants it.

14. If an Eskimo child were to see a cup of whale oil, a dish of ice cream, and a plate of cookies, do you know which he would take? He would take the first because he eats that all the time. Draw a line on what the little Eskimo would take.

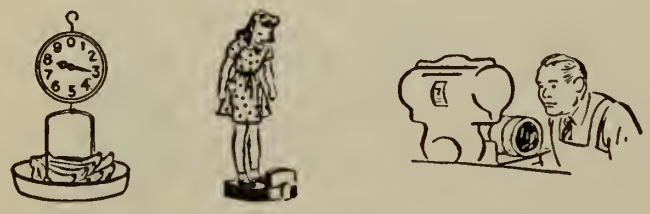
15. Mary has a great many coats. She has a short white jacket to wear on summer evenings. She has a tan sport coat for spring and fall, and a fur coat for winter. Mary wears a black velvet cape to evening parties in the cold weather. Draw a line under Mary's spring coat.

16. This spider is going out on these twigs to spin her web. She will climb up to the highest twig and then spin downward to a lower one. She will swing in the air on the web as she spins it. Draw a cross to show where the spider will begin to spin.

17. These red squirrels live in the hole at the foot of the tree. They are getting their winter's supply of nuts. They fill their cheeks with them and then hurry off to store them in the tree. Draw a line from the hole in the tree to the squirrel that is farthest away from the hole.

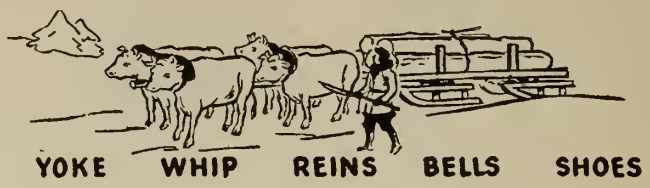


18. Hens or robins sit quietly on their nests until their eggs are hatched. A turtle digs a hole in the sand, lays her eggs, and then goes back to the water. She counts on the hot sun to hatch her eggs. Put an X on the mother who does not sit on her nest.



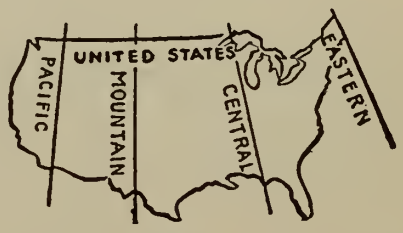
19. Scales are used for measuring weight in terms of ounces and pounds. The first scales show that the bananas weigh three pounds. The little girl weighs fifty pounds. The roast beef weighs seven pounds. Put an X on the scales that are measuring the heaviest weight.

20. Some horses are a bright bay. Some are black, white, or gray. A few are dark strawberry red, and some are brown with cream-colored tails. Some ponies are spotted, like those used by the Indians. Draw a line under a pony that an Indian might have owned.



21. In the old days farmers never used reins in driving their oxen. The heads were held in a wooden yoke and the farmer either walked or rode in the wagon with a whip in his hand. Put an X on the word that tells what were never used on oxen in the old days.

22. These different shapes all have different names. The first is a circle; it has no corners. The second is a square; it has four corners. Do you know the name of the third? It is longer than a square. Make a cross in the center of the one that has no corners.



23. From New York to California there is a difference of three hours in the time. "Central" time is one hour earlier than "Eastern," "Mountain" two hours, and "Pacific" three. Write 1, 2, 3 on the proper lines to show how much earlier than Eastern Time the other times are.

24. It was the morning after a heavy fall of snow. Snow covered everything with a thick white blanket—the roofs and porches of the houses, the roads, stones, and trees. Only the chimney was black and smoking. It had melted the snow. Put an X on what was not white.

GATES BASIC READING TEST

For Grade 3 (Second Half) Through Grade 8

TYPE C. Reading to Understand Precise Directions

FORM 2

Write your name here . . . . . .

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

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

This is to be a reading test. You are to read a number of paragraphs. Each paragraph tells you to make some sort of mark with your pencil to show that you have understood the paragraph. Do exactly what the paragraph tells you to do. Make the marks quickly—do not waste any time trying to make pretty drawings. The purpose of the test is to see how many of the paragraphs you can read in a short time. Don't waste any time. Don't look at anyone else's paper. Remember, you must do exactly what the paragraph tells you to do. Don't make any marks other than those the paragraph tells you to make. Wait until you are told to "Begin," and then turn the page and work as quickly and as accurately as you can until you are told to "Stop!"

