A COMPARISON OF HEALTH HABITS AND SCHOOL ACHIEVEMENT AND PHYSICAL DEFECTS AND SCHOOL ACHIEVEMENT

by

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INDEX TO TABLES

CONTENTS

Introduction

A STUDY OF PHYSICAL EXAMINATIONS AND HEALTH HABITS AS THEY RELATE TO SCHOOL ACHIEVEMENT.

For many years the schools of the United States have included physiology and hygiene teaching within the curriculum. Yet in the years of the world war startling revelations were brought to the American people concerning the health of the youth.

General Wood[1] stated that the war furnished an excellent opportunity for all to see the men of America as they were; it brought to the people's attention certain conditions that were alarming. He wrote that only one-half of the men of military age were fit for military duty. He made the accusation, "The education which had purported to train them for life's responsibilities was revealed as glaringly inadequate."

It has been stated by Terman,[2] "A study of adult health shows that much of adult ill health is due to neglect in childhood."

Therefore the training for good health habits should be started in childhood because,[3] "The children of today must be viewed as the raw material of a new state; the schools as the nursery of the nation."

1. Metropolitan Magazine, June 1919.
2. Lerrigo - Health Problem Sources.
3. Terman - "Health Work In The Schools" Chapter I.

Educators over the whole country began to look about them to strive to remedy the situation as disclosed. They realized that,[4] "Instead of seeking to equip our public school pupils with a scarcely understood technical phraseology they must seek to inform, motivate and train in good health practices."

F. M. Gregg wrote[5], "Anatomical facts and physiological intricacies must give way to vital hygienic principles still kept above the level of mere health platitudes."

Today the development of health habit training is recognized by many educational leaders as one of the primary objectives of all education.

Franklin Bobbitt[6] has placed the development and maintenance of one's physical powers of first importance, and the development of one's mental efficiency in eighth place, among the ten objectives for a good curriculum.

In the past we thought education called only for mental development but at present, according to Byron Cosby[7]-"We define education as the superior adjustment of the child to his environment, physically, mentally, socially and morally."

Mildred Patterson[8] in a recent article stated, "Since the mental condition of a normal child, to a large degree, depends on his physical condition, common sense indicates that improving the child physically should be the first step in the school program."

4. Gregg - "Vitalizing The Teaching of Hygiene."
5. Gregg - "Vitalizing The Teaching of Hygiene."
6. Bobbit - "The Curriculum"
7. Education, Volume 43, page 645.
8. Education, Volume 44, pages 636-640.

Percival Symonds[9] wrote, "Scientific investigation is constantly refining our knowledge and with each new accretion to the stock of knowledge comes a new slant on health habits and on their relative emphasis."

"It is remarkable how few the really fundamental rules of health are;- When you have taken care of food, rest, air, cleanliness, activity and a few others you have really considered the main habits relating to health", he further stated.

William Howe[10] stated, "First health, then wisdom. We believe that normal health is essential to normal wisdom, that physical fitness and mental fitness should go hand in hand in our educational program, that in our school health service, health training should articulate or correlate closely with mental training, that as all knowledge is valuable only as it can be used in a practical and beneficial manner, so must health habits well become automatic."

After reading many editorials, books and magazine articles concerning correction of physical defects, training in health habits and methods of health teaching the problem of the relation of health to school achievement presented itself.

J. H. Stevenson,[11] in an address delivered at the annual meeting of the Ontario Educational Association at Toronto, said, "The sound mind in the sound body is our ideal, however difficult of attainment this objective may be."

9. Education, Volume 44, pages 44-369.
10. Educational Association, Volume 59, pages 384-387
11. Mind and Body, February 1929, Number 375, Volume 35.

Sargent stated[12], "Cultivate physical perfection of the body and mental perfection will follow as a matter of course; neglect the physical and strive to force the mental and the failure of both will surely follow."

12. Education, Volume 43, Page 645.

Chapter I.

RELATED LITERATURE

"In the past the schools of America have worked side by side with public health agencies, but there has been between them little realization of common ideals and purposes. The educators of the country have passed through a period of complacent satisfaction with sanitation of the school plant to a realization that the schools have a distinct responsibility in the active promotion of health through educational means. The lines of thought of public health and public school people are beginning to converge."[1]

C. H. Judd[2] of Chicago University wrote, "In the last twenty years our notions about the school responsibility have changed. We are now trying to turn out human beings well started on paths of successful adaptation. This we cannot do, if we not help our pupils to equip themselves with well organized, well controlled bodies. We must teach health in the schools by precept and through drill in practice."

"No one," further wrote Judd, "who runs a good automobile would race its engine all the time or run with the brakes set, or overheat the circulatory system. Why should we treat our bodily mechanisms more carelessly than we do our automobiles?"

"Health is an internal affair. To learn to live at peace with one's self, internal co-ordination must be a habit."

1. "Health Survey of 86 Cities", Chapter 10.
2. National Education Association, 1925 - Page 696

The unfavorable health statistics gathered from the examinations of drafted men have aroused those interested in health to the necessity of a thorough going national policy for the conservation of good health.

"The consensus of opinion," wrote E. George Payne[3], "is that these unfavorable health statistics might have been altered by means of a constructive health program in the schools."

The statistics of defects of drafted men which concerns school children are given:[4]

Mentally defective----------200,000, or 1%
Organic Heart Disease----------250,000 over 1%

Have now or have had bad heart disease---1,000,000, or 5%.
Defective hearing----------1,000,000, or 5%.
Defective Sight----------5,000,000, or 25%.
Malnutrition----------3,000,000 to 5,000,000.
Adenoids, (diseased) or other glandular defects----------3,000,000 to 5,000,000-15% to 25%.
Weak foot arches, weak spines, or other joint defects----------3,000,000 to 4,000,000-10% to 20%.
Defective teeth----------11,000,000 to 16,000,000- 50% to 75%.
Detrimental physical defects ----------15,000,000 or 75%.

Then E. George Payne pointed out that every child should be deeply impressed with the notion that disease and unfavorable health conditions are due to individual and social ignorance and bad habits.

Because of these physical defects these drafted men were unable to take up the work of army life and so it is in education, physical defects hinder school work.

William Howe[5] stated: "Subnormalities are very frequently associated with, or resulted from physical defects."

3. Education In Health, Chapter I, Page 19.
4. Annual Report of The National Education Association, 1918, Page 144.
5. School Health Service in New York State, National Education Association of United States, Volume 59, Pages 384-387.

"The analysis of the problem of infant mortality and its attendant evils, from various studies made by the Children's Bureau indicates that there are specific reasons for the bad health conditions. Among the most important are: First, insufficient income; second, unsanitary conditions; third, improper housing; fourth, unsuitable and insufficient food and clothing; fifth, lack of proper medical attention.[6]

"It is a social problem to save the infants from dying, but it is a school problem to see that those who survive are in a condition to receive school training. The conditions that kill so many are sure to leave others with stunted or retarded growth, defective bodies and impaired mental life," wrote E. George Payne.[7]

These conditions will cause difficulty in schools because Terman[8] stated: "Under developed children are often immature in mental as well as physical make-up."

A survey was made by the Missouri Tuberculosis Association to determine the health condition of school children.[9] Fifteen schools were visited in two counties, twelve of which were one room, one two-rooms, two village schools of several rooms.

"These physical examinations of rural school children in Missouri have confirmed those made in other sections of the United States in proving that the common physical defects of the school children are malnutrition, decayed teeth, defective tonsils, enlarged adenoids and defective eyesight. There was remarkably little difference in the medical findings for the

6. Education in Health, Chapter I, Page 21.
7. Education in Health, Chapter I, Page 16.
8. Health work in the Schools-Hoag and Terman, Pages 1-48, 62-109.
9. Education in Health, Chapter I, Page 19.

two counties."

These figures may be summarized:

Number weighed 572. Number examined 556.

10% or more underweight	127 or 22.2%
Having defective or unfilled teeth	409 or 72.5%
Mouth breathers	111 or 20%
Having defective tonsils	264 or 47.5%
Probably having adenoids	265 or 47.7%
Having defective or questionable eye-sight	195 or 34.9%

What effect do these defects have upon the school work?

Arnold H. Kiegel, M. D., Commissioner of Health of Chicago stated[10]: "The 'physical defect' child is so often the mentally retarded child. And when one considers that some form of physical defect is present in 85 percent of the children in our schools, as well as the fact that 70% of these defects are readily remediable, the difficulties of keeping up a steady progression of scholastic attainment without correction of defects become readily apparent."

"As one health officer put it, "The usual effect of bodily ailment is to embarrass the action of the mind. A tendency toward unsocial action in the school life of the defective child frequently follows. The defensive mechanism which is set up tends to an attitude of antagonism toward school work, teachers and other pupils. These are the difficult pupils who drift farther and farther away from social restraint and end usually, during the adolescent period when beset by the violent emotions of that time, in major or minor crime or at least in some phase of unsocial action."[11]

10. "Health and School Progress", June 1929, Chicago Schools Journal, Page 366.
11. Chicago School Journal, June 1929. Page 368.

"Good citizenship is oftimes a matter of good health. Much of crime, disorder, misbehavior comes from physical disorders, defects and degenerations. The records of our courts, broken homes and sanitoriums testify that good health is essential to good conduct," so James Rogers, a member of the National Physical Education Service of New York City, wrote.[12]

The school child is quite often affected in the same manner as to citizenship. This may be proven by the report of the Parental School of Chicago.[13] This report states, "Generally speaking the causes of truancy, as of crime, are physical and mental defects and environmemt. This institution found that from 17% to 18% of the truant class are made up of children below normal both physically and mentally."

"The new movement for health teaching is an educational effort which definitely includes a more comprehensive objective than the prevention of disease and physical impairment. It is a movement for the definite promotion of what its exponents are found of referring to, as, "positive health","abundance of life", "that quality of life which fits the individual to live most and serve best".[14]

"If public health is to be realized then individuals themselves must cultivate personal health and to bring this about they must be instructed, as Professor Winslow of Yale University has stated in a recent address, "The keynote of the modern campaign for public health is to be found in education."[15]

12. National Physical Education Service, New York.
13. National Education Association of United States, Volume 59, Pages 386-391.
14. "Health Survey of 86 Cities" - Chapter 10.
15. "Health Survey of 86 Cities" - Chapter 10.

Annette M. Phelan in a recent article[16] stated that health examination may furnish educational possibilities in two ways:

1. The examination, by indicating the outstanding health needs of the student body may furnish the basis for a course in personal hygiene.

2. The findings of the examination, the doctor's recommendations and the "follow-up work" may be used to develop in the student a keener appreciation of her own possibilities.

[17] "Health in a constructive sense is a matter of education since individuals can be healthy only in proportion to the number and effectiveness of the health habits, ideals and attitudes that have been built into him through training."

"Educators know how children should be taught," stated Bliss[18] "and can discriminate as to which facts should be used, and at what ages these facts are presented."

Thus, this health movement places a large responsibility upon the school.

R. E. DeLong stated,[19] "The teacher should teach boys and girls not only what will be of benefit ten years from now, but teach them to live today and to develop themselves in ideals, character and correct attitudes."

Courtis wrote[20], "The student who is undernourished must be taught what, and when to eat. Prophylactic measures would include instruction and guidance in all matters which pertain to healthful living, courses in proper use of foods, clothing and shelter of course, but even more essential are courses in

16. "The Nation's Health, June 15, 1926. Number 6.
17. Education in Health, Chapter II, Page 27.
18. American Journal of Public Health, October 1926.
19. Junior High Clearing House Magazine, April, May, 1929.
20. School and Society, Volume 14, July to December 1921.

every type of health habit, mode of living, sex hygiene, method of study, etc. -- almost without end."

"Our problem is to establish as many desirable health habits as we can," wrote Margaret E. Noonan.[21]

Terman stated,[22] "The school must investigate the home conditions of defective pupils. It must know more of the child's habits, what time he goes to bed, how long he sleeps, how much he works, how much he studies at home, what he eats, drinks, when and under what conditions he sleeps, and what the home environment is in every particular that concerns the child's health."

Alexander Inglis wrote[23], "The school room may be a place for the positive physical development of children, or through carelessness and indifference, it may become a perfect hot bed for the breeding of disease."

"The fact remains," stated Margaret Noonan,[24] "that no matter How strongly hereditary factors have tended toward physical perfection in any individual, the complex social life of the present makes proper physical development impossible unless the individual has acquired the proper health training to conserve and develop his hereditary endowment. It is equally true that individuals even seriously handicapped by heredity, along physical lines, may largely overcome, by the development of right health practices, such handicaps."

21. "Education in Health", Chapter I.
22. "Health Work In The Schools" - Hoag and Terman, Chapter I.
23. "Virginia Public School Survey" Pages 187-196.
24. "Health In Education", Chapter I.

"Society's chief educative institution, the schools, must therefore face the responsibility of setting up physical standards to be obtained, of encouraging and developing ideals that will tend toward better physical development and of forming sound health habits that will enable its members to meet adequately the complexities and difficulties of modern social life."[25]

Stanley Hall wrote,[26] "Mental and Physical acceleration go together." Therefore as the child grows in intelligence, we want the body to grow in strength.

"There is no sharply defined period in the life of children when they cease to form habits and begin to establish ideals and attitudes. There are, however, certain habits that should be pretty well established in the first four grades of the elementary school curriculum. These are: (1) Habits of cleanliness of the whole body with special emphasis upon the teeth, nails, hands, and face. (2) Habits of exercising in the open air. (3) Habits of sleeping in properly ventilated rooms. (4) Habits of properly chewing food. (5) Habits of selecting the proper kinds of food. (6) Habits of keeping other things than food out of the mouth. (7) Habits of taking the proper amount of rest and sleep regularly."[27]

Winifred Richmond wrote[28] "Adolescence can do no more than repeat and strengthen the development of her earlier years, can

25. "Education in Health", Chapter II.
26. Fifteenth YearBook, "National Society for Study of Education, 1916, Chapter III.
27. "Education in Health", Chapter II, Page 37.
28. "The Adolescent Girl", Chapter V, Page 135.

fill out and enlarge the picture then sketched in, but cannot create nor develop new traits of character or new abilities of mind."

Thus those habits formed in the first four grades should be strengthened and enlarged when the child comes to the adolescent stage.

Ethel Wieden stated,[29] "In addition to the establishment of health habits it is necessary to create health attitudes and ideals, in fact, to build a complete health consciousness. This dan be done only by constantly talking health, by keeping it ever present in the minds of children, and by showing the value of good health practices and the dangers of bad ones."

"Health in a constructive sense," stated E. George Payne,[30] is a matter of education since it can result only from the development of habits, ideals, attitudes, and points of view in the individual. For instance, keeping the teeth clean is as much a matter of health as the observance of the rules of ettiquette and the development of habits is one of the basic functions of education; for when the child is acquiring habits, he is being educated, whether these habits are the result of school, home or street experience. Furthermore health requires knowledge, attitudes and ideals since personal and social practice depend upon them."

"The human organism is a unit," wrote Grace Richmond,[31] "and we cannot separate the mental or spiritual from the physical."

29. E. George Payne, "Health in Education", Chapter III.
30. E. George Payne, "Health in Education", Introduction.
31. "The Adolescent Girl", Chapter VI.

Chapter II

AIMS OF TEACHING HEALTH HABITS

"With the growth of the new conception of education as the dominant motive in the public health campaign, there has come the need for new machinery through which such education may be accomplished. There has been created, to meet this need, elaborate health bulletins, health news service, health lecture bureaus, institutes, and health exhibits. These instruments are all of assistance but mass methods of that type form but a first step toward the goal which is in view."[1]

"Personal hygiene is a very personal matter therefore it is essential to utilize some more direct and more individual agency to carry the lesson of health."[1] There must be some way to measure the health teaching, to find out if the health knowledge is having any effect upon the child's activities.

Within the last few years health organizations have made surveys to determine the health habits of school children.

In the years 1922 to 1925, the American Red Cross held a health demonstration in Mansfield and Richland County, in the state of Ohio.[2]

"As a first approach to building child health work upon a foundation of intelligent understanding in the community, the demonstration concentrated upon the education of individual children. This was promoted in the schools."

1. "Child Health Demonstration of Mansfield and Richland Co., Ohio.
2. "Child Health Demonstration of Mansfield and Richland Co.,

The health committee planned a survey of the elementary grades of a number of schools within the county, in order to find what the outstanding health needs of the children were, Accordingly a detailed list of health habits was expressed simply and clearly, bearing on such topics as nutrition, elimination, cleanliness, clothing, posture, sleep, rest, environment, mental habits, disease prevention, social contacts, safety first, and first aid, were formulated and sent to each school building to be checked by each teacher according to the needs of her pupils. Returns from seven buildings were summarized and used as the basis for the formulation of specific aims for the primary, intermediate and grammar groups.

As formally stated and approved by the Health Committee, the following were the things to be aimed at, by the grades:-

First, Second, Third.

1. To develop good habits in all children.
2. To develop appreciation of cleanliness of person, surroundings and food.
3. To establish a friendly relationship between the children, doctor, nurse and dentist.

Fourth, Fifth, Sixth.

1. To re-enforce and strengthen the habit formation begun in the primary grades.
2. To have the children realize that their bodies are like fine mechanisms which need constant care to do the best work and to begin to establish ideals in regard to its care.

3. To have children know the simple parts of the body and how they work.
4. To have the children know how to protect the body from disease.
5. To have the children realize their responsibility for protecting the people with whom they come in contact.

Seventh and Eighth.

1. To re-enforce and strengthen health habits begun in the lower grades.
2. To develop further attitudes and ideals in health which will influence daily practices.
3. To develop a sense of responsibility for personal, home and community health.
4. To broaden the student's knowledge regarding those problems of living which are associated with the attainment of the most worth-while things in life.

The following points were passed upon favorably by the Health Committee and were incorporated in the program used in the Mansfield schools in 1925-26.

1. Continued monthly weighings of children with measuring in September and February.
2. Continued daily morning inspection for cleanliness and beginning signs of contagion and disease.

3. Continued daily attention to sanitation of school rooms and school buildings.
4. Rest periods whenever needed, and active play at recess.
5. Continued interest and participation in securing health examinations and correction of defects.
6. Continued daily teaching of health, directly and indirectly in the school program.
7. Continued use of the monthly health topics.
8. Special health topics to be introduced into seventh and eigthth grades and carried under manners and morals club organizations.
9. The time assignment for direct health teaching to remain:

   30 minutes a week in first, second, third grades.
   45 minutes a week in fourth, fifth, sixth grades.
   60 minutes a week in seventh and eighth grades.

10. Health cards for each pupil to be filed in each building for reference; all records on these cards to be kept by nurse.
11. Survey of defects of pupils, in various buildings on the day of health examination, to be placed on file and given promptly to the teachers.
12. Teachers to participate in health examinations as far as possible.
13. The trophy cup (explained later in notes) to be awarded to the school receiving the highest score.

During the demonstration period, the number of school children receiving medical examination increased from 720 in 1921-22 to 5,491 in 1924-25.

In the years 1923 and 1924, a report on defects was prepared and given to the teacher so that she could see the condition of the children in her room and strive to develop health habits where it was needed.

The writer of this thesis will show you the sample of this Health Examination sheet which was given to the teacher.

A Copy of Health Examination Given to Teachers During The Mansfield and Richland County Survey.

Health Examination_____Date.

_____School _____Teacher

Name	Defects	Weight	Habits	Average Grade
Rose Green	2 permanent teeth to be filled. Tonsils			
Grace Jones	Teeth to be cleaned.			
Mary Martin (Blue Ribbon)				
Frances Tiller	Thyroid X			
William Smith	2 permanent 2 baby teeth need attention	To gain 2 lbs.		
Alice Thomas	Thyroid X			
Tom White	Circulation XX			
Helen Murray		To gain 5 lbs.	Cleanliness?	

Explanations:- The notation "Cleanliness" in the habit column indicates that attention is needed. The column for "Habits" is left for teacher to fill in. Average grade is left for teacher to fill in. Weight is checked by teacher ordinarily except in cases where the health director wishes to impress upon the child exactly how many points he needs to gain. The word "Blue Ribbon" meant that the child's physical record was satisfactory. If the teacher's O. K. was placed on all points the blue ribbon was awarded. "Tonsils" indicates necessity of treatment, probably removal. Thyroid X means slight enlargement; but under treatment. Such notation as "Circulation XX (Indicates bad heart condition).

Every morning a ten minute period was established for morning inspection at the beginning of each day. These inspections proved valuable in encouraging habits of cleanliness.

There were special classes for handicapped children to teach them valuable health habits.

There was school milk service for the underweight children.

The children participated in sanitary surveys. They had "clean-up" days to make their buildings clean and beautiful.

A food project called "Blue Ribbon Project" was installed within the school systems. This was a form of measurement in health for the child. A trophy cup was offered, by the Rotary Club, to the school having the most "Blue Ribbons".

This project is given in detail because it is a measurement of school habits and school achievement:

BLUE RIBBON PROJECT

Standard Requirements For A Blue Ribbon.

A child will be considered eligible for a Blue Ribbon if- after a physical examination by a physician, and in the opinion of his teacher- he is rated as (1) mentally normal (2) Physically free of defects (3) reasonably co-operative in the practice of health habits and (4) satisfactory in his behavior and attitude in the school environment.

I Is Meantally Normal.

A. If he has the mental capacity to attain a general average grade of "C" or its equivalent in school work.

II Is Physically Normal.

A. If he is of standard weight.

1. Not more than 10% under or 20% above the average weight for his height.

B. If he is free from remediable defects or chronic disease.

1. Hearing normal and no chronic discharge from ears.
2. Vision 20/30 or better in both eyes- with or without glasses- and eyes free from any chronic infection or abnormal condition.
3. Nasal breathing unobstructed and nose free from any chronic discharge or exudate.
4. Tonsils rated as normal or removed.
5. All teeth (both permanent and temporary) free from cavities-or all cavities filled-and all badly decayed teeth extracted.
6. No enlargment of the thyroid gland and no marked chronic enlargement of the neck.
7. The skin and scalp clean and free from any chronic disease or abnormal condition. No evidence of Anemia.

8. No orthopedic deformity - such as club feet, marked bow legs, or any other marked physical deformity.
9. Posture satisfactory.
10. No evidence of chronic organic disease involving the heart, lungs or other organs or the nervous system - such as tuberculosis, heart disease, nephritis, chorea, habit spasms, etc.

III In Reasonably Co-operative in the Practices of Certain Health Habits.

A. Is physically clean.

1. Face, neck, ears, hands and finger nails cleaned daily.
2. Teeth brushed daily.
3. One complete bath once a week.
4. Clothes clean and neat.
5. Clean handkerchief daily.
6. Good personal habits of cleanliness such as clean desk, floor and surroundings.

B. Obtains sufficient sleep.

1. Child must sleep at least nine hours every night with open windows.

C. Eats well selected Foods.

1. Drinks at least one pint of milk a day.
2. Eats some vegetable daily - such as carrots, beets, peas, beans, onions, tomatoes, etc.
3. Eats some greens regularly - such as cabbage, spinach lettuce, celery.
4. Eats some fruit daily.
5. Eats some cereal daily.

Note:- Other foods may be added. Those mentioned in the outline above are the "protective" foods and are essential to good health.

D. Obtains plenty of fresh air and exercise.

1. Spends some time daily in outdoor play or exercise. Every school intermission should be used for that purpose.

E. Clothing.

1. All extra garments - such as heavy coats and sweaters, rubbers, over shoes, and boots removed while in class room provided the room temperature is 65° or over.

IV Is satisfactory in his behavior and attitude in the School Environment and is Amenable to Ordinary School discipline. Note: (X) on the physical record card indicates a defect of a minor character which requires observation but not treatment and does not disqualify for a Blue Ribbon. A thyroid marked (X) will disqualify a child for Blue Ribbon unless he uses iodine salt regularly at home or takes iodine in some other form as recommended by a physician.

The standards for awarding a blue ribbon were the joint product of careful thought on the part of all the special health workers in the demonstration, and were passed upon by the demonstration director in his official capacity as health officer. As a result, there was general agreement from every point of view that the child who was given a blue ribbon was entitled to it because of his actual health knowledge, his use of such knowledge in eating, sleeping, and playing, and in the improvement of his bodily conditions in general.

An examination by a physical determined whether the child was actually in physical health and free from defects as a result of his own and his parent's efforts.

Many devices to strive to formulate good habits within the school room were used. To the writer the one device that was outstanding was the "School House Device." The result of this project showed a great improvement in school housekeeping and established better health habits such as body cleanliness, hands, teeth cleaning and eating habits.

A Motivating Device For Health Habit Formation

The School House Device

BUILDING HEALTH SCHOOLS

1. If you have a morning inspection every morning --
   You may put a door in your school house.

2. If you have a hot lunch five days a week--
   You may hang a bell in the belfry.

3. If you have a first-aid kit--
   You may put a window below the bell.

4. If you have a clean up every Friday--
   You may put one window on the side of the school house.

5. If all children wash their hands before they eat their lunch--
   You may put the second window in your school house.

6. If you have fresh air coming in at all times--
   You may put window boards in your windows.

7. If all children have clean teeth daily--
   You may put a chimney on your school.

8. If 90 per cent or more children were examined by the doctor--
   You may color your roof red.

9. If your children all see normally, with or without glasses--
   You may make smoke coming out of your chimney.

10. If all children have teeth in perfect condition--
    You may make a green lawn in front of your school house.

11. If 90 per cent or more of your children are satisfactory in weight--
    You may paint your school any color you wish.

12. If 50 per cent of your children are blue ribbon children--
    You may put a flag on your school house.

13. If your school house looks like this one below--

    (Picture of a Model School)

    Your school is Grade A.

The results of this demonstration were:-

1. Great improvement in the health habits of the children.
2. Improvement in school house keeping.
3. Increase in the number of first-aid kits.
4. Increase in the number of schools adopting effective morning inspection and careful inspection for contagion by teachers. (This has resulted in better attendance.)
5. Great improvement in co-operation of the teachers in securing an increase in the number of children taking health examination and those having defects corrected.

In the year 1923 there was a health survey of eighty-six cities, prepared by the Research Division of the American Child Health Association. Its purpose was to secure facts from which there could be expressed a comprehensive picture of child health in the United States.[3]

There was a desire by those making the survey to ascertain some of the results of health work. The opportunity was afforded through direct inquiry of the school children as to certain daily habits of life. It was made a part of each surveyor's task to visit the grade schools and in addition to gathering facts about the school building to submit a list of questions to the children in the fifth grade. There were eight or ten schools chosen from each of the eighty-six cities. Altogether, replies were received from 35,349 children.

Most of the questions were asked directly by the surveyor. He would explain that the purpose of the questions was to find

3. "Health Survey of 86 Cities--Pages 144-195.

out how children live.

The question sheet was worked out most carefully prior to the survey. Several eminent educators and specialist in educational measurements were consulted.

THE QUESTIONNAIRE USED IN SURVEY OF 86 CITIES

City_____

Name of School_____

1. What time did you get to bed last night?
2. What time did you get up this morning?
3. Write down each thing you ate for breakfast this morning.
4. What did you eat for lunch this noon?
5. Did you play outdoors after school yesterday?
6. What did you play?
7. Where did you play? Check the place or places.
   a. In the street?
   b. On the playground?
   c. In a public park or playground?
   d. In your own or neighbor's yard?
   e. In the house?
   f. In a gymnasium?
8. How many cups of coffee did you drink yesterday?
9. How many glasses of milk did you drink yesterday?
10. Did you have an all-over bath last week?
11. Did you brush your teeth yesterday?
12. Have you been to a dentist in the last year?
13. Have you ever been vaccinated against smallpox?

14. How many days were you out of school last week because you were sick?

15. Was there a baby born in your family in the last six months?

The findings from the questionnaire were:-

The time of going to bed for these 35,000 children in the fifth grade ranged from eight o'clock to nearly twelve. "We may express," so the report states, "the retiring habits of fifth grade school children simply by stating that during the period from January to June 69% are in bed before 9:15.

The most common hour of arising is seven o'clock. The median for the entire group was 7.06.

The median length of sleep for the entire group was ten hours and eleven minutes.

The analysis of items shown in the breakfasts was omitted. The replies revealed variety, but not quantity of food. A fair proportion of children had either milk or chocolate or cocoa for breakfasts. Fresh and cooked fruits seemed neglected. The American child certainly is not a confirmed meat eater at the morning meal. Eggs were the most common protein food. "Summing up this table", so the report stated, "the absence of fruit would seem to represent the greatest deficiency in the American child's breakfast."

Concerning milk drinking there were 42% who drank less than a pint of milk daily and 22% reported no milk at all.

Coffee drinking seemed to have been a fairly well established custom among fifth grades., 39% of 34,386 children d drank coffee, 24% drank one cup, 9% drank two cups, 4.4% drank three cups, and 1.6% drank four cups.

From the replies to the question, "Did you have an all-over bath last week?" it appeared that the American child is a fairly clean individual, 92% responded affirmatively to the question.

The habit of brushing the teeth one or more times daily should be universal yet the children, in answer to the question of teeth washing, gave a surprise. Only 68% of children answered in the affirmative. Only 53% stated that they had visited a dentist within the past year.

"The play habits of fifth grade children," so the report says, "appear to be in a favorable state. Concerning play;- 85% played out of doors; 34,000, or 31% indicated that they played in the yard; 15% played on sidewalk or street; and 10% playground or park. 9% did not play; 6% played indoors; 2% played two or more places; 15% played indoors and outdoors; 0.5% were unclassified. 78% engaged in active play.

Concerning the question "How many days were you out of school last week because you were sick?" 87% answered that they were not absent.

There were only four out of the eighty-six cities that did not have some form of physical examination of their school children.

The most common items in examination were:-

Teeth	General Condition
Height	Eyes
Weight	Tonsils

"One of the most obvious weaknesses disclosed in the survey is the lack of standardization in the definition of a defect and a correction."

"We are living far below the hygienic standard made possible by our scientific knowledge. And yet we have never instituted a general and systematic program for training people in the correct habits of living!"[4]

These considerations led the Massachusetts Institute of Technology to develop some five years ago a plan for experimental study in health education within a school system.

Many questions pressed for an answer. Some of these were:-

Would it be practical from the standpoint of administration, and the results obtained, for the public schools of America, to add a systematic program of health habit training to health activities?

Can this be made as natural as training in politeness and courtesy?

Can such a program sufficiently motivate the school child to cause an actual improvement in his habits of living?

4. "Malden Studies In Health Education", May 1925. American Journal of Public Health.

The experiment was carried on at Malden, Massachusetts. A health education program was placed in two school buildings. Only one-half hour a week in each class was given in health work. Those in charge of the experiment gave health habit training only. They began work with three fourth grades, three fifth grades, three sixth grades in two buildings.

Children were weighed monthly and measured three times a year. Those who were 10% underweight had special "health habit conferences" with the health teacher in order to determine what was wrong.

In 1924 a letter, signed by the grade teachers and the health teacher, was sent to three hundred parents asking them to answer a questionnaire. 80% of these questionnaires were returned and 233 were filled out completely.

These answers were tabulated and were:-

QUESTIONNAIRE CONCERNING HEALTH HABITS AFTER HEALTH HABIT TRAINING WITH TABULATIONS

Is Your Child:-

1.	Going to bed earlier?	Yes 129	No 104
	Spending more time out of doors?	Yes 198	No 35
	Keeping himself more clean?	Yes 196	No 37
	Brushing teeth more regularly?	Yes 146	No 87
	Drinking more milk?	Yes 169	No 64
	Eating more vegetables?	Yes 176	No 57
	Eating more fruit?	Yes 194	No 39
	Eating more cereals?	Yes 103	No 130
	Eating less candy between meals?	Yes 156	No 77
	Eating food which he has refused before?	Yes 141	No 92
	Standing and sitting in better posture?	Yes 149	No 84

Has your child improved in health appearance as shown by bright eyes, clear skin, good color etc.? Yes 177 No 56

Do think there has been a real improvement in health? Yes 186 No 47

Have you noticed improvement in any of the following ways as a result of better health?-

More cheerful and good natured in dis position? Yes 151 No 82

More completely rested in the morning and willing to get up promptly? Yes 150 No 83

Better appetite? Yes 171 No 62

In every case but one the health habits had improved. The one exception was the habit of cereal eating.

At the beginning of the experiment 61 children had badly bitten finger nails. There was an inspection every morning and a year later 41 children had been cured of that habit.

There were only 150 children drinking milk at the beginning of the experiment. After the health habit teaching, there were 285 children drinking milk.

In June 1924 a questionnaire comparable to that used by the American Child Health Association in the survey of 86 cities was given to three hundred and twenty-two children who had had health habit training.

These habits were reported improved within the last three years.

No candy between meals.
Child eating more fruit.
Child eating more vegetables.
Eating better breakfasts.
Bathing more regularly.
Improvement in the Posture.

Teeth brushed more often.
Better appetite.
Less drinking tea and coffee.
Going to bed earlier.
Open windows.
Drinking more milk.
Drinking more water.
Fewer nail biting.

The health habits of the children were measured in three ways.

1. Direct observation of Improvement in certain habits is possible by classroom inspection.
2. Opinion of the people concerned.

The testimony of teachers and parents were used for this measurement. The questionnaire was the testimony from the parents, while eighteen of the twenty-five teachers indicated that 44 % of the children have shown school improvement as the result of health education.

3. Individual Health Records.

D. F. Smiley, medical advisor of Cornell University made a study of the health of the Urban and Rural students in Cornell College.[5] He took six hundred and sixty rural dwelling agricultural short course students' physical records, covering three years of time and placed them against those of an equal number of urban dwelling regular students for the purpose of determining the differences in health in the two groups.

5. Health Inventory of Urban and Rural Students. The Nation's Health. Vol. 8, January 1926.

The results of this comparison show:-

1. The conditions of city life seem to entail an increased incidence for the acute infectuous diseases which medical science has not yet brought under control.
2. Physical defects seem to be rather evenly distributed between urban and rural dwellers - about 2½ defects apiece.
3. Urban dwellers have remedied about one-third of their physical defects by college age. Rural dwellers have remedied only about one-fifth of their defects.
4. The health habits and health knowledge of urban dwellers, as a whole, are superior to those of rural dwellers.

The findings of Health Habits showed that there is an average of 95 faulty health habits per urban student and 1.21 faulty health habits per rural students.

The faulty health habits were:-

1. Brush teeth less than twice daily.
2. See Dentist less than once yearly.
3. Do not move bowels at least once daily.
4. Average less than seven hours sleep a night.

There is an average of 1.59 remediable defects per urban student and 2.05 remediable defects per rural student showing beyond question that the urban group avails itself of medical assistance more effectively. Defects predominating markedly in

the rural group are nasal obstruction, poor nourishment, carious teeth, and pyorrhea. Defects predominating markedly in the urban group are chronically infected or hypertrophied tonsils and enlarged thyroid. It is interesting to note that the posture of the rural group is inferior to that of the urban group and that a larger number of the rural group is in need of a fitting to glasses.

Dr. Smiley made the statement, "The combination of carious teeth, pyorrhea, and poor nourishment so often found in the rural group is an indictment of the rural dietary habits."

The question was then asked by Dr. Smiley:- "If an ordinary thorough going physical examination of individuals of the educated class, from the better homes, at the healthiest period of their lives, shows from 1½ to 2 remediable defects per person and from one to two faulty health habits or chronic complaints per person, what must be the need for physical examination and medical advice in the population at large?"

"Health services of Colleges and Universities occupy a strategic position for the study of the medical histories and the results of the physical examinations of young men and women," stated Howard Beard, M. D., University Health Officer of the University of Illinois, Urbana, Illinois.[6]

The generalizations presented by Dr. Beard in his study of "Health Problems as shown by College Medical Examinations", are based upon a total of 14,641 medical histories of which 10,487

6. "Health Problems Shown by College Medical Examinations. The Nation's Health, Vol. 7, December 1925.

are those of men and 4,154 of women examined during the years 1919 to 1923 inclusive.

1. A smaller percentage of girls than boys use coffee, the number of the former is increasing at a mean rate of 2.5 per cent per class. In the case of men, coffee drinkers show slight decrease.
2. Tea addiction of men is greater than that of women. While the men have shown no increased use of this beverage during the last five years, in the women the increase has been 14% during the last three years, a per annum average of 4.6%.
3. About 30% of the men examined gave a history of using tobacco. During the last five years this has fallen from nearly 32% to approximately 27%.
4. 88% of women and 91% of the men sleep from seven to nine hours daily which is about normal. About 2.5% of the men gave a history of lack of sleep, while 5% of the women get less than seven hours of sleep.
5. At the time of physical examination 22.1% of the men and 36.5% of the women gave a history of wearing glasses.
6. A greater percentage of women than men have measles, whooping cough, chickenpox and scarlet fever. The incidence of mumps, typhoid fever and smallpox is about the same in men and as in women, but a slightly greater tendency in men than women.

"The medical history of the high school graduate is a picture whose shadows reveal many avoidable accidents, much preventable infection and great delay in the use of well established means of immunization. It shows the encouraging fact that available scientific knowledge is being more and more used by intelligent laymen to promote the welfare of their families and that of their community."

Gertrude Bilhuber, Associate Professor of Purdue University, Lafayette Indiana, made an interesting study of health habits of rural children in Washtenaw County, Michigan.[7] There were between four and five thousand rural children examined by a physician. This study was based upon the information gathered at that time, and although it covers only a small percentage of the entire group examined, it serves as a cross section picture of the larger number.

Each child was questioned individually by the writer, and his answers recorded with the result that uniformity of information and accuracy in interpretation was possible.

The study covered 621 health habit histories and represnted visits to thirty-six rural one-room schools. Of these 621 children, 347 were boys and 274 were girls. The ages ranged from six to seventeen years with the largest group at age ten in the fourth grade. School attendance varied from five to thirty-three pupils per school, with an average of fourteen pupils.

7. "Health Habits of Rural Children". The Nation's Health. Vol. 7, November 1925.

Past incidence of disease revealed an average of 2.3 cases of communicable disease per child. Prevalence of disease was greater among girls than among boys. Only 7.8% of the group reported no communicable disease.

According to the Baldwin-Wood tables, three times as many rural girls as boys were underweight in this group of 621. A greater percentage were also over weight. The adolescent years showed the greatest extremes of over and underweight. Only 6.4% of entire group were normal according to the tables used.

"Physical defects are potentially more serious among rural than urban children, due to lack of medical inspections and follow up work. Not the discovery alone, but what is done about it, is the important thing," says Miss Bilhuber. Seventy-eight and eight-tenths per cent of this group in Washtenaw County showed defects of some kind, most of which were preventable and should have been corrected during early life. These defects were:-

	No. Children	Pct. of total 621
Tonsils	260	41.7
Teeth	180	28.8
Cervical glands	136	21.7
Goiter	103	16.5
Eyes	73	11.5
Skin	20	3.2
Lungs	20	3.2
Ears	19	3.0
Orthopedic defects	15	2.4

Mouth breathing	13	2.0
Heart	11	1.4
Speech	3	0.4
Mental	2	0.3
No defects	132	21.2

The questionnaire on health habits covered five approaches to health, namely: nutrition, care of teeth, cleanliness, rest and recreation.

"Nutrition is probably one of the most important approaches to health," stated Gertrude Bilhuber.

This study revealed (1) the usual capriciousness of appetite among children; (2) an ignorance of food values; (3) an amazing lack of variety in food choices; (4) an excess in starchy foods and no knowledge of preserving them for that season; (6) conservatism in the use of milk as a food for growing children.

Meat and potatoes were frequently eaten three times a day. The three P's, potatoes, pork, and pancakes, were the staple diet for the winter months. Vegetables figured very little. 34.6% of the children not having any during the winter.

Forty-eight percent of the children drank one or more cups of coffee per day, while 21% drank one or more cups of tea. The amount of water used, usually about three glasses per day.

"The teeth in this group were shockingly bad, especially the first teeth of younger children," stated Gertrude Bilhuber.

Over 40% had never been to the dentist. The use of the tooth brush was ignored by 11%. There were 33.8% who brushed

their teeth from one to four times weekly.

This study revealed that the weekly bath is still the American institution, being the custom in 76.9% of the cases. Hands, however, were very unclean and finger nails were terribly neglected. No children ever observed the elementary habit of washing their hands before eating lunch. Only a small percentage, 0.9 did not bathe during the winter.

The rest hours of rural children averaged eight to nine hours.

The conditions under which they got that sleep is not so favorable so it seems. There were 36% of the group who never opened windows. A large majority of them slept with some one at night.

There was no organized recreation in any of the thirty-six schools visited.

In conclusion, Gertrude Bilhuber stated, "With Thomas Wood, M. D., we say feelingly, our schools are spending millions in educating, or trying to educate, the children who are kept back by ill health when the expenditure of thousands in a judicious health program would produce an extraordinary saving in economy and efficiency. The principle of thrift in education finds its first and most vital application in the conservation and improvement of the health of the children."

A survey of problem cases was made some years ago by the New York City Schools[8] by George Parrish, Commissioner of

8. "Health and School Progress" by Kegel, Chicago Schools Journal, June 1929, Page 366.

Health of Los Angeles.

Some of the causes of retardation in the school were due to:

Difference in health of pupils while at school.

Degrees of irregularity while at school.

Differences in mentality of normally intelligent children.

Presence of subnormal children in regular classes.

Physical defects.

Differences in maturity.

Dr. Arnold H. Kegel, Commissioner of Health pointed out to the reader that many of the causes of retardation related directly to the physical or mental health of the child.

An interesting program for the betterment of the health program for the betterment of the health of each individual school child in Chicago has been launched by the Health Department, with the co-operation of the Superintendent of schools, board of education, the medical and dental societies and the Chicago Council of Social Agencies.[9]

It is planned to establish forty health centers in the city with staffs which will be responsible for children in the public and parochial schools in their respective districts. The object is to secure correction of all physical defects.

Thus far, two centers have been designated. The first was the Kinzie school district at La Salle and Ohio street,

9. "Health and School Progress Magazine" "Chicago Schools Journal, No. 10, June 1929, Page 368.

the second is the building of the West Park Commissioners, located in Union Park.

The Kinzie school district was chosen first because previous experience shows it to be one of the neediest. Four nurses and two physicians have begun the work of securing correction of defects. There are approximately 9,000 children enrolled in the schools in this district.

The second center in Union Park, will serve a district containing approximately 36,000 children.

This is the plan they will follow:-

1. A careful physical examination is to be made of every child in every school in the district by the school physicians and nurses.
2. All parents have an opportunity either to be present during the examination or to come to the school at a later date and hear the physicians' explanations of the findings and suggestions as to corrections.
3. Examination of the older girls by women physicians.
4. As much privacy as it is possible to give in the examination of the older children.
5. The making of a complete defect card to be kept in the school for each child.
6. Preparation of a desk sheet for each teacher, bearing a brief summary of the physical finings on each child, arranged alphabetically by pupils' names, to which the

teacher can refer when she wonders at the difficulties the children are having in meeting their problem and upon which she can enter remarks as to scholastic progress.

7, Provisions to have the defect cards follow each child from school to school even in junior high school and senior high school.

The manner in which the Chicago schools strive to correct the physical defect is:

1. Through close co-operation with teachers, principals, the school physicians and nurses who suggest to parents the need for having corrections attended to by their own family physicians. In the majority of cases this is readily accomplished.
2. In case corrections are not made the efforts of special health department staff are directed specifically to the solution of the problem.

Those cases which exhibit difficulties are classed as "problem cases" and when all methods of correction have failed a "case conference" of teachers, compulsory education officers, juvenile court representatives are called.

"Perhaps one of the chief reasons for the application of this plan is the well-known tendency on the part of retarded pupils to repeat grades. The cost of repeating to the school system may run into close to a million dollars a year. The

expenditure of a smaller sum in this health movement may not stop all "repeating" but it will reduce it", so writes Dr. Kegel on page 368 of the article.

"The difficulties of making thorough physical examinations under any plan are many. To secure a large percentage of corrections is also a problem of no mean dimensions." Dr. Kegel points out.

Daniel R. Hodgdon has analyzed conditions back of failures in the fourth, fifth and sixth grades of a school and found "that children with normal I. Q. 's are not so often lazy and indifferent as has been frequently claimed when they fail to pass their grades."[10]

Daniel R. Hodgdon gave intelligence tests to all the repeaters in these grades and found that in the fourth grade 56% had I. Q.'s above 90, some of them even above 110, that in the fifth grade 78% tested above 90, and in the sixth grade 56% scaled above 90. All these children whose I. Q.'s were 90 or more were found to be 10% below normal weight and every one of them "passed through their grades as soon as they were brought up to normal condition physically. "This is definite proof that in this school of 1100 children", states Dr. Hodgdon, "Malnutrition and physical condition had a very definite relation to failure."

10. "Why Normal Children Fail Their Grades." Magazine "Brief" National Child Welfare Association, Vol. 6, No. 3. December 1928, Page 4.

"I believe", he further states, "that the I. Q. is decidedly helpful in locating difficulties which may arise from home conditions, health, and the general attitude of the child."

Ayers found that a relatively higher percentage of school children with enlarged glands, defective breathing, defective teeth, hypertrophied tonsils and adenoids, were to be found among the retarded than among either the normal or accelerated."[11]

11. "Laggards in Our School" Chapter XII.