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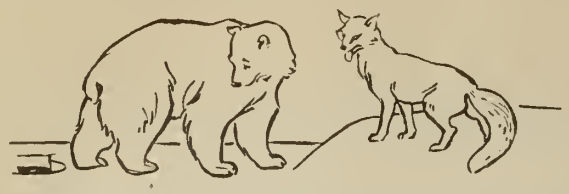
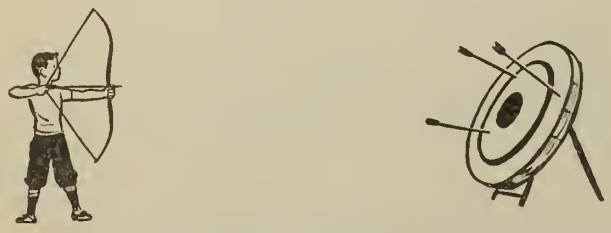
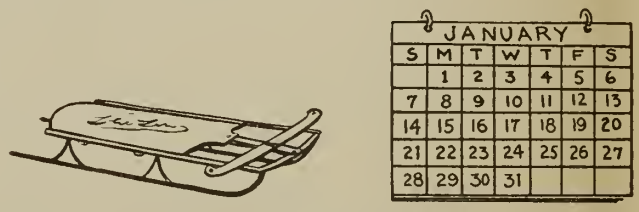


1. One cold day, long ago, the fox persuaded the bear to fish by sitting down with his tail hanging through a hole in the ice. Soon the tail was frozen, and when the bear got up, it broke off. Ever since the bear has had a stumpy tail. Draw a line around him.

5. Today "Liberty Bell" hangs in Philadelphia but it rings no more, for it is cracked. The bell was rung on July 8, 1776, when a famous message was read to the American people; it did not crack until later. Draw a line from "Liberty Bell" to the place it hangs today.



2. Dick is learning to shoot with a bow and arrow. He aims for the black spot in the center of the circles, called the "bull's-eye." Dick has already shot three arrows but they have missed the mark. Draw a line from the arrow he is shooting to the spot he will try to hit.



6. It is now January 20. About a week ago William's father gave him a sled for his birthday. His birthday came on January 12. Draw a line around the day in January which was his birthday so we will know when the sled was given to him.

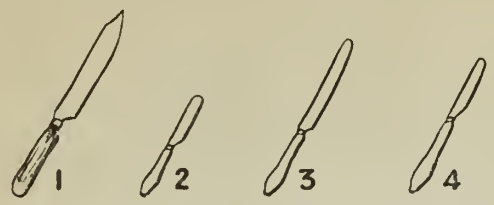
3. The children were playing Bean Bag. They used six Bean Bags—one to throw into each hole. The first boy's bags went into No. 1, missed Nos. 2 and 3, went into No. 4, missed No. 5, and finally made No. 6. Put an X on each of the holes that the boy missed.

BUSH BEANS **POLE BEANS**
POTATOES **BEETS**
CARROTS **CORN**

7. For your first garden choose the vegetables which require the least care. Carrots and beets are safe to begin with. Bush beans are better than pole beans. Corn and potatoes take up too much room. Put an X on each of three vegetables good for a first garden.

4. Ruth is stringing beads to wear around her neck. All the beads are different colors. She has not yet finished the necklace. She wants to put a large red bead on the end of the string that is hanging down. Draw the bead for Ruth where it should be.

8. After many attempts, all of which failed, the North Pole was finally discovered by Robert Peary on April 6, 1909. The trip was made with the help of Eskimos and dogs. Men had struggled and died to find what proved to be a vast stretch of ice and snow. Put an X on its finder.



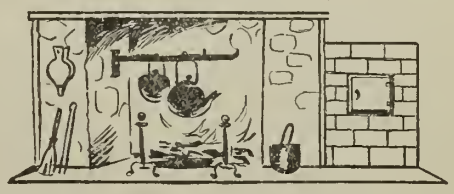
9. Here are four kinds of knives. The first is a carving knife, which is used to carve a roast. The second is used to spread butter. The third is an ordinary table knife. The fourth is a fish knife. Draw a line under the one you would use to spread butter on a piece of bread.

13. The officer is reviewing his troops. He sits on his horse and salutes as rows of soldiers go by. The band plays and the soldiers, carrying their guns, march across the parade grounds. Draw a line from the last row of soldiers to the one who is reviewing them.