Chapter III

SPECIFIC PROBLEM AND METHOD OF PROCEDURE

The aim of this study is to make a comparison between physical defects and school achievement, and a comparison between health habits and school achievement.

The quotations given in Chapters I and II seem to point out the fact that health service and health training in our schools should articulate closely with mental training. There was much evidence that physical growth has some effect upon the mental growth of a child.

The correction of defects and the formation of good health habits requires knowledge. C. H. Judd stated[1], "Health in the broad sense comes through intelligent living, and intelligent living requires intelligence." School achievement, to be of lasting value, should be the result of intelligent thinking, therefore, there must be some relationship between health and achievement in the school.

The data for this study were collected from 146 children in the Junior High School, Iola, Kansas, during the school year, 1928 and 1929. The group was composed of the girls in the seventh, eighth, and ninth grades within the school. This group was chosen for two reasons: (1) There was a felt need of remedial work, and health instruction among the girls, by the

1. "Health Education Vs. Physical Training". National Education Association, 1925. Page 696.

the majority of the junior high school teachers. In previous years most of our disciplinary cases had been the girls, our retarded problem cases had been mostly among the girls. (2) The amount of expense connected with the experiment prohibited that greater numbers be examined by the physician.

These children have had some health teaching in the lower grades. There has been, however, a very small amount of testing done, either medical examination or mental measurement. Thus the writer of this thesis had no past records or reports to base any investigations upon for the present study.

The children of the Junior High School have a very healthful environment. The building is a new one, built in 1924, and is equipped with the Univent system of ventilation which makes a complete change of air every three minutes.

The method of ventilation is important because, "Evidence has been slowly accumulating which serves to show that the method of ventilating the school room has an important bearing on the health of the school child as measured in terms of respiratory disease rates." stated Thomas J. Duffield.[2]

The County Health Officer of Allen County, C. B. Stephens, M. D., after inspection of the building, classified the Iola Junior High School highly from the viewpoint of health environment.

2. American Journal of Public Health, Vol. 19, January 23, 1929.

Healthful school surroundings is a pressing need in the health program of schools according to Thomas D. Wood. He listed as the fifth pressing need in a health program-- "An efficient hygiene of school management."[3]

In order to gain a scientific knowledge of the defects existing among the 146 children of the Junior High School, Iola Kansas, a medical examination was given.

Charles K. Taylor stated,[4] "A thorough physical examination can be made only by an experienced physician."

Also - "A physician should be selected who has some special interest in, and adaptability for work with school children," wrote Terman.[5]

With those two statements in mind, one of the leading physicians, James T. Reid, M. D., of Iola, Kansas, was selected to examine the 146 children. He has co-operated with the school authorities in many ways. He has taken control of many charity operations of school children. He has an interest in the school because he is the father of two school children, one a junior high school student. He has attended school activities for many years and has always shown a splendid attitude in the health activities of the school.

He was assisted in the examinations by the two physical training supervisors.

3. "The Health Crisis" National Education Association, Vol. 59.
4. "The Physical Examination and Training of Children. Taylor.
5. "Health Work In The Schools." Hoag and Terman.

The chart used in making notations of the health of the individual child may be found in the appendix.

The height and weight chart used in determining whether the child was underweight or overweight was the chart found in the book, "Health Habits" by B. C. Maroney, the text adopted by the state of Kansas for Health Teaching.

The Snellen Eye chart was used for the testing of the eyes of the children.

The ears of the children had been tested previous to the physician's examination and the seating arrangement in the classrooms made according to the results of the test.

These physical examinations, given by the physician, covered three weeks of time, beginning the third week in September, one hour a day, and was completed the second week in October.

Each child's physical record was filed in the Principal's office.

The last week of October the Otis Self Administering Group Intelligence test was given to the 146 children to determine their intelligence quotients. This test was chosen for that purpose because of its reliability.

"Recent mental tests have given very high reliability, many being over ± .90 -- the Otis Self Administering yielded ± .92", stated Richard W. Husband.[6]

A copy of this test may be found in the appendix.

6. School and Society. Vol. 28, October 27, 1928. Page 521.

The 146 children, who were examined by the physician, and who had been given the Otis Intelligence Test, were then given the Stanford Achievement Test, Form B for the purpose of measuring their abilities in school subjects.

This achievement test was chosen because it has a reliability of ± .98 for a single grade.[7] A copy of this achievement test may be found in the appendix.

The relation between physical defects and school achievement was sought. There were many handicaps in striving to solve this problem because:-

"School medical Inspection still suffers from the lack of standard." stated Terman.[8]

"Physical examinations are quite universal but standardization is badly needed,"wrote Charles K. Taylor.[9]

Since there was no standard means of measurement of defects, the writer of this thesis attempted to make a score card of defects found in the physician's examinations of the 146 Iola girls. Three nurses, two of them school nurses, were selected to classify the defects. They were asked to give their judgment of the bearing of these defects upon the school achievement.

This score card may be found in the appendix.

The most common defects found in the physician's examination were:

7. School and Society, Vol. 28, October 27, 1928, Page 521.
8. "Health Work In The Schools" Hoag and Terman.
9. "The Physical Examination and Training of Children" Taylor.

Diseased tonsils.
Defective eyes not fitted to glasses.
Defective teeth.
Enlarged glands.
Orthopedic defects.
Markedly stooping posture.
Mouth breathing.
Heart defect.
10% Underweight and 20% overweight.

These defects found among the 146 children were almost identically the same as those found in the survey of 86 cities,[10] and those defects found, during the examinations of rural school children, made by Gertrude Bilhuber.[11]

Faulty habits were noted during the physical examination. These faulty habits were practically the same as D. F. Smiley[12] found in his study of the health of rural and city children.

These faulty habits were:

1. Brush teeth less than twice daily.
2. See dentist less than once yearly.
3. Faulty sleeping habits.
4. Do not move bowels at least once daily.
5. Average less than seven hours sleep a night.
6. Faulty eating habits.

One encouraging fact was noted. The children had good habits of cleanliness. That was one fact that was noted in practically every health survey. The American child seems to be a clean individual.

10. "Health Survey of 86 Cities" Research Division, American Child Health Association.
11. "Health Habits of Rural Children" The Nation's Health, November 1925.
12. "Health Inventory of Urban and Rural Students" The Nation's Health, January 1926.

After the physical examinations had been given, the intelligence quotients found, and the Stanford Achievement scores tabulated, and defects noted, the health teaching was renewed. Health habit teaching was intensified, with stress placed upon the outstanding faulty habits found in the physical examination. There was correlated health teaching in connection with the domestic science and domestic art classes.

Many times during the year there were special assemblies with health habit formation the subject.

There were visual education films presented before the entire student body for the purpose of teaching good health habits. These films were obtained from the University of Kansas Bureau of Visual Education. The names of the films were:- (1) Good Teeth, (2) The Flying Bandit,(3) How's Your Eyesight? (4) How We Breathe.

The film on "Tuberculosis", a three reel picture, sent out by the State Tuberculosis Association of Topeka, Kansas was also presented.

There were health posters placed in the school hall ways.

Health pageants and plays were presented in the assemblies. These pageants and plays were presented by some of the 146 children.

Inspection was made three times a week, by the physical training supervisor. The inspection covered every day of the week.

Corrective exercises were given in the physical education classes for the correction of faulty posture, Exercises were given to correct orthopedic defects.

The names of those children who had defective eyesight were given to the teachers so that those afflicted would be placed in correct seating positions.

Five children, out of the twelve cases having enlarged glands began using iodine in some form.

The one child who had lateral curvature of the spine began taking treatments from a physician to strive to correct the defect.

At the close of the school year it was noted by the Principal and health supervisors that many who had defective eyes were wearing glasses. There were several tonsillectomy operations during the school year.

Thus, the Junior High School faculty tried to conduct an efficient "follow-up" health program.

Thomas D. Wood[13] pointed out that one of the present needs of a health program in the schools is, "An efficient program of follow-up health work, conducted by the school, home and community."

In May 1929, the second testing program was given. The 146 children were given the Stanford Achievement Test, Form A.

13. "The Health Crisis" National Education Association, Vol. 19, January 23, 1929.

The reliability of this test has been stated, by Richard W. Husband[14] as ± .98 for a single grade. A copy of this test may be found in the appendix. A Health Habit Test or Scale constructed by E. George Payne was given. This test is not a standard test but is the best scale for the measurement of attainment in the development of habits and ideals in health, that can be procured at the present time.

"This scale has the same object as has a scale for measuring attainments in spelling, arithmetic, language, or any other subject; it provides an objective unit of measure that can be applied to the children in each grade, so that the teacher may know how her children compare with other children in other parts of the community or country. The ideal cannot be fully attained in this scale as the practice on which this scale is based is not sufficient to determine the proper degree of attainment for each grade."[15]

The data were recorded and the relationship was sought between health habits and school achievement, and a comparison between physical defects and school achievement.

14. School and Society. Vol. 28, October 27, 1928. Page 521.
15. "Education in Health" Page 229.

Chapter IV,

INTERPRETATION OF DATA AND SIGNIFICANT FACTS

"Data collected from test or experiment are often merely a series of numbers or mass of figures without meaning or significance until they have been re-arranged or classified in some systematic way", stated Henry E. Garrett. Thus, keeping that statement in mind, the first task that confronted the writer of this study was the organization of the material. This led naturally to a grouping of the measures into classes or categories. The procedure in grouping was: (1) The determination of the range in scores of physical defects, school achievement, health habits and mental age. The interval between the largest and the smallest measures were found. This distribution may be found in Tables I, II, III, IX, X, XI.

The number and size of the steps or class intervals depended largely upon the range.

The step intervals were listed serially with the smallest measures at the bottom of the column and the frequency of occurrence opposite each step.

1. Statistics in Psychology and Education. H. E. Garrett.

TABLE I

Distribution of Stanford Achievement Test Scores Form B, of 146 Children in Junior High School, Iola, Kansas, 1928.

Achievement Scores	Frequency
94-96	1
91-93	1
88-90	2
85-87	5
82-84	13
79-81	6
76-78	8
73-75	15
70-72	13
67-69	12
64-66	12
61-63	12
58-60	21
55-57	9
52-54	7
49-51	3
46-48	1
43-45	2
40-42	2
37-39	1
	146

Mean 67.55

TABLE II.

Distribution of Physical Defect Scores of 146 Children in Junior High School, Iola, Kansas, 1929.

Defect Scores	Frequency
981-1000	11
961- 980	5
941- 960	5
921- 940	7
901- 920	9
881- 900	13
861- 880	13
841- 860	11
821- 840	22
801- 820	12
781- 800	12
761- 780	7
741- 760	4
721- 740	4
701- 720	1
681- 700	4
661- 680	3
641- 660	2
621- 640	0
601- 620	1
	146

Mean = 820.6

TABLE III.

Distribution of Mental Ages in months based on Otis Self Administering Group Intelligence Test, of 146 Children in Junior High School, Iola, Kansas, October, 1928.

Mental Ages	Frequency
206-210	1
201-205	0
196-200	5
191-195	3
186-190	14
181-185	6
176-180	11
171-175	20
166-170	12
161-165	9
156-160	13
151-155	18
146-150	12
141-145	9
136-140	2
131-135	4
126-130	1
121-125	2
116-120	3
111-115	1
	146

Mean 163.3 or 13 yr. 7 mo.

After the systematic arrangement of the scores a relationship between the physical defect scores and the school achievement scores was established by the product moment method of correlation. This relationship is illustrated in Table IV.

The relationship in Table IV was expressed by the coefficient of correlation, designated by r. The score is .182. It may be said that the correlation between school achievement and physical defects is positive because -- "A positive correlation indicates a positive relation or correspondence," wrote Henry E. Garrett.[2]

In order to give a more detailed comparison between the two traits, physical defects and school achievement, the two groups of scores were divided into 20 percentile divisions as shown in Table V. The reader must keep in mind that a high defect score indicates few defects, and a low defect score indicates many defects.

In noting the results of the 20 percentile division of scores the following truths are revealed:-

2. Statistics in Psychology and Education. Page 151.

TABLE IV.

Correlation Between School Achievement and Physical Defects Scores.

Defect Score	Achievement Scores																			
	37 39	40 42	43 45	46 48	49 51	52 54	55 57	58 60	61 63	64 66	67 69	70 72	73 75	76 78	79 81	82 84	85 87	88 90	91 93	94 96
981-1000								1		1		1	2	1	1	1	2			1
961-981					1				1				1			1		1		
941-960	1							1		1		1				1				
921-940							1	1	1	1	1					2				
901-920							1	1		1	2		2		1		1			
881-900						1		3	2	2	1	2	1		1					
861-880						1				1	4	2	1	1		2		1		
841-860			1			1	3	2				2		2		1				
821-840							3	2	2	1	1	2	6		1	2	1			
801-820							1	3	2	2			1	1	1	1				
781-800			1		2	3		1	1		1	1			1	1				
761-780		1						1	2	1		2								
741-760								2		1				1						
721-740									1		1		1						1	
701-720																1				
681-700		1						1						1			1			
661-680								1			1			1						
641-660			1					1												
621-640							1													
601-620							1													

r = .182

P. E. = .054

1. There were 28 of the 146 children who ranked in the highest 20 percentile in physical defect score.
   4 of the 28 children ranked in the highest 20% in school achievement.
   10 of the 28 children ranked in the second highest 20% in school achievement.
   8 of the 28 children ranked in the middle 20% in school achievement.
   5 of the 28 children, ranked in the fourth highest 20% in school achievement.
   1 of the 28 children, ranked in the lowest 20% in school achievement.
2. The second noticeable result of this division shown in Table V, was:
   There were 47 of the 146 children who ranked in the second highest 20 percentile in physical defect score.
   2 of the 47 children ranked in the highest 20% in school achievement.
   12 of the 47 children ranked in the second highest 20% in school achievement.
   19 of the 47 children ranked in the middle 20% in school achievement.
   13 of the 47 children ranked in the fourth highest 20% in school achievement.
   1 of the 47 children ranked in the lowest 20% in school achievement.

TABLE V.

Graphic Representation Showing the Comparison Between Physical Defect Scores and School Achievement Scores in 20 Percentile Divisions

Defect	Achievement 37-48	49-60	61-72	73-84	85-96
921-1000	1	5	8	10	4
841-920	1	13	19	12	2
761-840	2	16	18	15	1
681-760	1	3	3	4	2
601-680	1	3	1	1	0

3. There were 52 of the 146 children who ranked in the middle 20 percentile in physical defect scores.

There was 1 of the 52 children who ranked in the highest 20% in school achievement.

15 of the 52 children ranked in the second highest 20% in school achievement.

18 of the 52 children ranked in the middle 20% in school achievement.

16 of the 52 children ranked in the fourth highest 20% in school achievement.

2 of the 52 children ranked in the lowest 20% in school achievement.

4. The fourth truth noted in Table V was that 13 of the 146 children were in the fourth highest 20 percentile of the physical defect scores.

2 of the 13 children ranked in the highest 20% in school achievement.

4 of the 13 children ranked in the second highest 20% in school achievement.

3 of the 13 children ranked in the middle 20% in school achievement.

3 of the 13 children ranked in the fourth highest 20% in school achievement.

1 of the 13 children ranked in the lowest 20% in school achievement.

5. There were 6 of the 146 children who ranked in the lowest 20 percentile in physical defect scores.

There were none of the six who were in the highest 20% in school achievement.

1 of the 6 children ranked in the second highest 20% in school achievement.

1 of the 6 children ranked in the middle 20% in school achievement.

3 of the 6 children ranked in the fourth highest 20% in school achievement.

1 of the 6 children ranked in the lowest 20% in school achievement.

There are several significant facts revealed in this Table V. They are: The 4 children who ranked highest in school achievement also had the highest defect score or fewest physical defects. On the other hand there were none who had the greatest number of defects, or lowest defect score, who ranked in the highest 20% in school achievement.

The whole graphic representation shows a tendency for high achievement accompanied by few defects while large numbers of defects accompany low achievement.

In order to make further comparisons between physical defects and school achievement the scores were divided into 50 percentile divisions. The defect scores of the 146 children were divided into 50 percentile divisions and arranged

horizontally as in Table VI.

A few significant statements are noted, based on this table.

1. There were 61 of the 146 children who ranked in the highest 50% in school achievement who had the fewest number of defects.
2. There were 47 of the 146 children who ranked in the lowest 50% in school achievement and had a small number of defects.
3. There were 23 of the 146 children who ranked in the lowest 50% in school achievement and had the largest number of physical defects.
4. Only 15 of the 146 children ranked in the highest 50% in school achievement and in the 50% having the largest number of physical defects.

It is especially significant that 61 of the 146 children ranked highest in school achievement and at the same time had the fewest number of physical defects while only 15 ranked in the highest 50% in school achievement and at the same time had the largest number of physical defects. This alone indicates that the school child who has a large number of physical defects or defects that score high in detrimental value is handicapped, to a high degree, in his school work.

The writer of this study sought a comparison between physical defects and mental age.

TABLE VI.

Graphic Representation, Showing the Comparison Between Physical Defect Scores and School Achievement Scores in 50 Percentile Divisions

Defect	Achievement: 37 to 66	Achievement: 67-96
801-1000	47	61
601-800	23	15

Terman[3] defined mental age as, "that degree of general ability which is possessed by the average child of corresponding chronological age."

Virgil E. Dickson[4] stated, "Such factors as application, health, interest and environmental influences enter strongly to determine how fully his ability will realize itself in actual achievement."

In order to make the comparison between physical defects and mental age, the scores were divided into 20 percentile divisions. The defect scores of the 146 children were divided into 20 percentile divisions and arranged vertically, and the mental ages were divided into 20 percentile divisions and arranged horizontally as in Table VII.

Table VII reveals several facts concerning the relationship that existed between the mental ages and physical defects. These facts were:

1. There were 28 of the 146 children who ranked in the highest 20 percentile in physical defect score or the lowest number of defects.

3 of the 28 ranked in the highest 20% in mental age.
12 of the 28 ranked in the second highest 20% in mental age.
8 of the 28 ranked in the middle 20% in mental age.
5 of the 28 ranked in the fourth 20% in mental age.
None of the 28 ranked in the lowest 20% in mental age.

3. "The Intelligence of School Children" L. M. Terman, Chap. I.
4. "Mental Tests and The Class Room Teacher" Dickson, Chap. III.

TABLE VII.

Graphic Representation, Showing the Comparison Between Physical Defect Scores and Mental Ages in 20 Percentile Divisions

Defect	Mental Age: * 9. 4 to 10. 11	11. to 12. 6	12. 7 to 14	14. 2 to 15. 8	15. 9 to 17. 3
921-1000		5	8	12	3
841-920	1	9	13	19	4
761-840	5	10	20	16	2
681-760	1	2	6	2	2
601-680		1	2	3	

* years and months.

2. There were 46 of the 146 children who ranked in the second highest 20 percentile in physical defect scores.
   4 of the 46 ranked in the highest 20% in mental age.
   19 of the 46 ranked in the second highest 20% in mental age.
   13 of the 46 ranked in the middle 20% in mental age.
   9 of the 46 ranked in the fourth highest 20% in mental age.
   1 of the 46 ranked in the lowest 20% in mental age.
3. There were 53 of the 146 children who ranked in the middle 20 percentile in physical defect scores.
   2 of the 53 ranked in the highest 20 % in mental age.
   16 of the 53 ranked in the second highest 20% in mental age.
   20 of the 53 ranked in the middle 20% in mental age.
   10 of the 53 ranked in the fourth highest 20% in mental age.
   5 of the 53 ranked in the lowest 20% in mental age.
4. There were 13 of the 146 children who ranked in the fourth highest 20% division in physical defect scores.
   2 of the 13 ranked in the highest 20% in mental age.
   2 of the 13 ranked in the second highest 20% in mental age.
   6 of the 13 ranked in the middle 20% in mental age.
   2 of the 13 ranked in the fourth highest 20% in mental age.
   1 of the 13 ranked in the lowest 20% in mental age.

5. There were 6 of the 146 children who ranked in the lowest 20 percentile in physical defect scores, or having many physical defects.

   None of the 6 ranked in the highest 20% in mental age.
   3 of the 6 ranked in the second highest 20% in mental age.
   2 of the 6 ranked in the middle 20% in mental age.
   1 of the 6 ranked in the fourth highest 20% in mental age.
   None of the 6 ranked in the lowest 20% in mental age.

6. One may further state that there were 38 in the higher 40% in mental ages and higher 40% in physical defect scores. That may be stated in another manner as--there were 38 of the 146 children who were in the higher 40% in mental ages and these 38 had the fewest physical defects.

   There were only 7 of the 146 who ranked in the upper 40% in physical defect scores. In other words, there were only 7 of the 146 children with high mental ages who had a large number of defects.

7. It is an interesting fact to note that only 15 of the 146 children who ranked in the lower 40% in mental ages also ranked in the upper 40% in physical defect scores. The meaning of that is--only 15 of the 146 children who had low mental ages also had a small number of defects.

Comparing statement 6 with statement 7 a summary may be stated.

As a general rule high mental ages accompany few physical defects.

The mental ages and physical defect scores were divided into 50 percentile divisions to give further comparison. This 50 percentile division may be seen in graphic form in Table VIII.

There are three interesting comparisons found in this 50 percentile division. They are:

1. There were 67 of the 146 children who ranked in the higher 50% in physical defect scores and in the higher 50% in mental ages. This brought out the truth that 67 of the 146 children had high mental ages accompanied by very few physical defects.
2. There were 16 of the 146 children who ranked in the higher 50% in mental ages and at the same time ranked in the lower 50% in physical defect scores. This may be stated in this way--only 16 of the 146 children, who ranked in the higher 50% in mental ages had a large number of defects.
3. There were 41 of the 146 children who ranked in the upper 50 % in physical defect scores and ranked in the lower 50% in mental ages.

After the comparisons of physical defects and school achievement by means of the method of correlation, and by means of 20 percentile divisions, and by 40 percentile divisions, it was deemed a wise plan to use the same type of comparisons

TABLE VIII

Graphic Representation, Showing the Comparison Between Physical Defect Scores and Mental Ages in 50 Percentile Divisions

Defect	9 yrs. 5 mo. – 13 yrs. 3 mo.	13 yrs. 4 mo. – 17 yrs. 3 mo.
801-1000	41	67
601-800	22	16

Mental Age

TABLE IX.

Distribution of Stanford Achievement Test Scores, Form A, of 146 Children in Junior High School, 1929.

Achievement Scores	Frequency
96-100	1
91-95	5
86-90	8
81-85	14
76-80	26
71-75	19
66-70	32
61-65	25
56-60	10
51-55	5
46-50	0
41-45	0
36-40	1
	146

Mean = 72.1

TABLE X.

Distribution of Health Habit Scores of 146 Children in Junior High School, Iola, Kansas, 1929.

Health Habit Score	Frequency
434-448	4
419-433	4
404-418	8
389-403	13
374-388	25
359-373	12
344-358	14
329-343	19
314-328	8
299-313	9
284-298	7
269-283	8
254-268	8
239-253	6
224-238	0
209-223	0
194-208	0
179-193	0
164-178	1
	146

Mean = 346. 88

TABLE XI

Distribution of Mental ages, in months, based on Otis Self Administering Group Intelligence Test, of 146 Children in Junior High School, Iola, Kansas, May 1929

Mental Ages	Frequency
211-215	1
206-210	1
201-205	4
196-200	4
191-195	14
186-190	8
181-185	10
176-180	20
171-175	10
166-170	11
161-165	16
156-160	16
151-155	14
146-150	4
141-145	2
136-140	4
131-135	2
126-130	2
121-125	2
116-120	1

Mean = 170 or 14 yr. 2 mo.

between health habits and school achievement.

Thus the method of correlation was used.

The relationship between health habits and school achievement was expressed in Table XII by the coefficient of correlation, designated by r. The score was .112. This is a positive correlation.

In order to show a more definite comparison the health habit scores of the 146 children were divided into 20 percentile divisions and placed vertically on the page (Table XIII) and the school achievement scores were divided into 20 percentile divisions and placed horizontally on the page (Table XIII). The scores of the individual children were then tabulated and ranked.

Several significant facts were revealed in this chart (Table XIII). They were:

1. There were 29 of the 146 children who ranked in the highest 20 percentile in health habit scores.

   3 of these 29 ranked in the highest 20% in school achievement.

   9 of these 29 ranked in the second highest 20% in school achievement.

   14 of these 29 ranked in the middle 20% in school achievement.

   3 of the 29 ranked in the fourth 20% in school achievement.

   None of the 29 ranked in the lowest 20% in school achievement.

TABLE XII.

Correlation Between Health Habit Scores and School Achievement Scores.

Habit	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90	91-95	96-100
434-448						1	1		1			1	
419-433							1	2		1			
404-418					1	1		3	2	1			
389-403					1	4	3	1	3		1		
374-388				1	1	2	6	3	6	3	2	1	
359-373					1	6	2		2		1	1	
344-358						1	3	1		6		1	1
329-343	1		2	2	1	6	1	3	1				
314-328						1	1	2	1	1	2		
299-313					1	1	1	4	3				
284-298					1	1	2	2	2				
269-283					1	1	2		1	1	1		
254-268					1	3	1	1			1	1	
239-253				1		4		1	1				
224-238													
209-223													
194-208													
179-193													
164-178							1						

School Achievement

$r = .112$ #

P.E. $= \pm .055$

TABLE XIII

Graphic Representation, Showing the Comparison Between Health Habit Scores and School Achievement Scores in 20 Percentile Divisions.

Habit	Achievement 36-48	49-61	62-74	75-87	88-100
392-448	0	3	14	9	3
335-391	1	8	23	24	5
278-334		8	14	13	1
221-277		6	10	1	2
164-220			1		

2. There 61 of the 146 children who ranked in the second highest 20 percentile in health habit scores.

   5 of the 61 ranked in the highest 20% in school achievement.

   24 of the 61 ranked in the second highest 20% in school achivement.

   23 of the 61 ranked in the middle 20% in school achievement.

   8 of the 61 ranked in the fourth 20% in school achievement.

   1 of the 61 ranked in the lowest 20% in school achievement.

3. There were 36 of the 146 children who ranked in the middle 20 percentile in health habit scores.

   1 of the 36 ranked in the highest 20% in school achievement.

   13 of the 36 ranked in the second highest 20% in school achievement.

   14 of the 36 ranked in the middle 20% in school achievement.

   8 of the 36 ranked in the fourth 20% in school achievement.

   None of the 36 ranked in the lowest 20% in school achievement.

4. There were 20 of the 146 children who ranked in the fourth highest 20 percentile in health habit scores.

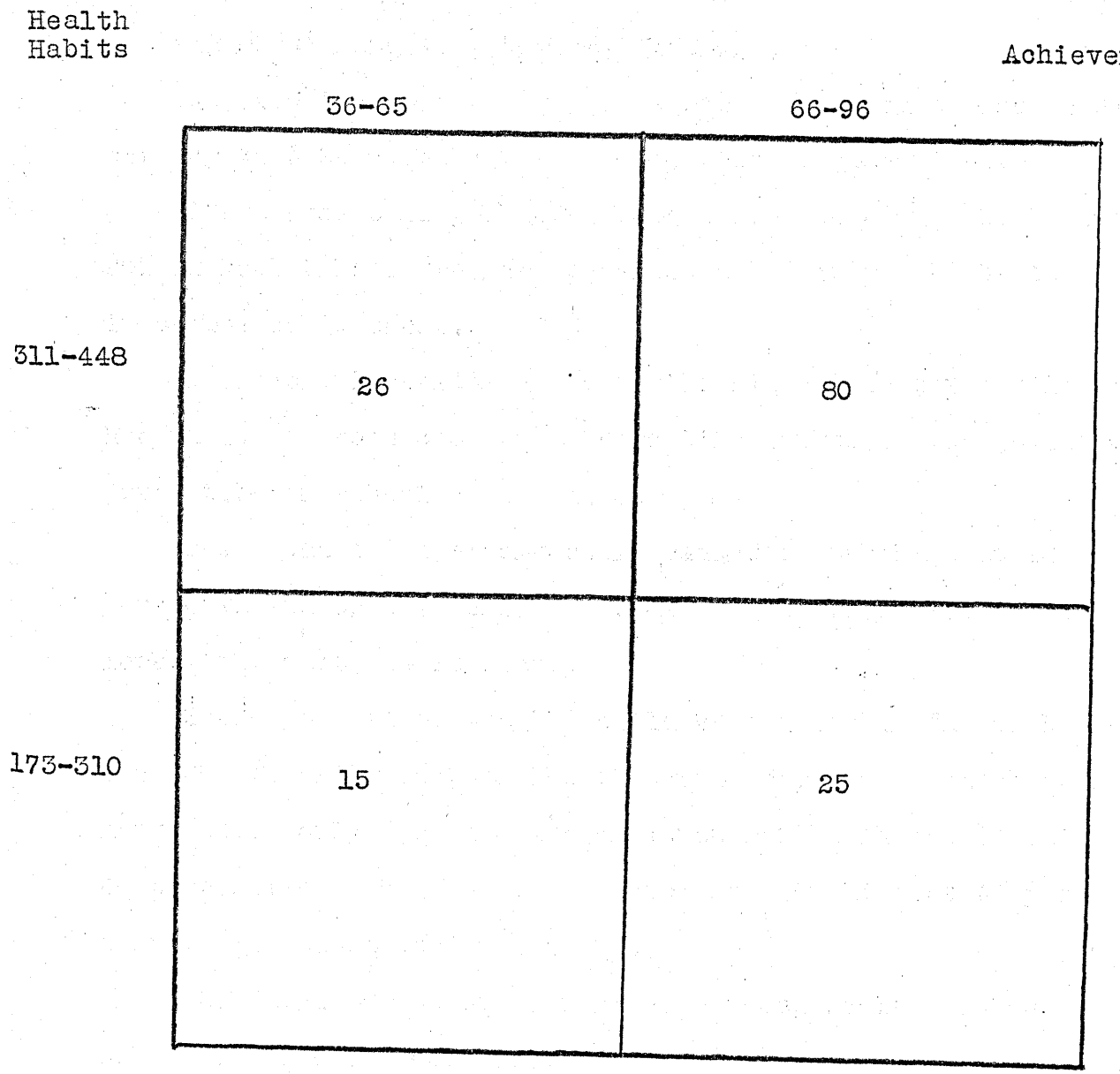
   2 of the 20 ranked in the highest 20% in school achievement.

   1 of the 20 ranked in the second highest 20% in school achievement.

   10 of the 20 ranked in the middle 20% in school achievement.

TABLE XIV

Graphic Representation, Showing the Comparison Between Health Habit Scores and School Achievement Scores in 50 Percentile Divisions



6 of the 20 ranked in the fourth highest 20% in school achievement.

None of the 20 ranked in the lowest 20% in school achievement.

5. There was only 1 of the 146 children who ranked in the lowest 20 percentile in health habit scores, and that 1 ranked in the middle 20% in school achievement.

A few outstanding significant statements may be made concerning this 20 percentile division form of comparison.

There were 3 of the 146 children who ranked in the highest 20% in health habit scores and also ranked in the highest 20% in school achievement.

Not a signle child ranked in the highest 20 percentile in health habit score and at the same time ranked in the lowest 20 percentile in school achievement.

There was not a single child ranked in the highest 20 percentile in school achievement and at the same time ranked lowest in health habit score.

There were 41 of the 146 children who ranked in the highest 40 percentile in both health habit scores and school achievement, while only 3 of the 146 children ranked in the lowest 40 percentile in health habit scores and the highest 40 percentile in school achievement.

The third method of comparison between health habits and school achievement was made.

The two groups of scores, health habit and achievement, were divided into 50 percentile divisions. The division is shown in Table XIV.

This graphic representation (Table XIV) reveals several important details concerning the comparisons of health habit scores and school achievement.

Some of them are:-

1. There were 80 of the 146 children who ranked in the higher 50 percentile in both school achievement and health habit scores.
2. There were 25 of the 146 children who ranked in the higher 50 percentile in school achievement and the lower 50 percentile in health habit scores.
3. There were 26 of the 146 children who ranked in the lower 50 percentile in school achievement and the higher 50 percentile in health habit scores.

The general statement may be made from this comparison that creditable school achievement depends largely upon good health habits.

It has often been stated that good health habits may be taught, but it is impossible to "teach away" defects, but it is common sense to say that good health habits will prevent some physical defects. For example, the habit of washing the teeth three times a day, will prevent teeth decay to a large extent.

There must be some correlation or relationship between health habit scores and physical defect scores the writer of this study felt. The same methods of comparisons were used in measuring these two traits as were used in the two traits, health habits and school achievement.

The first method was by Correlation.

The relationship found, by this method may be found in Table XV. It was expressed by the coefficient of correlation, designated by r. The score was .25. It may be said that the correlation between health habit scores and physical defect scores was positive.

The relationship was then given in a more detailed comparison, by dividing the two groups of scores into 20 percentile divisions as shown in the Table.XVI

A number of outstanding facts are noticed from this graphic representation (Table XVI). They are:

1. There were 28 of the 146 children who ranked in the highest 20 percentile in physical defect scores.

   10 of the 28 ranked in the highest 20% in health habit scores.

   11 of the 28 ranked in the second highest 20% in health habit scores.

   6 of the 28 ranked in the middle 20% in health habit scores.

   1 of the 28 ranked in the fourth highest 20% in health habit scores.

None of the 28 ranked in the lowest 20% in health habit scores.

2. There was 46 of the 146 children who ranked in the second highest 20 percentile in physical defect scores.

10 of the 46 ranked in the highest 20% in health habit scores.

20 of the 46 ranked in the second highest 20% in health habit scores.

12 of the 46 ranked in the middle 20% in health habit scores.

4 of the 46 ranked in the fourth 20% in health habit scores.

None of the 46 ranked in the lowest 20% in health habits.

3. There were 53 of the 146 children who ranked in the middle 20 percentile in physical defect scores.

5 of the 53 ranked in the highest 20% in health habit scores.

24 of the 53 ranked in the second highest 20% in health habit scores.

14 of the 53 ranked in the middle 20% in health habit scores.

10 of the 53 ranked in the fourth 20% in health habit scores.

None of the 53 ranked in the lowest 20% in health habits.

4. There were 13 of the 146 children who ranked in the fourth highest 20 percentile in physical defect scores.

3 of the 13 ranked in the highest 20% in health habit scores.

6 of the 13 ranked in the second highest 20% in health habit scores.

TABLE XV.

Correlation Between Health Habit Scores And Physical Defect Scores

Defect \ Habit	164-178	179-193	194-208	209-223	224-238	239-253	254-269	269-283	284-298	299-313	314-328	329-343	344-358	359-373	374-388	389-403
981-1000							1		1	1			2	2	1	2
961-980										1	1					2
941-960												1	1		1	
921-940								1	1				1	1	1	1
901-920							1			1	1	1			3	1
881-900								1	2	1	1	3	1		1	1
861-880												3	3	1	3	1
841-860	666					1		2	1	1	1	2			1	2
821-840	6					1	3	2		2	3	1	2	2	3	
801-820						2		2		1	1	1	2	3		
781-800						1	1			1		3	1		3	1
761-780										1			1	1	3	1
741-760												1	1	1	1	
721-740							1		1					1		1
701-721															1	
681-700						1						1		1		
661-680							1			1				1		
641-660	1								1							
621-640																
601-620						1										

r = .25

P. E. = ±.052

Table Continued:

Defect \ Habit	404-418	419-433	434-448
981-1000			1
961-980	1		
941-960	1		1
921-940		1	
901-920			1
881-900	2		
861-880	1	1	
841-860			
821-840	2	1	
801-820			
781-800	1		
761-780			
741-760			
721-740		1	
701-721			
681-700			1
661-680			
641-660			
621-640			
601-620			

TABLE XVI

Graphic Representation Showing the Comparison Between Physical Defect Scores and Health Habit Scores in 20 Percentile Divisions

Defect	164 220	221 277	278 334	335 391	392 418 Health Habit
921-1000		1	6	11	10
841-920		4	12	20	10
761-840		10	14	24	5
681-760		2	2	6	3
601-680	1	3	1	1	

2 of the 13 ranked in the middle 20% in health habit scores.

2 of the 13 ranked in the fourth 20% in health habit scores.

None of the 13 ranked in the lowest 20% in health habit scores.

None of the 13 ranked in the lowest 20% in health habit scores.

5. There were 6 of the 146 who ranked in the lowest 20 percentile in physical defect scores.

None of the 6 ranked in the highest 20% in health habit scores.

1 of the 6 ranked in the second highest 20% in health habit scores.

1 of the 6 ranked in the middle 20% in health habit scores.

3 of the 6 ranked in the fourth highest 20% in health habit scores.

1 of the 6 ranked in the lowest 20% in health habit scores.

6. There were 51 of the 146 children who ranked in the highest 40% both in physical defect scores and health habit scores, while there were only 5 of the 146 children who ranked in the highest 40% in defect scores and the lowest 40% in health habit scores.

7. There were 10 who ranked in the lowest 40% in physical defect scores and the highest 40% in health habit scores.

The physical defect scores and health habit scores were then compared by means of a 50 percentile division. This comparison may be noted in graphic form in Table XVII.

The 50 percentile division of the two traits present many interesting truths. They are:-

1. There were 80 of the 146 children who ranked in the higher 50% in both health habit scores and physical defect scores, while there were only 28 of the 146 children who ranked in the lower 50% in health habit scores and the higher 50% in physical defect scores.

2. There were 27 of the 146 children who ranked in the higher 50% in health habit scores and in the lower 50% in physical defect scores.

The writer of this study wished to find the relationship between health habits and mental age. The health habit scores of the 146 children were divided into 20 percentile divisions vertically, and the mental ages were divided into 20 percentile divisions horizontally as in Table XVIII.

Several significant facts are revealed in this Table XVIII. They are:-

1. There were 28 of the 146 children who ranked in the highest 20 percentile in health habit scores.

   2 of the 28 ranked in the highest 20% in mental ages.

   11 of the 28 ranked in the second highest 20% in mental ages.

TABLE XVII.

Graphic Representation Showing the Comparison Between Physical Defect Scores and Health Habit Scores in 50 Percentile Divisions

Defect	173-310	311-448
801-1000	28	80
601-800	11	27

Habits

11 of the 28 ranked in the middle 20% in mental ages.

4 of the 28 ranked in the fourth highest 20% in mental ages.

None of the 28 ranked in the lowest 20% in mental ages.

2. There were 61 of the 146 children who ranked in the second 20 percentile in health habit scores.

4 of the 61 ranked in the highest 20% in mental ages.

25 of the 61 ranked in the second highest 20% in mental ages.

20 of the 61 ranked in the middle 20% in mental ages.

10 of the 61 ranked in the fourth 20% in mental ages.

2 of the 61 ranked in the lowest 20% in mental ages.

3. There were 37 of the 146 children who ranked in the middle 20 percentile in health habit scores.

1 of the 37 ranked in the highest 20% in mental ages.

14 of the 37 ranked in the second 20% in mental ages.

9 of the 37 ranked in the middle 20% in mental ages.

9 of the 37 ranked in the fourth 20% in mental ages.

4 of the 37 ranked in the lowest 20% in mental ages.

4. There were 21 of the 146 children who ranked in the fourth highest 20 percentile in health habit scores.

2 of the 21 ranked in the highest 20% in mental ages.

5 of the 21 ranked in the second highest 20% in mental ages.

7 of the 21 ranked in the middle 20% in mental ages.

4 of the 21 ranked in the fourth highest 20% in mental ages.

1 of the 21 ranked in the lowest 20% in mental ages.

5. There was only 1 of the 146 children who ranked in the lowest 20 percentile in health habit scores and that 1 ranked in the middle 20% in mental ages.

6. There were 42 of the 146 children who ranked in the highest 40% in both health habit scores and mental ages, while only 7 of the 146 ranked in the lowest 40% in health habit scores and also the highest 40% in mental ages. There were 16 of the 146 children who ranked in the highest 40% in health habit scores and lowest 40% in mental ages.

This comparison had a tendency to show a positive relationship between health habits and mental ages.

Table XIX shows that 61 of the 146 children ranked in the higher 50% in both health habit scores and mental ages, while 45 of the 146 children ranked in the higher 50% in health habit scores and the lower 50% in mental ages. It was also noted that 22 ranked in the lower 50% in health habit scores and the higher 50% in mental ages.

TABLE XVIII

Graphic Representation, Showing the Comparison Between Health Habit Scores and Mental Ages in 20 Percentile Divisions

Habit	9. 10 to 11. 5 *	11. 6 to 13	13. 1 to 14. 7	14. 8 to 16. 2	16. 3 to 17. 9	Mental Age
392-448		4	11	11	2	
335-391	2	10	20	25	4	
278-334	4	9	9	14	1	
221-277	1	4	7	5	2	
164-220			1			

* Years and months.

TABLE XIX.

Graphic Representation, Showing the Comparison Between Health Habit Scores and Mental Ages in 50 Percentile Divisions

Habits	9 yrs. 11 mo. – 13 yrs. 9 mo.	13 yrs. 10 mo. – 17 yrs. 9 mo.	Mental Age
	45	61	
	18	22	

Chapter V.

SUMMARY AND CONCLUSIONS

From the interpretation of these data the following conclusions are drawn:-

1. Those children who ranked in the lower 40 percent in both physical defect scores and school achievement, were either retarded cases or disciplinary problem cases.
2. The same children who ranked in the lower 40% in physical defect scores and school achievement also ranked in the lower 40% in health habit scores and school achievement.

These two statements seemed to reveal the truth that physical defects handicap a child in school achievement.

3. The physician observed, during the physical examination, that the children in the seventh and ninth grades were superior in physical condition to those in the eighth grade.

This study shows that the statement made by the physician was correct. All children, except one, who ranked in the lower 40% in physical defect scores, health habit scores, mental age scores and achievement scores were eighth grade children.

The one child was a seventh grade child.

4. There were 28 of the 146 children who ranked in the upper 40% in physical defect scores and school achievement scores of these same 28 children ranked in the upper 40% in health habit scores.

The relationship of high defect scores and high health habit scores seemed to be a positive one. It appeared that those children who had a small number of defects also had good health habits.

The truth seemed to be revealed that those children who had a small number of defects and good health habits were as a rule those children who made the greatest progress in school.

5. The fact was revealed that it would be a financial saving to the school district to assist in correcting the defects of the retarded and disciplinary cases. It has been found by B. F. Pittenger[1] that it costs a school district forty-two cents per child a day to educate him in the public schools. There were seven of the 146 children who ranked in the lower 40% in school achievement. These seven also had the largest number of physical defects and the poorest health habits. They were all retarded cases. From a financial standpoint the school district loses $529.20 on these 7 children alone. There are doubtless many more re-

1. "An Introduction To Public School Finance." - B. F. Pittenger.

tarded cases in the entire population of the Junior High School because the enrollment of the school is four hundred and twenty.

6. The relationship found between health habits and school achievement, and between physical defects and school achievement seems to demand a better organized and more far reaching course in health habit training, and some system for correction of physical defects, thant at present exists.