10. At one time great forests of white pine covered the New England States. The 200-foot trees were valuable for masts of sailing ships. Many trees were cut down because the chief industry of New England was shipping. Put an X on the part of the ship made from white pine.

14. The Eskimos live in a summer home very much like an Indian tent. It is made of seal skins, and the poles are of whale bones. Sometimes the Eskimos use sticks of wood for poles in the tents. Draw a line under what the Eskimos sometimes use for tent poles.

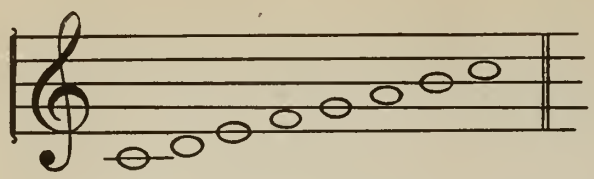
11. "Bills" and "beaks" mean about the same thing, but we tend to associate "bills" with small birds like robins or bluebirds, and "beaks" with larger birds like eagles or hawks. We speak of a duck's "bill" and a chicken's "bill." Draw a line around a bird that has a "beak."



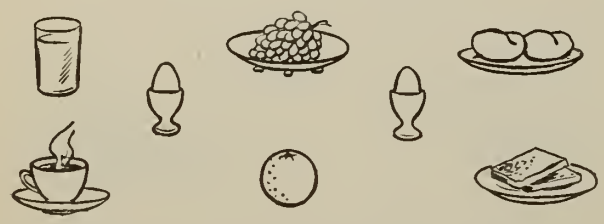
15. Long ago, before stoves were in use in America, women cooked at the fireplace. An iron rod above the fire held kettles and pots for boiling. Baking was done in the Dutch oven, a brick oven with a door built beside the fireplace. Put an X where cakes were baked.

12. Walter had these three pieces of money. He wanted to buy presents for the Christmas stockings. He found presents for fifty cents, ten cents, and twenty-five cents, but no one was to pay more than ten cents. Draw a line under what Walter paid for the presents.

16. This man is getting ready to go down into a gold mine. He has on the regular hat with the light on the front of it. He lights the light just before he goes into the dark tunnels. Make a cross where the man will carry his light when he gets down into the gold mine.



17. These are the notes of the singing scale. Each one of these notes has a name. The one at the bottom is Do. The others in order have their names too. No. 8, the one at the top, is named Do also. Make a cross on each note that is named Do.



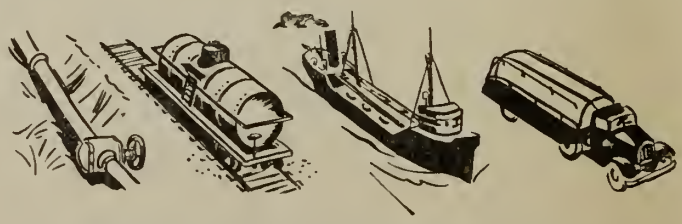
18. Mother let each of the boys choose his own breakfast. Dick chose an orange, some toast, a boiled egg, and a cup of cocoa. Jack chose a bunch of grapes, a boiled egg, two rolls, and a glass of milk. Draw a line so that everything Dick ate for breakfast will be inside it.

19. Cedar chests, in which blankets are stored in summer, are made from the cedar tree. Birds eat its berries and take strips of its bark for their nests. Its wood is so soft that it is also used to make pencils. Draw a line from the cedar tree to something large made from it.

20. House No. 1 is a cabin in the woods. No. 2 is a famous old palace in Europe. Along any village street you might see No. 3, a cottage, but in the South Sea Islands is found the grass hut pictured in No. 4. Draw a line around the kind of building you might see if you went to Europe.

21. John loves his pet pony. He rides it everywhere. He says he likes his pony because it has a white nose. The pony likes John, too, and likes to take him on his back. Draw a cross over the picture of John's pony, so that John can find him quickly in the pasture.

22. In Family No. 1, the mother is a *sister* of the mother in Family No. 2. The two fathers are *brothers*. The children of both families are *first cousins*. The mother and father of each family are *aunt* and *uncle* to the children of the other. Draw a line between two first cousins.



23. Oil is transported from the Southwest by three means. It comes in ships along the Atlantic coast. It is brought by railroads in cars. The best method of transporting oil is to pump it through huge pipe lines. Put an X on the best method of transporting oil.

24. Here are three kinds of swings you can make with rope. Dave likes the first one because he says it is like the one he saw at the circus. He thinks he can go highest on it, too. Most children like the second. Make a cross under the one Dave likes best.