APPENDIX

Name of School

Medical Examination Record

Name Date of birth Grade

Eyes	Ears	Nose	Throat
Normal------	Normal------	Normal-----	Normal------
Treated-----	Need Treatment---	Suspected Growth of Adenoids--	Enlarged Tonsils-----
Need Treatment---			Needs Treatment---

Heart	Lungs	Skin	Teeth
Normal-----	Normal------	Good------	Normal------
Weak--------	Suspicious---	Fair------	Decayed-----
Lesions-----	Need	Needs	No.------
----------	Treatment----	Treatment--	Needs care--

Height	Actual Weight	Standard Weight	General Health
1 ----------	1 ----------		Good-------
2 ----------	2----------		Fair-------
	3 ----------		Poor-------
	4 ----------		

Check the diseases the pupil has had with year date:-

Measles Mumps Whooping Cough Diptheria
Chicken Pox Scarlet Fever Tonsilitis Last Vaccination

Notes:-

DEFECT SCORE CARD

Name of Defect	Scores			
	I	II	III	Average
Infected Tonsils	80	100	110	97
Teeth	25	35	50	37
Goitre Tendencies	30	15	15	20
Eyes	40	50	100	63
Lungs				
Suspicious of Tuberculosis	80	50	50	60
Subject to Colds	60	50	50	53
Orthopedic				
Both feet flat	20	10	20	17
One foot flat	15	10	5	10
Nasal Obstructions				
Adenoids	35	25	35	32
Deviated septum	15	10	15	13
Heart				
Nervous	10	25	15	17
Rapid	15	25	10	17
Irregular	75	45	85	68
Lesion	80	75	45	67
Weak	35	50	10	32
Overworked	25	35	10	23
Nervous Conditions	55	25	60	47
Rheumatism	30	35	20	28
Arterial Rheumatism	15	25	10	16
Appendicitis	15	20	5	13
Liver Complaint	10	10	5	8
Spine	35	60	25	40
Rickets in early Childhood	30	35	25	30
Tetanus effects	10	15	0	8
Aenemic conditions	40	50	100	63
Poor posture	35	50	25	37
Underweight (10% below normal)	75	50	75	67
Overweight (20% below normal)	10	15	25	17

SCORES OF THE 146 CHILDREN OF THE JUNIOR HIGH SCHOOL, IOLA, KANSAS

OCTOBER 1928

Child Number	*1 Intelligence Quotient	*2 Achievement Composite Score	Mental Age	*3 Defect Score
1	110	64	14-5	943
2	111	73.9	14-6	879
3	86	45.2	10-7	856
4	72	45.2	9 -10	790
5	110	59.8	12-1	943
6	118	74.5	14-8	836
7	108	61.3	14-6	834
8	106	75.5	15-2	1000
9	109	70.6	15	833
10	92	62.4	11-10	817
11	92	58.6	11-2	883
12	104	59.8	14-9	1000
13	89	53.1	12-1	849
14	97	58.9	12-1	808
15	99	59.9	12-4	756
16	108	82.3	15-2	800
17	99	56.	12-6	931
18	111	68.3	13-1	866
19	109	72.4	14-2	865
20	70	40.7	10	700
21	103	62.7	12-7	734
22	97	70.6	12-7	960
23	104	73.7	12-2	1000
24	123	72.8	14-10	779
25	111	65.7	12-6	756
26	100	58.6	12-9	649
27	123	82.6	14-3	873
28	194	56.7	13-1	850
29	98	65.3	13-3	903
30	110	73.3	13-7	834
31	92	63.6	11-4	766
32	124	76.7	15-10	866
33	100	67.7	12-5	886
34	107	57.5	13-7	854
35	102	59.4	12-10	937
36	105	76.9	12-11	809
37	101	57.6	13-4	834
38	110	62.2	13-6	823
39	98	70.9	14-2	900
40	98	58.6	12-4	900
41	105	66	12-11	886
42	113	70.9	13-6	1000
43	110	68.5	14-6	914

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Defect Score
44	103	58.4	12-4	842
45	133	86.7	16	824
46	127	80.1	15-5	1000
47	94	59.2	13	883
48	94	54.3	12-10	784
49	93	59.4	13-7	671
50	91	60	12-10	754
51	114	71.6	15-1	840
52	98	74.9	12-5	824
53	127	85	14-6	990
54	111	77.1	15-6	679
55	97	60.6	12-11	803
56	97	58.1	13-7	827
57	111	80.2	15-1	840
58	95	68	12-6	823
59	112	72	15-6	883
60	97	61.6	13-3	963
61	90	59	13	782
62	98	75.8	13-2	886
63	100	55	13-11	834
64	86	61.7	11-11	786
65	84	64.7	12-10	817
66	116	79.4	15-6	903
67	121	83.3	16-1	826
68	70	49	10-5	800
69	93	65.8	14-3	834
70	82	58	12	829
71	97	75.1	13-11	918
72	115	88.9	14-5	963
73	95	77.6	12-10	693
74	88	63.3	13	929
75	94	55.5	12	849
76	70	51.	9-5	786
77	94	54.2	13-7	870
78	100	65.5	13-8	817
79	94	53.5.	11	787
80	85	62.4	11	817
81	100	63.4	13-11	886
82	98	68.1	15-9	871
83	74	42.6	10-2	780
84	88	58	12-5	915
85	115	85.9	14-3	681
86	97	83.4	14-4	951
87	91	64	14-7	866
88	91	72.6	14-4	951
89	110	84	14-9	846

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Defect Score
90	98	76.1	13	840
91	91	60.5	12-1	851
92	88	46.6	14-1	659
93	94	64	13-2	937
94	96	63.7	12-11	883
95	93	61.6	12-10	766
96	109	82	14-6	937
97	103	80.3	15-3	787
98	75	57.9	9-10	816
99	84	59.5	12-4	946
100	91	56.6	11-7	920
101	106	83.5	15-7	829
102	97	71	14-5	856
103	113	86.9	16-6	909
104	113	82.6	16-7	963
105	103	66.8	15-7	1000
106	95	59.8	14-8	764
107	97	67.9	14-3	916
108	97	68.8	14-8	678
109	101	69.1	14-1	781
110	97	69.1	13-10	940
111	90	68.6	12-10	729
112	100	57.2	13-2	834
113	88	54.7	14-3	900
114	110	83.6	15-8	812
115	107	79.6	15-8	818
116	117	81.9	15-7	890
117	92	74.8	14-6	829
118	109	74	14-0	980
119	105	68.3	14-5	871
120	96	67.5	14-4	866
121	111	78.3	15-6	750
122	96	66.3	13-4	886
123	115	92.9	16	735
124	82	58.2	12-11	817
125	95	54.1	12-5	788
126	96	74.6	13-11	903
127	115	74.4	13-8	839
128	112	88.2	16-7	870
129	107	83.5	15-8	926
130	101	78	15	1000
131	111	83.5	14-1	714
132	85	73.5	16-8	739
133	97	75.6	12-8	811
134	108	75.6	15-2	835
135	115	82.7	14-10	1000
136	83	64.5	12-10	780
137	112	82	15-8	870

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Defect Score
138	100	70.3	14-1	784
139	106	72.2	14-7	866
140	106	78.5	14-11	849
141	74	51.8	11-2	965
142	109	95.8	16-7	990
143	93	72.6	15-7	774
144	118	86.5	17-2	1000
145	79	53.4	12-1	620
146	85	60.9	12-7	687

*1 Based on Otis Self Administering Group Intelligence Test.
*2 Based on Stanford Achievement Test, Form B.
*3 Based on Defect Score Card.

SCORES OF THE 146 CHILDREN OF THE JUNIOR HIGH SCHOOL, IOLA, KANSAS

MAY 1929

Child Number	*1 Intelligence Quotient	*2 Achievement Composite Score	Mental Age	*3 Habit Score
1	110	68.1	14-11	448
2	111	83.8	15-1	348
3	86	55.3	11	331
4	72	56	10-4	256
5	110	65.8	12-7	418
6	118	81.3	15-2	377
7	108½	63.5	15	259
8	106	70.3	15-8	308
9	109	77.5	15-6	383
10	92	61.4	12-4	385
11	92	61.9	11-8	325
12	104	65.2	14-3	262
13	89	58.1	12-5	299
14	97	61.3	12-5	375
15	99	63.1	12-10	358
16	108	83.3	15-8	345
17	99	62.5	13	360
18	111	70.3	13-7	353
19	109	76.1	14-8	404
20	70	37.7	10-6	338
21	103	69.1	13-1	392
22	97	77.6	13-1	382
23	104	79.9	12-8	379
24	123	86.3	15-4	384
25	111½	71.3	13	384
26	100	68.3	13-3	173
27	123	83	14-9	374
28	94	59.4	13-7	398
29	98	72.7	13-9	259
30	110	77.4	14-1	410
31	92	64.5	11-10	389
32	124	90.9	15-4	397
33	100	75.4	12-11	303
34	107	66.7	14-1	392
35	102	66.7	13-4	432
36	105	71.5	13-5	346
37	101	60.8	13-10	407
38	110	70.2	14	377
39	98	73.1	14-8	407
40	98	64.1	12-10	399
41	105	71.8	13-5	416
42	113	76.7	14	401
43	110	70.7	15	377

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Habit Score
44	103	61	12-10	251
45	133	92.9	16-6	354
46	127	80.4	15-11	403
47	94	61.4	13-6	345
48	94	65.8	13-4	397
49	93	62.8	14-1	264
50	91	64.9	13-4	365
51	114	78.5	15-7	306
52	98	77.9	12-1	320
53	127	91	15-	446
54	111	80.8	16-	310
55	97	60.5	13-5	366
56	97	63.6	14-1	360
57	111	82.4	15-7	428
58	95	74.7	13	317
59	112	77.6	16	290
60	97	67.8	13-9	320
61	90	67	13-6	343
62	98	77.6	13-8	388
63	100	69.2	14-5	255
64	86	66.3	12-5	331
65	84	67.8	13-4	296
66	116	77.6	16	340
67	121	90.1	16-7	260
68	70	51.7	10-11	331
69	93	68.9	14-9	276
70	82	60	12-6	269
71	97	79.8	14-5	374
72	115	84.9	14-1	410
73	95	80.7	13-4	434
74	88	67.5	13-6	396
75	94	61.5	12-6	294
76	70	61.7	9-11	306
77	94	67.4	14-1	374
78	100	70.3	14-2	334
79	94	60.2	11-6	379
80	85	68.2	11-6	364
81	100	74.3	14-5	296
82	98	77.5	15-3	336
83	74	52.6	10-8	379
84	88	65.4	12-11	438
85	115	91.6	14-9	383
86	97	83	14-10	345
87	91	67.1	14-1	346
88	91	66.8	14-10	272
89	110	87	15-3	380
90	98	74.4	13-6	319

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Habit Score
91	91	66	12-7	335
92	88	61.5	14-7	277
93	94	69.7	13-8	290
94	96	68.3	13-5	332
95	93	65.1	13-4	362
96	109	87.4	15	280
97	103	84.6	15-9	382
98	75	52.7	10-4	285
99	84	58.3	12-10	330
100	91	61.6	12-1	403
101	106	82.7	16-1	358
102	97	77.8	14-11	282
103	113	86.5	17	321
104	113	79.1	17-1	393
105	103	78.8	16-1	286
106	95	66.3	15-2	345
107	97	73.6	14-9	303
108	97	70.2	15-2	362
109	101	67.9	14-9	377
110	97	69.5	14-4	379
111	90	72.3	13-4	297
112	100	61.6	13-8	365
113	88	58.8	14-9	339
114	110	89.3	16-2	318
115	107	73.3	16-2	376
116	117	81.5	16-1	278
117	92	73.3	15	241
118	109	76	15-6	397
119	105	73	14-11	431
120	96	70.4	14-10	335
121	111	79.6	16	332
122	96	68.3	13-10	339
123	115	93	16-6	263
124	85	54.1	13-5	241
125	82	62.3	12-11	253
126	95	75.9	14-5	380
127	96	74.4	14-2	329
128	115	95.2	17-1	361
129	112	85.6	16-2	353
130	107	80.2	15-6	361
131	101	89	14-7	370
132	111	75.6	16-2	429
133	85	80.1	13-2	251
134	108	75.6	15-8	304
135	115	78.7	15-4	361
136	83	66.1	13-4	375
137	112	81.8	16-2	337
138	100	71.	14-7	407

Child Number	Intelligence Quotient	Achievement Composite Score	Mental Age	Habit Score
139	106	79.4	15-1	388
140	106	82.1	15-5	324
141	74	68.9	11-8	313
142	109	96.1	17-1	344
143	93	79.4	16-1	310
144	118	82	17-8	358
145	79	58	12-7	248
146	85	64.2	13-1	251

*1 Score based on Otis Self Administering Group Intelligence.
*2 Score based on Stanford Achievement Test, Form A.
*3 Score based on E. George Payne's Health Habit Test.

An Analysis of Instruction for Habits and Practices in Health and Accident Prevention

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AN ANALYSIS OF INSTRUCTION FOR HABITS AND PRACTICES IN HEALTH AND ACCIDENT PREVENTION

BY

E. GEORGE PAYNE, Ph.D.

President of the Harris Teachers College, and Assistant Superintendent with Supervision of the Division of Tests and Measurements of the St. Louis Public Schools.

This study was originally published by Lyons and Carnahan, Chicago and New York, and is reproduced here with their permission. Full explanation of this analysis of instruction together with the method of its construction may be found in EDUCATION IN HEALTH,[1] chapter XII, pp. 229-243.

Fill in the following blank spaces:

City..... State..... Date.....

Name..... Age today.....
Years—Months

Race..... Sex..... School.....

Grade..... Teacher.....

DIRECTIONS FOR USE

This outline should be used with groups from grades four to eight. Below grade four it can be used only as an individual check as the children are not old enough to understand its contents from reading. No time limit is given. The teacher should go over the outline point by point, and explain any items upon which the children wish help. Urge the children to report accurately. The habits and practices may be checked up at any time, but they should be checked up at the beginning and end of each semester. At the beginning of the semester this list will discover for the teacher the practices of the children that need to be corrected by instruction, and at the end of the semester, it will determine for the teacher how effective her instruction has been. The method of instruction is outlined in EDUCATION IN HEALTH.

Directions for Scoring

1. Allow full value for each point or nothing.

2. Practice in any item does not mean that there can never be an exception. For instance, if a child is kept up at night beyond his regular hour of retiring once a week to attend a moving picture show, nothing should be allowed for the first item under regularity. On the other hand there might be an imperative reason for keeping a child up later than the regular hour on an occasion of special nature. If such occasion occurs often or regularly, the child should be given no credit.

3. In scoring X and XI the child should be given full credit for items with which he has had no experience. For instance, some children would have no incentive to play on railroad tracks, because there would be none in their vicinity.

4. Put + after each item for which credit is to be given.

5. Score A, B, and C separately.

6. Add the numbers after which + is placed and compared with the tentative standards.

Tentative Standards

The following tentative standards are compiled from the median scores of the best conditioned among ten thousand grade and high school children.

End of Grade	*A*	*B*	*C*	*Total*
I	247	72	10	329
II	259	72	15	341
III	272	72	20	364
IV	285	72	25	382
V	295	75	30	400
VI	305	75	40	420
VII	325	75	70	470
VIII	355	75	70	500
H.S.	355	75	70	500

A SCALE FOR MEASURING PERSONAL AND SOCIAL BEHAVIOR—HABITS AND PRACTICES IN HEALTH AND ACCIDENT PREVENTION

TOTAL POINTS—500.

A—355

I. Food 83

Variety 29	Quantity 20	Regularity 14	Manner of Eating 20

II. Air 30

Breathing 9	Bedroom Air 12	Schoolroom and Study 5	Time in Open Air 4

III. Drink 25

Amount 2	Regularity 3	Sanitation 14	Tea and Coffee 6

IV. Exercise 45

Variety 30		Regularity 15	

V. Sleep 28

Amount 15	Regularity 10	Manner 3	

VI. Posture 15

Sitting 6	Standing 3	Walking 3	Work 3

VII. Cleanliness 91

Hands and Nails 35	Teeth, Mouth, Head 16	Bathing 20	Bowel Movement 20

VIII. Clothing 34

Cleanliness 13	Suitability 10	Miscellaneous 11

IX. Indications of Health 4

Physique 1	Height 1	Weight 1	Vital Index 1

B—75

X. Safety Habits 75

On the Streets 31	At Home 23	In School 12	At Play 9

C—70

XI. Service—Social and Civic Habits and Practices 70

Home 20	School 20	Streets 10	Community 20

KEY TO SCALE FOR MEASURING INDIVIDUAL AND SOCIAL BEHAVIOR—HABITS AND PRACTICES IN ACCIDENT PREVENTION AND HEALTH.

I. Food

Variety

Drink from a pint to a quart of milk every day	3
Eat bread and butter every meal	5
Eat some fruit every day (fresh, dried, or preserved)	5
Eat some green, leafy vegetable every day (spinach, lettuce, kale, etc.)	5
Eat some starchy vegetable every day (as potato)	3
Eat a cooked cereal for breakfast daily	2
Eat meats but once daily	2
Eat candies, cakes, etc. only as dessert	4

Quantity

Food Requirements in Calories—Age—Sex

	Boys			*Girls*		
Age	*Total Cal.*	*Protein Cal.*	*Energy Cal.*	*Total Cal.*	*Pro. Cal.*	*Energy Cal.*
6–7	1400–1700	168–204	1232–1496	1300–1600	156–192	1144–1408
7–8	1500–1800	180–216	1320–1584	1380–1680	165–201	1215–1479
8–9	1600–1900	192–228	1508–1672	1460–1760	175–211	1285–1549
9–10	1700–2000	204–240	1496–1760	1550–1850	186–222	1364–1628
10–11	1900–2200	228–264	1672–1936	1650–1950	198–234	1462–1716
11–12	2100–2400	252–288	1848–2112	1750–2050	210–246	1540–1804
12–13	2300–2700	276–324	2024–2376	1850–2150	222–258	1628–1892
13–14	2500–2900	300–348	2200–2552	1950–2250	234–270	1716–1980
14–15	2600–3100	312–372	2288–2728	2050–2350	246–282	1804–2068
15–16	2700–3300	324–396	2376–3204	2150–2450	258–294	1892–2156

Foods Rich in

Protein	*Fat*	*Carbohydrate*	*Protein & Fat*	*Prot. and Carbo.*
100 Calorie Portions				
2 oz. Beef, lean	½ oz. Bacon	2 h. t. Sugar	10 Almonds	3 oz. Peas, dried
2 Eggs, whites	1⅓ oz. Cream	4 oz. boiled Tapioca	1 oz. Beef, fat	3 oz. Beans, dried
3 oz. Cheese, cottage	½ oz. Butter	4 oz. boiled Rice	½ oz. Cheese	1 slice Bread (3 x 4 x ½ in.)
3 oz. lean } Fish	¼ oz. Butterine	4 oz. boiled Cornstarch	1 large Egg	6 oz. Farina
1½ oz. fat } Fish	⅓ oz. Lard	3 oz. White Potatoes	5 oz. Milk	5 oz. Oatmeal
5 oz. Milk	1 oz. Salt pork	3 t. Honey	10 Peanuts	4 oz. Macaroni
	⅓ oz. Olive oil	2 t. Molasses	2½ t. Peanut butter	9½ oz. Milk skim
		4 Dates	1½ oz. Sardines	9½ oz. Buttermilk
		1 small Banana		

Foods Rich in Mineral Constituents and Cellulose

100 Calorie Portions

1⅓ lb. Spinach—1½ lb. lettuce—1 lb. string beans—1 lb. tomatoes—1 lb. celery—1 lb. cauliflower—1½ lbs. cabbage—1 lb. carrots—1 lb. beets—1 lb. squash—1½ lbs. cucumbers—5 oz. oatmeal—1 slice wholewheat bread—1 oz. raisins—3 large prunes—1½ large figs—½ lb. strawberries—2 oz. beef, lean—2 egg yolks.

Known Vitamine Carriers

Liver—brains—heart—kidneys—eggs—milk—cheese—butter—leafy vegetables—tomatoes—fresh fruits—whole grain cereals.

Regularity

Eat a warm breakfast every morning..... 2
Eat something warm for lunch (as soup)..... 3
Eat meals every day at the regular hour and in regular amounts..... 3
Do not eat candies, cakes, ice-cream, etc., between meals..... 3
If hungry eat some bread and butter, and not within two hours of another meal 3

Manner of Eating

Eat slowly in a calm, unexcited frame of mind..... 5
Chew all foods thoroughly..... 5
Engage in pleasant conversation with the family..... 5
Tell a story or anecdote or interesting incident of the day..... 5

II. Air

Breathing

Breathe deeply—take ten deep breaths before open window night and morning with setting up exercise..... 4
Breathe always through the nostrils, not through the mouth..... 5

Bedroom Air

Sleep with windows well open every night..... 5
Do not sleep in draft—use window boards if necessary..... 3
Air out bedroom every day..... 4

Schoolroom and Study Room

See that room where you live or study is properly supplied with fresh air 5

Time in Open Air

Spend from two to three hours daily in exercise in the open air..... 4

III. Drink

Amount

Drink four to six glasses of water every day..... 2

Regularity

Drink a glass of water on rising in the morning..... 1
Drink two glasses of water in the forenoon at regular times daily..... 1
Drink two glasses of water in the afternoon at regular times daily.... 1

Sanitariness

Do not drink out of a cup after some one else..... 5
Drink only pure water from the fountain or out of a clean cup..... 4
Do not drink cold water while overheated, from play or work..... 3
Do not drink water containing cracked ice..... 2

Tea and Coffee

Do not drink tea or coffee..... 6

IV. Exercise

Variety

Two hours of out-door exercise daily. Run, skate, hike, swim, or play tennis, baseball, basket ball, volley ball, or hockey. Little children may plan running games, skate, swing, play see-saw, or skip rope.. 20

Only light exercise should be taken for one-half hour before each meal and one hour after..... 10

Regularity

Exercise every day..... 5
Take exercises every morning on rising and every night on going to bed or after long periods of inactivity..... 10

Setting-up exercises—stretching, bending, twisting, breathing. Use arms, legs, and trunk in exercise.

V. Sleep

Amount

Sleep needed (Sleep alone.)

	Hours		Hours
5–6 years	11 –13½	13 years	8½–10
7 years	10½–13	14 years	8½–10
8 years	10½–12½	15 years	8½– 9½
9 years	10 –12	16 years	8½– 9
10 years	10 –11½	17 years	8½– 9
11 years	9½–11	18 years	8½– 9
12 years	9 –10½		

Regularity

Go to bed at same hour every night..... 5
Get up at some hour every morning..... 5

Manner

Sleep on the side, mainly the right side..... 3

VI. Posture

Sitting

Sit erect while conversing..... 3
Sit erect at study and in writing..... 3

Standing

Stand erect with chest forward, head high..... 3

Walking

Walk with erect carriage, feet pointing directly forward..... 3

Work

Keep an erect, healthy posture while placing work on the blackboard, and in all you do..... 3

VII. Cleanliness

Hands and Nails

Wash hands before every meal..... 5
Clean finger nails once every day..... 5
Keep hands and nails clean and cuticle pushed back at all times..... 20
Keep nails out of mouth—do not bite..... 5

Teeth, Mouth, Head

Clean teeth, mouth and tongue morning and night..... 5
Do not put corners of books in the mouth..... 3
Do not put fingers, pencils, etc., in the mouth..... 3
Do not dampen fingers in the mouth to turn pages of a book..... 3
Do not lick postage stamps or envelopes..... 3

Bathing

Take a full tub bath twice every week..... 10
Sponge the arms and breast daily in cold water..... 5
Wash perspiring feet every day..... 5

Bowel Movement

Have a bowel movement regularly every day..... 10
Dot not take drugs or medicine for this. Depend solely on food, water, exercise, and habit..... 10

VIII. Clothing

Cleanliness

Keep clothing well-dusted and properly cleaned..... 5
Keep dresses and stockings properly mended..... 4
Wash stockings every day..... 4

Suitability

Wear warm porous clothing in winter..... 3
Wear light porous clothing in summer..... 3
Wear shoes with broad heels and sufficient length..... 4

Miscellaneous

Put on a wrap when sitting down after exercise..... 3
Keep clothing properly aired..... 3
Do not sleep in clothing worn in day..... 5

IX. Indications of Health

Physique

Physique: Robust, normal, frail emaciated..... 2

Height

Height: Amount above or below norm for his age..... 1

Weight

Weight: Amount above or below norm for his age..... 1

X. Safety Habits

In the Streets

Look in both directions before crossing the streets..... 3
Go straight across the street and at the crossings only..... 3
Do not tarry in the street but cross promptly..... 3
(Help the little ones to cross the street safely)..... 3
Do not play on railroad tracks..... 3
Do not handle dangling wires or come into contact with electric wires.. 5
Do not ride on the outside of street cars..... 3
Do not beg rides on autos..... 5
Do not climb on trucks and wagons..... 3

At Home

Be careful about the use of matches; keep them in a safe place..... 2
Be careful about the use of kerosene; keep it in a safe place; do not start a fire with it..... 3
Be careful always in using the gas range..... 3
Be sure electric wires are disconnected before touching them..... 3
Be careful about the stairways and fire escapes..... 3
Do not climb on chairs, tables and step-ladders unless necessary, and then only after examination..... 3
Do not place heavy objects or sharp instruments where they may fall upon some one..... 3
Do not leave chairs or other objects where some one may stumble over them in the dark..... 3

At School

Do not hurry down the stairways..... 3
Do not run in the halls..... 3
Look before going in and out of doors and do not rush..... 3
Take one step at a time on stairways..... 3

At Play

Do not run on busy traffic streets in play..... 3
Do not play near high places or on rough grounds..... 3
Keep away from quarries..... 3

XI. Service—Social and Civic Habits and Practices

Service at Home

Help clean the house, make beds, air rooms..... 5
Keep shoes shined, clothes brushed..... 5
Run errands which take one into open air..... 5
Keep yard and outbuilding free from rubbish..... 5

Service at School

Serve on Health or Safety Committees..... 5
Weigh smaller children. Help mend clothing..... 5
Call attention in every case to children who violate health or safety practices..... 10

Service on the Streets

Help children across street in congested quarters..... 5
Place safety signs in street under direction of police..... 5

Service to the Community

Notify the Police Department of any obvious violations of ordinances.. 5
Notify the Fire Department in case of fire..... 5
Notify the Health Department of menaces to health in the neighborhood 5
Notify the Street Department of holes in the street, obstructions, unclean alley in neighborhood..... 5

OTIS SELF-ADMINISTERING TESTS OF MENTAL ABILITY

By ARTHUR S. OTIS, PH.D.

Formerly Development Specialist with Advisory Board, General Staff, United States War Department

INTERMEDIATE EXAMINATION: FORM A

For Grades 4–9

20 Score.....

Read this page. Do what it tells you to do.

Do not open this paper, or turn it over, until you are told to do so. Fill these blanks, giving your name, age, birthday, etc. Write plainly.

Name..... Age last birthday..... years
First name, initial, and last name

Birthday..... Teacher..... Date..... 192...
Month Day

Grade..... School..... City.....

This is a test to see how well you can think. It contains questions of different kinds. Here is a sample question already answered correctly. Notice how the question is answered:

Sample: Which one of the five words below tells what an apple is?
1 flower, 2 tree, 3 vegetable, 4 fruit, 5 animal.....(4)

The right answer, of course, is "fruit"; so the word "fruit" is underlined. And the word "fruit" is No. 4; so a figure 4 is placed in the parentheses at the end of the dotted line. This is the way you are to answer the questions.

Try this sample question yourself. Do not write the answer; just draw a line under it and then put its number in the parentheses:

Sample: Which one of the five things below is round?
1 a book, 2 a brick, 3 a ball, 4 a house, 5 a box.....( )

The answer, of course, is "a ball"; so you should have drawn a line under the words "a ball" and put a figure 3 in the parentheses. Try this one:

Sample: A foot is to a man and a paw is to a cat the same as a hoof is to a — what?
1 dog, 2 horse, 3 shoe, 4 blacksmith, 5 saddle.....( )

The answer, of course, is "horse"; so you should have drawn a line under the word "horse" and put a figure 2 in the parentheses. Try this one:

Sample: At four cents each, how many cents will 6 pencils cost?.....( )

The answer, of course, is 24, and there is nothing to underline; so just put the 24 in the parentheses.

If the answer to any question is a number or a letter, put the number or letter in the parentheses without underlining anything. Make all letters like printed capitals.

The test contains 75 questions. You are not expected to be able to answer all of them, but do the best you can. You will be allowed half an hour after the examiner tells you to begin. Try to get as many right as possible. Be careful not to go so fast that you make mistakes. Do not spend too much time on any one question. No questions about the test will be answered by the examiner after the test begins. Lay your pencil down.

Do not turn this page until you are told to begin.

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 OSATMA: IE: A–12

EXAMINATION BEGINS HERE.

1. Which one of the five things below does not belong with the others? (Do not write on these dotted lines.)
   1 potato, 2 turnip, 3 carrot, 4 stone, 5 onion..... ( )
2. Which one of the five words below tells best what a saw is?
   1 something, 2 tool, 3 furniture, 4 wood, 5 machine..... ( )
3. Which one of the five words below means the opposite of west?
   1 north, 2 south, 3 east, 4 equator, 5 sunset..... ( )
4. A hat is to a head and a glove is to a hand the same as a shoe is to what?
   1 leather, 2 a foot, 3 a shoestring, 4 walk, 5 a toe..... ( )
5. A child who knows he is guilty of doing wrong should feel (?)
   1 bad, 2 sick, 3 better, 4 afraid, 5 ashamed..... ( )
6. Which one of the five things below is the smallest?
   1 twig, 2 limb, 3 bud, 4 tree, 5 branch..... ( )
7. Which one of the five things below is most like these three: cup, plate, saucer?
   1 fork, 2 table, 3 eat, 4 bowl, 5 spoon..... ( )
8. Which of the five words below means the opposite of strong?
   1 man, 2 weak, 3 small, 4 short, 5 thin..... ( )
9. A finger is to a hand the same as a toe is to what?
   1 foot, 2 toenail, 3 heel, 4 shoe, 5 knee..... ( )
10. Which word means the opposite of sorrow?
    1 sickness, 2 health, 3 good, 4 joy, 5 pride..... ( )
11. Which one of the ten numbers below is the smallest? (Tell by letter.)
    A 6084, B 5160, C 4342, D 6521, E 9703, F 4296, G 7475, H 2657, J 8839, K 3918 ( )
12. Which word means the opposite of pretty?
    1 good, 2 ugly, 3 bad, 4 crooked, 5 nice..... ( )
13. Do what this mixed-up sentence tells you to do.
    number Write the the in 5 parentheses..... ( )
14. If we believe some one has committed a crime, but we are not sure, we have a (?)
    1 fear, 2 suspicion, 3 wonder, 4 confidence, 5 doubtful..... ( )
15. A book is to an author as a statue is to (?)
    1 sculptor, 2 marble, 3 model, 4 magazine, 5 man..... ( )
16. Which is the most important reason that words in the dictionary are arranged alphabetically?
    1 That is the easiest way to arrange them. 2 It puts the shortest words first. 3 It enables us to find any word quickly. 4 It is merely a custom. 5 It makes the printing easier .. ( )
17. Which one of the five things below is most like these three: plum, apricot, apple?
    1 tree, 2 seed, 3 peach, 4 juice, 5 ripe..... ( )
18. At 4 cents each, how many pencils can be bought for 36 cents?..... ( )
19. If a person walking in a quiet place suddenly hears a loud sound, he is likely to be (?)
    1 stopped, 2 struck, 3 startled, 4 made deaf, 5 angered..... ( )
20. A boy is to a man as a (?) is to a sheep.
    1 wool, 2 lamb, 3 goat, 4 shepherd, 5 dog..... ( )
21. One number is wrong in the following series. What should that number be? (Just write the correct number in the parentheses.)
    1 6 2 6 3 6 4 6 5 6 7 6..... ( )
22. Which of the five things below is most like these three: horse, pigeon, cricket?
    1 stall, 2 saddle, 3 eat, 4 goat, 5 chirp..... ( )
23. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.)
    nuts from squirrels trees the gather..... ( )
24. A man who betrays his country is called a (?)
    1 thief, 2 traitor, 3 enemy, 4 coward, 5 slacker..... ( )
25. Food is to the body as (?) is to an engine.
    1 wheels, 2 fuel, 3 smoke, 4 motion, 5 fire..... ( )
26. Which tells best just what a pitcher is?
    1 a vessel from which to pour liquid, 2 something to hold milk, 3 It has a handle, 4 It goes on the table, 5 It is easily broken..... ( )

Do not stop. Go on with the next page.

27. If George is older than Frank, and Frank is older than James, then George is (?) James.
1 older than, 2 younger than, 3 just as old as, 4 (cannot say which)..... ( )

28. Count each 7 below that has a 5 next after it. Tell how many 7's you count.
7 5 3 0 9 7 3 7 8 5 7 4 2 1 7 5 7 3 2 4 7 0 9 3 7 5 5 7 2 3 5 7 7 5 4 7..... ( )

29. If the words below were rearranged to make a good sentence, with what letter would the last word of the sentence begin? (Make the letter like a printed capital.)
leather shoes usually made are of..... ( )

30. An electric light is to a candle as a motorcycle is to (?)
1 bicycle, 2 automobile, 3 wheels, 4 speed, 5 police..... ( )

31. Which one of the words below would come first in the dictionary?
1 march, 2 ocean, 3 horse, 4 paint, 5 elbow, 6 night, 7 flown..... ( )

32. The daughter of my mother's brother is my (?)
1 sister, 2 niece, 3 cousin, 4 aunt, 5 granddaughter..... ( )

33. One number is wrong in the following series. What should that number be?
3 4 5 4 3 4 5 4 3 5..... ( )

34. Which of the five things below is most like these three: boat, horse, train?
1 sail, 2 row, 3 motorcycle, 4 move, 5 track..... ( )

35. If Paul is taller than Herbert and Paul is shorter than Robert, then Robert is (?) Herbert.
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ( )

36. What is the most important reason that we use clocks?
1 to wake us up in the morning, 2 to regulate our daily lives, 3 to help us catch trains, 4 so that children will get to school on time, 5 They are ornamental..... ( )

37. A coin made by an individual and meant to look like one made by the government is called(?)
1 duplicate, 2 counterfeit, 3 imitation, 4 forgery, 5 libel..... ( )

38. A wire is to electricity as (?) is to gas.
1 a flame, 2 a spark, 3 hot, 4 a pipe, 5 a stove..... ( )

39. If the following words were arranged in order, with what letter would the middle word begin?
Yard Inch Mile Foot Rod..... ( )

40. One number is wrong in the following series. What should that number be?
5 10 15 20 25 29 35 40 45 50..... ( )

41. Which word means the opposite of truth?
1 cheat, 2 rob, 3 liar, 4 ignorance, 5 falsehood..... ( )

42. Order is to confusion as (?) is to war.
1 guns, 2 peace, 3 powder, 4 thunder, 5 army..... ( )

43. In a foreign language, good food = Bano Naab
good water = Heto Naab
The word that means *good* begins with what letter?..... ( )

44. The feeling of a man for his children is usually (?)
1 affection, 2 contempt, 3 joy, 4 pity, 5 reverence..... ( )

45. Which of the five things below is most like these three: stocking, flag, sail?
1 shoe, 2 ship, 3 staff, 4 towel, 5 wash..... ( )

46. A book is to information as (?) is to money.
1 paper, 2 dollars, 3 bank, 4 work, 5 gold..... ( )

47. If Harry is taller than William, and William is just as tall as Charles, then Charles is (?) Harry.
1 taller than, 2 shorter than, 3 just as tall as, 4 (cannot say which)..... ( )

48. If the following words were arranged in order, with what letter would the middle word begin?
Six Ten Two Eight Four..... ( )

49. If the words below were rearranged to make a good sentence, with what letter would the third word of the sentence begin? (Make the letter like a printed capital.)
men high the a wall built stone..... ( )

50. If the suffering of another makes us suffer also, we feel (?)
1 worse, 2 harmony, 3 sympathy, 4 love, 5 repelled..... ( )

51. In a foreign language, grass = Moki
green grass = Moki Laap
The word that means *green* begins with what letter?..... ( )

Do not stop. Go on with the next page.

52. If a man has walked west from his home 9 blocks and then walked east 4 blocks, how many blocks is he from his home? ( )

53. A pitcher is to milk as (?) is to flowers.
1 stem, 2 leaves, 3 water, 4 vase, 5 roots ( )

54. Do what this mixed-up sentence tells you to do.
sum three Write two the four and of ( )

55. There is a saying, "Don't count your chickens before they are hatched." This means (?)
1 Don't hurry. 2 Don't be too sure of the future. 3 Haste makes waste. 4 Don't gamble ( )

56. Which statement tells best just what a fork is?
1 a thing to carry food to the mouth, 2 It goes with a knife, 3 an instrument with prongs at the end, 4 It goes on the table, 5 It is made of silver ( )

57. Wood is to a table as (?) is to a knife.
1 cutting, 2 chair, 3 fork, 4 steel, 5 handle ( )

58. Do what this mixed-up sentence tells you to do.
sentence the letter Write last this in ( )

59. Which one of the words below would come last in the dictionary?
1 alike, 2 admit, 3 amount, 4 across, 5 after, 6 amuse, 7 adult, 8 affect ( )

60. There is a saying, "He that scatters thorns, let him go barefoot." This means (?)
1 Let him who causes others discomforts bear them himself also. 2 Going barefoot toughens the feet. 3 People should pick up what they scatter. 4 Don't scatter things around ( )

61. If the following words were arranged in order, with what letter would the middle word begin?
Plaster Frame Wallpaper Lath Foundation ( )

62. In a foreign language,
many boys = Boka Hepo
many girls = Marti Hepo
many boys and girls = Boka Ello Marti Hepo
The word that means *and* begins with what letter? ( )

63. A statement which expresses just the opposite of that which another statement expresses is said to be a (?)
1 lie, 2 contradiction, 3 falsehood, 4 correction, 5 explanation ( )

64. There is a saying, "Don't look a gift horse in the mouth." This means (?)
1 It is not safe to look into the mouth of a horse. 2 Although you question the value of a gift, accept it graciously. 3 Don't accept a horse as a gift. 4 You cannot judge the age of a gift horse by his teeth ( )

65. Which one of the words below would come last in the dictionary?
1 hedge, 2 glory, 3 label, 4 green, 5 linen, 6 knife, 7 honor ( )

66. Which statement tells best just what a watch is?
1 It ticks, 2 something to tell time, 3 a small, round object with a chain, 4 a vest-pocket-sized time-keeping instrument, 5 something with a face and hands ( )

67. Ice is to water as water is to what?
1 land, 2 steam, 3 cold, 4 river, 5 thirst ( )

68. Which statement tells best just what a window is?
1 something to see through, 2 a glass door, 3 a frame with a glass in it, 4 a glass opening in the wall of a house, 5 a piece of glass surrounded by wood ( )

69. Which of the five words below is most like these three: large, red, good?
1 heavy, 2 size, 3 color, 4 apple, 5 very ( )

70. Write the letter that follows the letter that comes next after M in the alphabet ( )

71. One number is wrong in the following series. What should that number be?
1 2 4 8 16 24 64 ( )

72. An uncle is to an aunt as a son is to a (?)
1 brother, 2 daughter, 3 sister, 4 father, 5 girl ( )

73. If I have a large box with 3 small boxes in it and 4 very small boxes in each of the small boxes, how many boxes are there in all? ( )

74. One number is wrong in the following series. What should that number be?
1 2 4 5 7 8 10 11 12 14 ( )

75. There is a saying, "Don't ride a free horse to death." This means (?)
1 Don't be cruel. 2 Don't abuse a privilege. 3 Don't accept gifts. 4 Don't be reckless. ( )

If you finish before the time is up, go back and make sure that every answer is right.

Stanford Achievement Test

By TRUMAN L. KELLEY, GILES M. RUCH, *and* LEWIS M. TERMAN

ADVANCED EXAMINATION: FORM B

FOR GRADES 4–8

Name.....*Grade*.....*Boy or girl*.....

Age.....*When is your next birthday?*.....*How old will you be then?*.....

Name of school.....*Date*.....

Test	*Score*	*Subject Scores*	*Age Equivalents (Subject Ages)*
1. *Reading: Paragraph Meaning*			
2. *Reading: Sentence Meaning*			
3. *Reading: Word Meaning*			
Total Reading Score			
4. *Arithmetic: Computation*			
5. *Arithmetic: Reasoning*			
Total Arithmetic Score			
6. *Nature Study and Science*			
7. *History and Literature*			
8. *Language Usage*			
9. *Dictation Exercise*			
Composite Score (Sum of Subject Scores ÷ 10)			
Educational Age			

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

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 SAT: ADV. B–18

PRINTED IN U.S.A.

To the Examiner: Do not administer this test without first reading carefully the Manual of Directions. The Manual must be ordered extra.

EDUCATIONAL PROFILE CHART: ADVANCED EXAMINATION

Test 1, Parag. Mean.	Test 2, Sent. Mean.	Test 3, Word Mean.	Read. total	Test 4, Arith. Comp.	Test 5, Arith. Reas.	Arith. total	Test 6, Na. St. & Sci.	Test 7, Hist. & Lit.	Test 8, Lang. Usage	Test 9, Dictation	Total Score	Educational Age	Chronological Age	Grade*
-102	**-75**	**-82**	**-259**	**-179**	**-132**	**-311**	**-86**	**-84**	**-54**	**-206**	**-100**	**-18-6**		
-102	-75	-81	-258	-175	-132	-307	-85	-83	-53	-204	- 99	-18-4		
-101	-74	-80	-255	-171	-131	-302	-85	-83	-53	-202	- 98	-18-1		
-101	-74	-79	-254	-166	-131	-297	-84	-83	-52	-200	- 97	-17-11		
-101	-73	-79	-253	-161	-130	-291	-84	-83	-51	-198	- 96	-17-8		
-101	**-73**	**-78**	**-252**	**-157**	**-130**	**-287**	**-83**	**-83**	**-50**	**-195**	**- 95**	**-17-6**		
-100	-72	-78	-250	-152	-130	-282	-82	-82	-50	-194	- 94	-17-4		
-100	-72	-77	-249	-148	-129	-277	-82	-82	-49	-191	- 93	-17-2		
- 99	-71	-76	-246	-147	-127	-274	-81	-81	-48	-190	- 92	-17-1		
- 98	-70	-75	-243	-147	-124	-271	-80	-80	-47	-189	- 91	-16-11		
- 96	**-70**	**-74**	**-240**	**-146**	**-122**	**-268**	**-80**	**-78**	**-47**	**-187**	**- 90**	**-16-9**		
- 95	-69	-73	-237	-146	-119	-265	-79	-77	-46	-186	- 89	-16-8		
- 94	-68	-73	-235	-145	-117	-262	-78	-75	-45	-185	- 88	-16-6		
- 92	-67	-72	-231	-145	-114	-259	-78	-74	-45	-183	- 87	-16-5		
- 90	-67	-71	-228	-145	-112	-257	-77	-72	-44	-182	- 86	-16-3		
- 89	**-66**	**-70**	**-225**	**-144**	**-110**	**-254**	**-77**	**-70**	**-43**	**-181**	**- 85**	**-16-2**		
- 88	-65	-69	-222	-144	-107	-251	-76	-69	-43	-179	- 84	-16-1		
- 87	-65	-68	-220	-143	-105	-248	-75	-67	-42	-178	- 83	-15-11		
- 86	-64	-67	-217	-142	-104	-246	-74	-66	-41	-176	- 82	-15-10		-10.0
- 85	-63	-66	-214	-141	-103	-244	-73	-65	-40	-174	- 81	-15-9		- 9.8
- 84	**-62**	**-65**	**-211**	**-140**	**-102**	**-242**	**-72**	**-63**	**-40**	**-172**	**- 80**	**-15-7**	-Adult	**- 9.7**
- 83	-61	-64	-208	-139	-101	-240	-71	-62	-39	-170	- 79	-15-6	-17-9	- 9.5
- 83	-60	-63	-206	-138	-100	-238	-69	-61	-38	-168	- 78	-15-4	-16-9	- 9.3
- 82	-59	-62	-203	-137	- 99	-236	-68	-60	-38	-165	- 77	-15-2	-16-2	- 9.2
- 81	-58	-61	-200	-136	- 98	-234	-67	-59	-37	-163	- 76	-15-1	-15-9	- 9.0
- 81	**-57**	**-60**	**-198**	**-134**	**- 97**	**-231**	**-66**	**-58**	**-36**	**-161**	**- 75**	**-14-11**	**-15-4**	**- 8.9**
- 80	-56	-59	-195	-133	- 96	-229	-65	-56	-36	-159	- 74	-14-9	-15-0	- 8.8
- 79	-55	-58	-192	-132	- 95	-227	-64	-55	-35	-157	- 73	-14-8**	-14-9	- 8.6
- 78	-54	-58	-190	-131	- 93	-224	-63	-54	-34	-155	- 72	-14-6	-14-6	- 8.5
- 77	-54	-57	-188	-129	- 92	-221	-62	-52	-34	-153	- 71	-14-4	-14-4	- 8.4
- 77	**-53**	**-56**	**-186**	**-128**	**- 91**	**-219**	**-61**	**-51**	**-33**	**-150**	**- 70**	**-14-2**	**-14-2**	**- 8.2**
- 76	-53	-56	-185	-127	- 89	-216	-60	-49	-32	-148	- 69	-14-0	-14-0	- 8.1
- 75	-52	-55	-182	-125	- 87	-212	-60	-48	-32	-146	- 68	-13-10	-13-10	- 8.0
- 74	-52	-54	-180	-124	- 86	-210	-59	-46	-31	-144	- 67	-13-8	-13-8	- 7.9
- 74	-51	-54	-179	-123	- 84	-207	-58	-44	-31	-141	- 66	-13-6	-13-6	- 7.7
- 73	**-51**	**-53**	**-177**	**-121**	**- 83**	**-204**	**-57**	**-43**	**-30**	**-139**	**- 65**	**-13-5**	**-13-5**	**- 7.6**
- 72	-50	-53	-175	-120	- 81	-201	-56	-42	-29	-137	- 64	-13-3	-13-3	- 7.5
- 71	-50	-52	-173	-119	- 80	-199	-55	-40	-29	-134	- 63	-13-2	-13-2	- 7.4
- 71	-49	-51	-171	-118	- 78	-196	-54	-39	-28	-132	- 62	-13-0	-13-0	- 7.3
- 70	-48	-51	-169	-117	- 77	-194	-52	-38	-28	-129	- 61	-12-11	-12-11	- 7.2
- 70	**-47**	**-50**	**-167**	**-117**	**- 75**	**-192**	**-51**	**-37**	**-27**	**-126**	**- 60**	**-12-9**	**-12-9**	**- 7.1**
- 69	-46	-49	-164	-116	- 73	-189	-50	-36	-27	-124	- 59	-12-8	-12-8	- 7.0
- 68	-45	-49	-162	-115	- 72	-187	-49	-35	-26	-121	- 58	-12-7	-12-7	- 6.8
- 67	-45	-48	-160	-114	- 70	-184	-48	-34	-25	-119	- 57	-12-6	-12-6	- 6.7
- 67	-44	-47	-158	-113	- 68	-181	-47	-33	-25	-116	- 56	-12-5	-12-5	- 6.6
- 66	**-43**	**-46**	**-155**	**-112**	**- 67**	**-179**	**-46**	**-31**	**-24**	**-114**	**- 55**	**-12-4**	**-12-4**	**- 6.5**
- 65	-43	-46	-154	-110	- 66	-176	-44	-30	-24	-112	- 54	-12-2	-12-2	- 6.4
- 64	-42	-45	-151	-109	- 65	-174	-43	-29	-23	-110	- 53	-12-1	-12-1	- 6.3
- 64	-41	-44	-149	-107	- 63	-170	-42	-28	-23	-108	- 52	-12-0	-12-0	- 6.2
- 63	-40	-44	-147	-105	- 62	-167	-40	-27	-22	-107	- 51	-11-11	-11-11	- 6.1
- 62	**-39**	**-43**	**-144**	**-103**	**- 61**	**-164**	**-39**	**-26**	**-22**	**-105**	**- 50**	**-11-10**	**-11-10**	**- 6.0**
- 61	-38	-42	-141	-102	- 60	-162	-38	-25	-21	-103	- 49	-11-9	-11-9	- 5.9
- 60	-38	-41	-139	-100	- 59	-159	-36	-24	-21	-101	- 48	-11-8	-11-8	- 5.8
- 59	-37	-41	-137	- 98	- 58	-156	-35	-23	-20	- 99	- 47	-11-7	-11-7	- 5.7
- 58	-37	-40	-135	- 96	- 56	-152	-34	-22	-20	- 97	- 46	-11-6	-11-6	- 5.7
- 57	**-36**	**-39**	**-132**	**- 95**	**- 55**	**-150**	**-33**	**-21**	**-19**	**- 95**	**- 45**	**-11-5**	**-11-5**	**- 5.6**
- 56	-35	-38	-129	- 93	- 54	-147	-32	-20	-19	- 93	- 44	-11-4	-11-4	- 5.5
- 55	-35	-37	-127	- 91	- 52	-143	-31	-20	-18	- 91	- 43	-11-3	-11-3	- 5.4
- 55	-34	-36	-125	- 89	- 51	-140	-30	-19	-17	- 89	- 42	-11-2	-11-2	- 5.3
- 54	-33	-35	-122	- 87	- 50	-137	-29	-18	-17	- 87	- 41	-11-1	-11-1	- 5.2
- 53	**-33**	**-34**	**-120**	**- 86**	**- 48**	**-134**	**-28**	**-17**	**-16**	**- 85**	**- 40**	**-11-0**	**-11-0**	**- 5.1**
- 52	-32	-33	-117	- 84	- 47	-131	-27	-16	-16	- 83	- 39	-10-11	-10-11	- 5.0
- 51	-31	-32	-114	- 82	- 46	-128	-26	-16	-15	- 81	- 38	-10-10	-10-10	- 4.9
- 50	-30	-32	-112	- 80	- 44	-124	-25	-15	-15	- 79	- 37	-10-9	-10-9	- 4.9
- 49	-30	-31	-110	- 78	- 43	-121	-24	-14	-14	- 77	- 36	-10-9	-10-9	- 4.8
- 48	**-29**	**-30**	**-107**	**- 76**	**- 42**	**-118**	**-23**	**-13**	**-14**	**- 75**	**- 35**	**-10-8**	**-10-8**	**- 4.7**
- 47	-29	-29	-105	- 74	- 41	-115	-22	-12	-13	- 73	- 34	-10-7	-10-7	- 4.6
- 46	-28	-28	-102	- 73	- 39	-112	-21	-12	-12	- 71	- 33	-10-6	-10-6	- 4.5
- 45	-27	-27	- 99	- 71	- 38	-109	-20	-11	-12	- 69	- 32	-10-5	-10-5	- 4.4
- 43	-26	-26	- 95	- 70	- 38	-108	-18	-10	-11	- 68	- 31	-10-4	-10-4	- 4.4
- 42	**-25**	**-25**	**- 92**	**- 68**	**- 37**	**-105**	**-17**	**-10**	**-10**	**- 66**	**- 30**	**-10-2**	**-10-2**	**- 4.3**
- 40	-24	-24	- 88	- 66	- 36	-102	-16	- 9	-10	- 65	- 29	-10-1	-10-1	- 4.2
- 39	-23	-23	- 85	- 65	- 35	-100	-15	- 8	- 9	- 63	- 28	-10-0	-10-0	- 4.1
- 38	-22	-22	- 82	- 63	- 34	- 97	-13	- 8	- 8	- 62	- 27	- 9-11	- 9-11	- 4.0
- 36	-21	-21	- 78	- 62	- 33	- 95	-12	- 7	- 8	- 60	- 26	- 9-10	- 9-10	- 4.0
- 35	**-20**	**-20**	**- 75**	**- 60**	**- 32**	**- 92**	**-11**	**- 6**	**- 7**	**- 59**	**- 25**	**- 9-8**	**- 9-8**	**- 3.9**
- 34	-19	-19	- 72	- 59	- 31	- 90	- 9	- 5	- 7	- 57	- 24	- 9-7	- 9-7	- 3.8
- 32	-18	-18	- 68	- 57	- 30	- 87	- 8	- 5	- 6	- 56	- 23	- 9-6	- 9-6	- 3.7
- 31	-17	-17	- 65	- 56	- 30	- 86	- 6	- 4	- 5	- 54	- 22	- 9-5	- 9-5	- 3.6
- 30	-16	-16	- 62	- 54	- 29	- 83	- 5	- 3	- 4	- 53	- 21	- 9-4	- 9-4	- 3.5
- 28	**-15**	**-15**	**- 58**	**- 53**	**- 27**	**- 80**	**- 4**	**- 3**	**- 4**	**- 51**	**- 20**	**- 9-2**	**- 9-2**	**- 3.4**
- 27	-14	-14	- 55	- 50	- 26	- 76	- 4	- 3	- 3	- 49	- 19	- 9-1	- 9-1	- 3.4
- 25	-14	-13	- 52	- 47	- 25	- 72	- 3	- 2	- 3	- 48	- 18	- 9-0	- 9-0	- 3.3
- 24	-13	-12	- 49	- 45	- 23	- 68	- 3	- 2	- 2	- 46	- 17	- 8-11	- 8-11	- 3.2
- 22	-13	-12	- 47	- 42	- 22	- 64	- 2	- 1	- 2	- 44	- 16	- 8-10	- 8-10	- 3.1
- 21	**-12**	**-11**	**- 44**	**- 40**	**- 20**	**- 60**	**- 2**	**- 1**	**- 1**	**- 42**	**- 15**	**- 8-9**	**- 8-9**	**- 3.1**

* Grade defined as in Table 5, Manual of Directions, Revised.
** Educational ages above this point are extrapolated values.
For explanation of vertical bars see Manual of Directions, Revised.

TEST 1. READING: PARAGRAPH MEANING

Sample: Dick and Tom were playing ball in the field. Dick was throwing the ball and..... was trying to catch it.

Write JUST ONE WORD on each dotted line.

---

1 Jack got his hat and ran to the door. " Where are you going? " said his mother. " To school," said ....., and ran off as fast as he could go.

2 Bess has a dog and a kitten, but her two pets do not like each other very well. When the dog comes near, the ..... always runs away as fast as it can.

3 Ned was crying because his little pony had died. Just then a fairy appeared and asked him why he was so sad. " Because," said Ned, " my dear little ..... is dead."

4 One day a lazy owl came to the magpie and begged her to build a nice nest for her. "Why should I build you a nest? " said the magpie. " If you were not so....., you would build it yourself."

5 A gray pussy saw a lark out in the field and thought it would make a fine dinner. " Come here, pretty lark," said the ....., " and I will show you the bell that hangs on my neck." But the wise lark said he did not care to see the ..... and flew quickly away.

6 Tom's kite was made of blue and red paper and was very pretty. One day he went out to a large field to fly it. There was a good wind, and in a short time the kite was so high that it seemed only a dim speck in the heavens. " How wonderful," said Tom; " my ..... must be nearly as ..... as the stars."

7 A pretty squirrel once lived in a hollow tree near the window of a farmhouse. In the room where the window was, a little girl, named Nellie, lay sick. Every day the .....came to the window and chatted as though to keep ..... from getting lonesome.

8 John's father hurried to his office soon after eating his breakfast, but before going he told John to pull all the weeds in the garden and mow the lawn. When he returned that evening, after a hard day's work, he found the ..... still growing in the garden and the ..... uncut.

9 Once there was a little girl who used to cry all day because she wanted the stars to play with. So one day she went out to find them. She walked until she was so tired she could go no farther. Just then a fairy appeared and asked where she was going. " I am going to hunt for the ....," said the little girl, " but I am very tired." Then the ..... reached up and pulled a beautiful ..... down from the sky and gave it to her.

10 When night came, I went into a cave where I thought I might rest in safety. I closed the narrow entrance of the cave with a rock to keep out the bears which were all about. But I could not sleep for thinking of the danger that a ..... might be able to push the ..... away from the entrance to the .....

Turn the page and go right on.

TEST 1, CONTINUED

11 Whenever many men dwell together in fellowship, one must be leader and the others must yield him obedience or everything will go wrong. Thus thought the outlaws of Sherwood; so one day they met together and chose Robin Hood as their ..... When he had been chosen, they all took a great oath that they would ..... his commands.

12 Captain Todd, who was leading his company in the attack, fell, severely wounded in the right leg. A stream of blood gushed from the wound. When found, he was very weak from the loss of so much ..... After he had been carried to the hospital, it was found necessary to amputate his .....

13 The smoke from the forest fires hung over the valleys for days, smothering the sun. Lamps had to be lighted at three in the afternoon. Conductors on trains carried lanterns all day to read the tickets of passengers. In short, day was turned into ..... It was more than a week before the rains came and put out the .....

14 France was a far richer country than Scotland, and the English king had a much greater mind to conquer it. So he let ..... alone and pretended that he had a right to the throne of .....

15 Bessie hunted for the fairy everywhere, but finally, quite discouraged, she sat down and rested her tired little head against the big brown root of her favorite tree. It was such a friendly tree that it seemed there ought to be a fairy on every bough. She peeped to see and spied just one teeny-weeny fairy; but, as you know, even one fairy may be pretty nice company; so Bessie climbed the ..... and reached out to the ....., who walked right up her finger, up her arm, and sang a little song in her ear. Later Bessie told her mother all about it, and Mother said, "I guess you were ....."

16 Age and Youth sat together by the fireside. Age, who was gray, bent, and infirm, talked incessantly of his childhood friends who were no more, of his successes and failures, and of the brevity and disappointments of human life. As ..... spoke, ... listened without saying a word.

17 Dumped into Ernest's corner of the attic are a roller skate and a much-read storybook. "Ernest likes me better than he likes you," said the skate. "Why, you poor skate, how mistaken you are," said the book. But, just then, they heard from outdoors, "Come on, Ernest, let's scoot." The word "scoot" set the book's leaves atrembling and sent a thrill of joy through the iron heart of the skate. But just then it began to rain hard, "Pitter-patter, pitter-patter," on the attic roof. This sent a thrill to the heart of the ....., and a shudder to the heart of the ..... Soon Ernest came in and said, "Where is that old ..... of mine?"

18 The typical Englishman has often been described as prone to repressive forms of self-consciousness and condemned to express himself through a jungle of scruples and checks. In this respect the average Frenchman is the exact opposite of the ..... The ..... is therefore usually a far jollier companion.

19 "Prince," said the Sultan, "your condition can never be sufficiently deplored; no one can be more sensibly affected by your misfortune than I am. Never did anything so extraordinary befall any man! One thing only is wanting — the revenge to which you are entitled; and I will omit nothing in my power to effect it." The ..... expressed his gratitude and began to plan how he might secure the ..... to which the Sultan thought he was entitled.

Go right on to next page.

TEST 1, CONTINUED

20 The planet Neptune is known to be exceedingly cold; far colder, in fact, than our north pole. The planet Mars, on the other hand, is blanketed with air and is probably almost as warm as the earth. So, although animal life may possibly exist upon ....., it is unlikely that there is any whatever upon .....

21 If success is due to any one thing other than natural inborn ability, that thing is diligence, although it would be questionable to assert that either of these factors outweighs the other. Without native ability the most untiring worker may accomplish little of great value, and without ..... the mere possession of ability may not guarantee success in life.

22 Like his physical features, the brain of man has evolved slowly under the operation of natural selection through an immense period of time, and there is no reason to believe that it has changed much in historic times. It is not ..... that the average man of today has a better ..... than the average man who lived a thousand years ago.

23 Have you ever seen a lake high up in the mountains? Its waters are clear and cold, and it is closed in between the high ridges, so well hidden that you wonder who first looked upon its beautiful shades of emerald and blue, and who first cast a line and tasted the rich flesh of the trout that you can see so lazily and gracefully slipping through the depths. Some people search out these mountain lakes because of their....., others in order to ....., and some for both reasons.

24 The human body is a steed that goes freest and longest under a light rider, and the lightest of all riders is a cheerful heart. Your sad, or morose, or embittered, or preoccupied heart settles heavily into the saddle, and the poor beast, the ....., breaks down the first mile.

25 There is unquestionably a great native variety among individuals in ability to pay attention. Some always find it hard to attend, while others follow easily a train of connected thought without temptation to turn the mind to other things. The opinion that any one can ..... close ..... to anything, if he really tries, is probably not .....

26 My name is Sally and I have three sisters. When Dorothy tells me to get some wood for the stove, I usually refuse if Ruth is around, because Ruth won't let Dorothy hurt me, and then sometimes I can make Helen do it. Write my name and the names of my sisters arranged according to our ages:

....

27 One of the most outstanding characteristics of Washington was his absolute veracity. He never deceived others, and he never deceived himself. Indeed, of no one can it be said that he loved ..... more than Washington.

28 Although he carried stakes, measured distances, and kept his surveyor's notes with care, the beauty of the bough, not the strength of fiber of its wood; the color of the distant mountain, not its elevation; the evanescent spray and ever changing wonder of the torrents, not their latent horse-power, enthralled him and showed him that engineering .... the calling of his heart.

29 By original nature, man is largely egoistic. His primary concern is his own welfare rather than the welfare of his group. Civilization means the overlaying of these selfish impulses with impulses of a social nature — in such a way, however, that the former are ..... entirely ....., but rather chastened and subdued, in the light of reason, to social convention.

Test 1. Number of blanks correctly filled ..... × 2 = *Score* .....

TEST 2. READING: SENTENCE MEANING

Samples: Can dogs bark? ..... Yes No
Does a cat have six legs? ..... Yes No

Read each question and draw a line under the right answer.

1 Do birds sing? ..... Yes No 1
2 Do boys eat bread? ..... Yes No 2
3 Do people have three feet? ..... Yes No 3
4 Can a horse run a mile? ..... Yes No 4
5 Do little girls ever laugh? ..... Yes No 5

6 Does grass grow on ice? ..... Yes No 6
7 May flowers that grow in the country be beautiful? .. Yes No 7
8 Are all fruits shaped alike? ..... Yes No 8
9 Is an egg as large as a mountain? ..... Yes No 9
10 Do any young children live in the city? ..... Yes No 10

11 Do fish have tails? ..... Yes No 11
12 Is there an island in the middle of every lake? ..... Yes No 12
13 Can a trunk be placed in a wagon? ..... Yes No 13
14 Is it wrong to do your neighbor a favor? ..... Yes No 14
15 Do bats live under carpets in cabins? ..... Yes No 15

16 Is it always warm in winter? ..... Yes No 16
17 Do the citizens of our country sometimes celebrate a holiday? ..... Yes No 17
18 Does your geography say that all the fertile land is in Arabia? ..... Yes No 18
19 Are we displeased with " crooked " dealers who cheat us? ..... Yes No 19
20 Are all vests made of velvet? ..... Yes No 20

21 Does history contain accounts of any famous battles? ..... Yes No 21
22 Is it painful to greet a welcome guest? ..... Yes No 22
23 Might the prospect of being robbed cause a woman to scream? ..... Yes No 23
24 Does victory ever cause a joyful scene? ..... Yes No 24
25 Is dessert usually served in casks and jugs? ..... Yes No 25

26 Do warriors ever handle their weapons with skill? ..... Yes No 26
27 Does nursing ever hasten the recovery of a patient from a disease? ..... Yes No 27
28 Are all discoveries of equal importance? ..... Yes No 28
29 Does one sometimes thwart his own plans by thoughtless mistakes? ..... Yes No 29
30 Do persons in agony sometimes call for assistance? ..... Yes No 30

31 Does every one halt before achieving his goal? ..... Yes No 31
32 Could the anniversary of a wedding be announced? ..... Yes No 32
33 Does a guilty person ever try to appear innocent? ..... Yes No 33
34 Are quickness and endurance good qualifications for an athlete? ..... Yes No 34
35 Is it a mistake to follow an excellent example? ..... Yes No 35

36 Is coarse humor offensive to some persons? ..... Yes No 36
37 Are leather gloves always an indication of plainness? ..... Yes No 37
38 Are sullen persons likely to brood over their troubles? ..... Yes No 38
39 Might the date of a concert conflict with an appointment? ..... Yes No 39
40 Should we assume that all cordial persons are ignorant? ..... Yes No 40

Go right on to next page.

TEST 2, CONTINUED

41 Might a slave be impatient for deliverance? ..... Yes No 41
42 Is a jury likely to be made up of lawless madmen? ..... Yes No 42
43 Is the selection of a preacher to fill a pulpit scandalous? ..... Yes No 43
44 Can rumor do injury to a person's reputation? ..... Yes No 44
45 Is the ministry of a parish usually intrusted to a ruffian? ..... Yes No 45

46 Does every individual fully recognize the importance of education? ..... Yes No 46
47 May a charter occasionally need amendment? ..... Yes No 47
48 Do people sometimes coöperate for self-preservation? ..... Yes No 48
49 Is correspondence a form of communication? ..... Yes No 49
50 Do we intrust lunatics with the adjustment of confidential matters? ..... Yes No 50

51 May a noun be used in an interrogative sentence? ..... Yes No 51
52 Are kimonos used as canopies for market places? ..... Yes No 52
53 Should every chap have determination to achieve? ..... Yes No 53
54 Does every rash action result in a tragedy? ..... Yes No 54
55 Are churlish cowboys always poetical? ..... Yes No 55

56 Is linoleum made of mohair and cheviot? ..... Yes No 56
57 Could one feign disappointment or agony? ..... Yes No 57
58 May we truthfully affirm that flattery is always harmless? ..... Yes No 58
59 Is it outrageous to circulate slanderous rumors? ..... Yes No 59
60 Would a far-off glacier look hideous? ..... Yes No 60

61 Have colonels been known to brag of their achievements? ..... Yes No 61
62 Is it lawful for a schoolmaster to seek employment? ..... Yes No 62
63 Is it a certainty that every explosion will cause a catastrophe? ..... Yes No 63
64 Might a battalion show inability to fight on the defensive? ..... Yes No 64
65 Does the management of a large establishment require an executive? ..... Yes No 65

66 Is one's initial good will sure to be lifelong? ..... Yes No 66
67 Is it advisable to accumulate accurate information? ..... Yes No 67
68 Might an artless person also be conscientious? ..... Yes No 68
69 Should one take precaution if in close proximity to an antagonist? ..... Yes No 69
70 Would it help an auctioneer to show insolence? ..... Yes No 70

71 May antagonists show aggressive behavior toward each other? ..... Yes No 71
72 Is parliamentary judgment necessarily infallible? ..... Yes No 72
73 Would most persons be apprehensive before an ordeal? ..... Yes No 73
74 Would one object to a barnyard having matchless drainage? ..... Yes No 74
75 Would some persons consider a booklet on anarchy a menace? ..... Yes No 75

76 Ought a government to exempt lawless factions from punishment? ..... Yes No 76
77 Are economic resources always inexhaustible? ..... Yes No 77
78 May one's displeasure be augmented in divers ways? ..... Yes No 78
79 Is a certain amount of bias necessarily degrading? ..... Yes No 79
80 Are convictions usually made on insufficient evidence? ..... Yes No 80

Number right .....
Number wrong .....
Test 2. Score (subtract) .....

TEST 3. READING: WORD MEANING

Samples: Bread is something to catch drink <u>eat</u> throw wear
A robin is a <u>bird</u> cat dog girl horse

In each sentence draw a line under the word that makes the sentence true.

---

1 A teacher is a boy family person school table 1
2 Tears come when we cry drink eat talk walk 2
3 A tail is part of a book cat face mountain week 3
4 An oak is a kind of box corn egg money tree 4
5 A wheel is part of an arm river train wall word 5

6 A napkin is made of cloth glass iron stone wood 6
7 Silk is for books dresses gardens horses letters 7
8 Soap is used in cleaning dusting eating racing studying 8
9 A neighbor is a person school story town watch 9
10 A limb is a part of a story table tree wall window 10

11 Stables are used for apples fish horses soldiers trains 11
12 " She wept " means that she cried laughed played sang talked 12
13 A cellar is part of a forest gate house leg shoe 13
14 A pasture is a basket bell doctor field train 14
15 To understand means to begin come draw help know 15

16 A branch is a bough parcel shield vice weapon 16
17 A baker makes dresses hats shoes bread suits 17
18 To offer means to change find give love measure 18
19 To be free is to have liberty luxury patience religion revenge 19
20 To be healthy is to be different grave well rich sick 20

21 A trail is a market path storm stream village 21
22 To exclaim is to fight grant hurry listen speak 22
23 To disappear is to disclose discharge enforce humiliate vanish 23
24 An ostrich is a bird dog flower snail tree 24
25 Slumber refers to memory nature seasons sleep weight 25

26 To gaze is to hoard illustrate implore invest stare 26
27 To provide is to hang rule strike supply waste 27
28 To toil is to believe fall play read work 28
29 To be brave is to be courageous frightful honorable humble ignoble 29
30 To grant means to get give see step wish 30

31 Biscuits are a kind of beef bread fruit pie spoon 31
32 An expert is a person with disease mirth skill tobacco wealth 32
33 A listener is a lodging hearer regiment rivulet treasurer 33
34 Enormous means gigantic ridiculous saucy superstitious transparent 34
35 A carol is a cargo drug dwarf prophecy song 35

36 To be rugged is to be burdened distressed grateful peculiar rough 36
37 A villain is a jungle leper minstrel scoundrel sculptor 37
38 To be coarse is to be eager frightened lazy joyful rough 38
39 To sneer is to scoff scorch scratch scream scrub 39
40 Kindred refers to plumage relationship reliability reliance repetition 40

Go right on to next page.

TEST 3, CONTINUED

41 An individual is a gift moment person promise song 41
42 To scare is to sympathize tackle taunt terrify testify 42
43 Intelligence means about the same as courage grief haste justice wisdom 43
44 To survey is to inspect negotiate supplant supplicate surmount 44
45 Ungracious means civil honest loving polite rude 45
46 To welcome is to receive abruptly cautiously cordially hastily haughtily 46
47 Antique means ancient prompt recent stormy tame 47
48 To discontinue is to distinguish minister quarrel stop sacrifice 48
49 Romantic means perverse sentimental shabby shameless spry 49
50 To resist is to dispute flutter inquire oppose perish 50
51 To reside is to ascend discover dwell offend repair 51
52 To be peaceable is to be peculiar perilous tormented tranquil treacherous ... 52
53 To be crafty is to be original shrewd temperate thankful tremendous 53
54 A misunderstanding is a diadem disagreement disk magnet monastery 54
55 A treaty is a combat conflict contest negotiation skirmish 55
56 Original means dependent creative inferior ridiculed subordinate 56
57 To loathe is to dislike revere swoon terrify usurp 57
58 A trowel is used chiefly by butchers masons merchants plumbers writers ... 58
59 An eruption is a chisel competition discharge inheritance inspiration 59
60 Accomplishment is attainment declension dependency reconciliation variation 60
61 Anxiety means dogma apprehension ominous sedition torpid 61
62 To be penitent is to be gleeful happy joyful sorrowful triumphant 62
63 Sentiment is burden feeling education election luxury 63
64 A sachet contains garbage liquor manuscripts music perfume 64
65 To be radical is to be delicate doubtful extreme faithless feeble 65
66 Infamous means habitual indispensable memorable sportive villainous 66
67 To skulk means to dishonor flounder snarl sneak slander 67
68 To acquit means to absolve divert emerge interfere loiter 68
69 To appreciate is to help satisfy share value want 69
70 To be legitimate is to be hopeless imperfect indignant infinite lawful ... 70
71 An opponent is an antagonist apparition apology observer oppressor 71
72 To be elaborate is to be artless complicated headstrong hereditary ignored ... 72
73 Alacrity means briskness frailty grudge humbleness levy 73
74 To vanquish is to betray commend conceal defeat defy 74
75 Unscrupulous means dishonest vagrant voluntary willful zigzag 75
76 Flexible means rigid rigorous stupendous supple swarthy 76
77 Symmetry refers to disposition material shape size religion 77
78 A stench is a kind of attachment harrow knoll odor wrench 78
79 Tempestuous means bountiful proficient prosecuted rational turbulent ... 79
80 A sorcerer is a kind of freeholder necromancer squatter stupor tincture 80
81 Matin means evening morning night noon afternoon 81
82 An aversion is a frenzy dislike friendship misfortune paradise 82
83 To acquit means to exonerate expatiate expedite expiate extradite ... 83
84 Palpable means colored evident shameful soft surprising 84
85 To mitigate means to contrive extinguish extol lessen revere 85

Test 3. Score .....

TEST 4. ARITHMETIC: COMPUTATION

Get the answers to these examples as quickly as you can without making mistakes. Look carefully at each example to see what you are to do.

Begin here.

(1)

$2 + 4 =$

(2)

$5 + 5 =$

(3)

Add

$$\begin{array}{r} 5 \\ 1 \\ \hline \end{array}$$

(4)

Add

$$\begin{array}{r} 15 \\ 2 \\ \hline \end{array}$$

(5)

Add

$$\begin{array}{r} 4 \\ 3 \\ \hline \end{array}$$

(6)

Add

$$\begin{array}{r} 8 \\ 3 \\ \hline \end{array}$$

(7)

Subtract

$$\begin{array}{r} 5 \\ 2 \\ \hline \end{array}$$

(8)

Subtract

$$\begin{array}{r} 6 \\ 3 \\ \hline \end{array}$$

(9)

$5 \times 2 =$

(10)

Add

$$\begin{array}{r} 81 \\ 37 \\ 42 \\ \hline \end{array}$$

(11)

Subtract

$$\begin{array}{r} 17 \\ 3 \\ \hline \end{array}$$

(12)

Subtract

$$\begin{array}{r} 68 \\ 53 \\ \hline \end{array}$$

(13)

Subtract

$$\begin{array}{r} 13 \\ 9 \\ \hline \end{array}$$

(14)

Subtract

$$\begin{array}{r} 971 \\ 536 \\ \hline \end{array}$$

(15)

Multiply

$$\begin{array}{r} 32 \\ 3 \\ \hline \end{array}$$

(16)

Multiply

$$\begin{array}{r} 452 \\ 4 \\ \hline \end{array}$$

(17)

Divide

$3\overline{)9}$

(18)

Add

$$\begin{array}{r} 791529572 \\ 865280183 \\ 437643359 \\ \hline \end{array}$$

(19)

$8 \div 2 =$

(20)

$10 \div 5 =$

(21)

Add

$$\begin{array}{r} 37 \\ 16\frac{2}{3} \\ \hline \end{array}$$

(22)

Multiply

$$\begin{array}{r} 7506 \\ 6 \\ \hline \end{array}$$

(23)

Multiply

$$\begin{array}{r} 7924 \\ 38 \\ \hline \end{array}$$

(24)

$3\overline{)13.5}$

(25)

$\frac{1}{3}$ of $219 =$

Go right on to next page.

TEST 4, CONTINUED

(26)

$\frac{1}{3}$ of 1 5 6 =

(27)

$\frac{1}{6} \times 5 =$

(28)

Subtract

5 7

$1\,2\frac{5}{8}$

(29)

Multiply

4 3 . 5

.8 1

(30)

$1\,2\frac{4}{5} - 3\frac{2}{10} =$

(31)

$\frac{2\,2}{2\,4} \div \frac{1\,1}{1\,6} =$

(32)

$5\frac{5}{6} \div 3\frac{1}{2} =$

(33)

Multiply

$3\,5\,6\frac{1}{3}$

2 7

(34)

$4\,3.5\,1 - 2\frac{3}{4} =$

(35)

$.2\,1\overline{)\,2\,0.7\,9}$

(36)

$\frac{17}{18} + \frac{2}{3} + \frac{5}{9} + \frac{1}{6} + \frac{1}{2} =$

(37)

$4.8\,3\,3 + 1\,7\frac{1}{2} + 3\frac{2}{5} + 2\,1.9 =$

(38)

$5\,3.1\,6 - 9\frac{2}{5} =$

(39)

$3\,3 + .0\,0\,3\,3 + 3\,3\,0\,0\,0\,0 + 3\,3.3\,3 =$

(40)

$4\frac{1}{2} \times 3\frac{1}{4} \times 2\frac{1}{4} =$

(41)

$(3)^3 =$

(42)

Add

2 quarts 1 pint
3 quarts 0 pint
1 quart 1 pint

(43)

Subtract

5 hr. 54 min. 30 sec.
1 hr. 50 min. 50 sec.

(44)

Express as a decimal to three places

$\frac{1\,1}{2\,4} =$

(45)

$2\,7.5\,8 \div \frac{7}{8} =$

(46)

Multiply

2 yds. 2 ft. 6 in.

3

(47)

$\sqrt{1\,5\,1\,2\,9} =$

Test 4. Number right ..... × 4 = *Score* .....

TEST 5. ARITHMETIC: REASONING

Find all the answers as quickly as you can.

Write the answers on the dotted lines.

Use the blank sheets of paper to figure on.

Begin here.

1 How many are 5 birds and 4 birds? *Answer*.....
2 Three apples and two apples are how many apples? *Answer*.....
3 Jane bought a ruler for 5 cents and a bottle of ink for 8 cents. How much did she spend for both? *Answer*.....
4 How many days are there in 2 weeks? *Answer*.....
5 Mary had eight oranges and ate two. How many did she have left? *Answer*.....

6 A boy planted 3 rows of seeds, putting 8 seeds in a row. How many seeds did he plant? *Answer*.....
7 How many days must a man work at $5 a day to earn $30? *Answer*.....
8 Write the figures that mean six thousand, three hundred, forty-seven. *Answer*.....
9 Joe paid $4.50 for a hat and $5.75 for a shirt. How much did he pay for both? *Answer*.....
10 Mrs. Brown's cook gets $14 a week. How much does she earn a day? *Answer*.....

11 Kate's stamp book holds 12 stamps on a page. How many pages will it take to hold 48 stamps? *Answer*.....
12 What would 48 eggs cost at the rate of 50 cents a dozen? *Answer*.....
13 A troop of Boy Scouts contains 6 squads of 8 boys each and 5 more left over. How many new boys are needed to make up a new squad? *Answer*.....
14 There are 16 ounces in a pound. How many ounces are there in $\frac{1}{4}$ of a pound? *Answer*.....
15 A boy had $1.55 in his pocket. There were 2 fifty-cent pieces, 1 quarter, and 2 dimes. The rest of the money was pennies. How many pennies were there? *Answer*.....

16 A merchant who is reducing his stock of neckties sells 50¢ ties for 40¢. At this price how many can be bought for $2? *Answer*.....
17 How many hours is it from 9 o'clock in the forenoon to 4 o'clock in the afternoon? *Answer*.....
18 How many gallons of water will it take to fill six $2\frac{1}{2}$-gallon cans? *Answer*.....
19 How many more cubic inches are contained in a box $6 \times 3 \times 4$ than in one $3 \times 4 \times 5$? *Answer*.....
20 How many yards of twine are needed to make a dozen strings, each $\frac{3}{4}$ yard long? *Answer*.....

Go right on to next page.

TEST 5, CONTINUED

21 At the rate of $7\frac{1}{2}$ miles in 15 minutes, how far will a train go in an hour? *Answer*.....

22 A tailor sells a suit for \$60, which in addition to \$4 a yard for $5\frac{1}{2}$ yards of cloth, costs him \$20 for labor and \$5 for general shop expenses. What is his profit on this suit? *Answer*.....

23 Halley's comet returns every 77 years. It was last seen in 1910. If Thomas, born in 1920, lives to see the comet, how old will he then be? *Answer*.....

24 Sound travels a mile in 5 seconds and light travels a mile in so short a time as to be practically unmeasurable. If you see a flash of lightning and 5 seconds later hear the thunder from it, how far away is the lightning? *Answer*.....

25 Frank, John, and Walter bought a bag of 40 marbles for 5 cents. Frank paid 1 cent, John paid 2 cents, and Walter paid 2 cents. How many of the marbles should John get? *Answer*.....

26 What would you expect to have to pay for 1 can of corn if 3 cans cost 29¢? *Answer*.....

27 The rainfall for Portland, Oregon, for the years 1915–1918 was 31, 35, 42, and 38 inches. What was the average rainfall? *Answer*.....

28 A collector charges 15 per cent commission. If he collects \$430 of a debt of \$615, what is the amount of his commission? *Answer*.....

29 A man's automobile will go 110 miles on 10 gallons of gasoline. If gasoline costs 22 cents per gallon, what is the cost per mile? *Answer*.....

30 A rectangular chicken pen has an area of 24 sq. ft. It is 6 ft. long. How many feet of chicken wire are needed to inclose it? *Answer*.....

31 A tree which is 8 ft. thick at the ground decreases 1 ft. in thickness for every 10 ft. of height. How thick is the tree 55 ft. from the ground? *Answer*.....

32 How much will it cost to carpet a room 12 ft. by 15 ft. with carpet at \$3 a square yard? *Answer*.....

33 Potatoes contain 70 per cent water, 20 per cent starch, and 10 per cent mineral matter. The starch can be removed at a cost of 14 cents a pound. How many pounds of potatoes are needed to yield 200 lbs. of starch? *Answer*.....

34 A man bought four horses at \$180 each, less a discount of $33\frac{1}{3}$ per cent. How much did he pay in all? *Answer*.....

35 How many dollars' worth of merchandise must a clerk sell at a commission of $2\frac{1}{2}$ per cent to earn a salary of \$1000 a year? *Answer*.....

36 Light travels about 186,000 miles per second. The sun is 93,000,000 miles away from the earth. How many **minutes** does it take a ray of light to come to the earth? *Answer*.....

37 What does \$1.00 compounded annually at 10 per cent amount to in 2 years? *Answer*.....

38 A ladder is standing against a wall in such a way that the base is 12 ft. from the wall and the top of the ladder is 16 ft. from the ground. How long is the ladder? *Answer*.....

39 A house was sold for \$3000. Out of this was paid \$20 for taxes, \$25 for abstract of title, 5 per cent as commission, and $\frac{1}{5}$ of 1 per cent as escrow charges. How much did the owner finally receive for his house? *Answer*.....

40 How many cubic feet are there in a cylindrical smokestack that is 20 feet in diameter and 100 feet high? *Answer*.....

Test 5. Number right ..... × 4 = *Score* .....

TEST 6. NATURE STUDY AND SCIENCE

Samples: The number of cents in a dollar is 200 100 300
Our rain comes from the clouds moon stars

Draw a line under the word that makes the sentence true.

Begin here.

1 Christmas comes in December January July 1
2 The month before April is March May June 2
3 A calf is the young of the cow goat horse 3
4 Soap is made from fats lemons sugars 4
5 Horseshoes are made of copper lead iron 5

6 A colt is the young of the cow horse sheep 6
7 Acorns grow on oaks pines poplars 7
8 A baboon is a kind of bird fish monkey 8
9 Ivory is obtained from elephants shellfish reefs 9
10 The lasso is usually made of rope rubber wire 10

11 An enemy of the mouse is the owl rabbit squirrel 11
12 An important orange-growing state is Alabama California Texas 12
13 The number of pints in a quart is 2 3 4 13
14 A scythe is used in cutting grass steel wood 14
15 Anchors are used on autos ships wagons 15

16 Muslin is a kind of cloth color drink 16
17 The burro resembles most the cow donkey horse 17
18 Calico is a kind of cloth curtain towel 18
19 A poor food for sick people is eggs milk pickles 19
20 The largest city in the United States is Chicago New York Washington 20

21 An important export from China is coffee salmon tea 21
22 One of the great tobacco states is New York Ohio Virginia 22
23 Pearls are obtained from ivory mines oysters 23
24 The least expensive of these cloths is cheesecloth poplin voile 24
25 One of the greatest cattle states is Louisiana Massachusetts Texas 25

26 The square is used chiefly by barbers blacksmiths carpenters 26
27 Tuberculosis is caused by cold air germs moist air 27
28 An animal with many long arms is the devilfish leech snail 28
29 Boston is in Connecticut Massachusetts Rhode Island 29
30 A bird that catches fish is the buzzard owl pelican 30

31 Geysers are a kind of hot spring iceberg seaweed 31
32 The inventor of the steamboat was Fulton Stephenson Watt 32
33 Dishes are made of clay sandstone gravel 33
34 To be soft boiled, eggs require about 3 minutes 4 minutes 5 minutes 34
35 Sleeve boards are used in ironing knitting sewing 35

36 Gasoline comes from grains petroleum turpentine 36
37 The Amazon is in Brazil India Russia 37
38 The Erie Canal is in Canada New York Pennsylvania 38
39 A bird that nests in holes in trees is the flicker robin song sparrow 39
40 Eggs are most easily digested when fried scrambled soft-boiled 40

41 An enemy of the chicken is the blackbird mole weasel 41
42 An animal that carries its young in a pouch is the beaver kangaroo squirrel . 42
43 A valuable ornamental wood is mahogany pine spruce 43
44 The incubator is useful in raising cattle chickens cotton 44
45 A cloth often used for kitchen aprons is flannel gingham velours 45

Go right on to next page.

TEST 6, CONTINUED

46 Ammonia is often used for **cleaning dyeing flavoring** 46
47 The Pyramids are located in **Egypt Morocco Persia** 47
48 Adenoids cause **blindness mouth breathing paralysis** 48
49 Pneumonia is a disease of the **heart lungs nerves** 49
50 Canton is a city in **China France Japan** 50
51 Malaria is often spread by **flies rats mosquitoes** 51
52 The electromagnet is used in **printing stenography telegraphy** 52
53 An example of a citrus fruit is the **apple lemon peach** 53
54 The most common rate of interest is **2 % 6 % 12 %** 54
55 The mimeograph is a kind of **copying machine phonograph typewriter** 55
56 An inventor of airplanes was named **Fulton Stephenson Wright** 56
57 The age of a tree may be learned from its **bark rings limbs** 57
58 Baking powders sometimes contain **alum arsenic calomel** 58
59 Threads are found on **saws screws rivets** 59
60 The chief industry of Labrador is **dairying farming fishing** 60
61 The North Star can be found by the **Big Dipper Little Dipper Seven Sisters** . 61
62 Seattle is in **California Oregon Washington** 62
63 The ligaments are attached to the **bones intestines stomach** 63
64 When it is noon in San Francisco it is 2 P.M. in **Berlin Chicago London** 64
65 The Andes are in **Africa Asia South America** 65
66 The Roman numerals XIX equal **14 19 21** 66
67 The telephone was invented by **Edison Bell Hammond** 67
68 A city with a very heavy rainfall is **Chicago Denver Seattle** 68
69 The sun in eclipse is hidden from us by **Jupiter the moon Saturn** 69
70 The Volga is in **Spain India Russia** 70
71 The longest day of the year is in **March June December** 71
72 The Guernsey is a kind of **cow horse sheep** 72
73 A plant that lives as a parasite is the **mistletoe nasturtium water lily** 73
74 Barrage is a term used in **mechanics plumbing warfare** 74
75 Potash is a kind of **mineral plant utensil** 75
76 A gimlet is used by **carpenters musicians stenographers** 76
77 The earth is slightly flattened at the **equator poles Tropic of Cancer** 77
78 The cerebellum is a part of the **brain heart skeleton** 78
79 A six-sided figure is called a **hexagon scholium trapezium** 79
80 The cube root of 27 is **9 3 $1\frac{1}{3}$** 80
81 Soil composition is most influenced by **earthworms gophers prairie dogs** 81
82 Cream of tartar is used in making **baking powders extracts soap** 82
83 Antitoxins are a kind of **disease pigment serum** 83
84 The reproduction of fishes is called **ovulation spawning pollination** 84
85 The dynamo produces **dynamite electricity illuminating gas** 85
86 An example of a chemical element is **glass oxygen water** 86
87 The originator of a form of shorthand was **Baldwin Pitman Remington** 87
88 The number of square feet in a square yard is **3 9 $16\frac{1}{2}$** 88
89 Rocks formed under water are called **igneous metamorphic sedimentary** 89
90 The chief cause of tides is the attraction of the **moon planets sun** 90
91 Mohair is used for **crocheting plastering upholstering** 91
92 Maroon is a **color drink food** 92
93 "The Origin of Species" was written by **Agassiz Darwin Lamarck** 93
94 The Roman numeral C equals **50 100 1000** 94
95 Haviland is a brand of **china furniture hats** 95

Number right .....
Number wrong ..... ÷ 2 = ...
Test 6. Score (subtract) .....

TEST 7. HISTORY AND LITERATURE

Draw a line under the word that makes the sentence true.

1 The man who slept for 20 years was **Ichabod Crane** **Miles Standish** **Rip Van Winkle** . . 1
2 America was discovered by **Balboa** **Columbus** **Hudson** 2
3 Black Beauty was a **crow** **dog** **horse** 3
4 A famous American poet was **Cooper** **Longfellow** **Shelley** 4
5 The girl who ran down a rabbit hole was **Alice** **Isabel** **Rosamund** 5

6 The Pilgrims were **English** **French** **German** 6
7 A person who went to seek for the Golden Fleece was **Baldur** **Jason** **Siegfried** . . 7
8 Civilization depends most upon **education** **electric lights** **parcels post** 8
9 Thor was the Norse god of **music** **peace** **thunder** 9
10 The word "courtship" reminds us of **Jonathan Edwards** **Miles Standish** **William Penn** . . 10

11 Aladdin had a magic **cloak** **lamp** **wand** 11
12 Daniel Boone explored the state of **Kentucky** **Oregon** **Texas** 12
13 The highest authority in a court is the **judge** **prosecutor** **sheriff** 13
14 A voter must **have property** **be a citizen** **belong to the white race** 14
15 The Mississippi was discovered by **Balboa** **De Soto** **Vespucci** 15

16 Longfellow wrote **Evangeline** **The Raven** **Snowbound** 16
17 The Civil War began in **1812** **1861** **1865** 17
18 The man who fed Belgium during the World War was **Hoover** **Pershing** **Wilson** . . 18
19 Huckleberry Finn's chum was **Artful Dodger** **Black Dog** **Tom Sawyer** 19
20 William Tell was an **archer** **orator** **prince** 20

21 A voter has to be at least **18 years old** **20 years old** **21 years old** 21
22 The theme of "Uncle Tom's Cabin" is **poverty** **slavery** **taxation** 22
23 A hero of the Revolution was **William Penn** **John Smith** **Paul Revere** 23
24 Our President during the Civil War was **Lincoln** **Roosevelt** **Washington** 24
25 "Snowbound" was written by **Field** **Markham** **Whittier** 25

26 The American Legion is composed of **ex-soldiers** **senators** **supreme court judges** . . 26
27 The "gold rush" to California was in **1849** **1865** **1872** 27
28 "Huckleberry Finn" was written by **Cooper** **Mark Twain** **Stevenson** 28
29 Robert E. Lee was famous in **literature** **science** **war** 29
30 The man who was cast into the lions' den was **Daniel** **Jonah** **Joseph** 30

31 Hindenburg commanded the forces of **England** **Germany** **Russia** 31
32 Lafayette fought on the side of **Grant** **Lee** **Washington** 32
33 The Pied Piper ridded Hamelin of **cats** **snakes** **rats** 33
34 Ichabod Crane lived in **Alaska** **Sleepy Hollow** **The House of the Seven Gables** . . 34
35 The appearance of a city is helped most by **billboards** **shade trees** **telegraph poles** . . 35

36 In the United States a criminal is tried by a jury of **6** **12** **16** 36
37 "The Call of the Wild" was written by **Cooper** **Jack London** **Mark Twain** . . . 37
38 When one man sells a property to another he gives him a **deed** **mortgage** **will** . . 38
39 The girl from Sunnybrook Farm was **Nora** **Peggy** **Rebecca** 39
40 Daniel Webster is famous as a **judge** **orator** **preacher** 40

41 The "Rough Riders" were led by **Pershing** **Roosevelt** **Sheridan** 41
42 Sir Launfal sought the **Golden Fleece** **Holy Grail** **Silver Buddha** 42
43 The Monroe Doctrine deals with foreign colonization in **Africa** **America** **Asia** . . 43
44 Dewey overcame the Spanish fleet at **Havana** **Manila** **Mobile** 44
45 The United States Military Academy is located at **Annapolis** **Washington** **West Point** . . 45

Go right on to next page.

TEST 7, CONTINUED

46 Paul Jones was a **general sea fighter statesman** 46
47 Stonewall Jackson is mentioned in **Barbara Frietchie Enoch Arden Paul Revere's Ride** .. 47
48 The President is elected directly by **Congress electors the people** 48
49 "Uncle Tom's Cabin" tells about **Ali Baba Little Eva Tar Baby** 49
50 The power of declaring war is vested in **Congress President Secretary of War** .. 50
51 A famous Confederate general was **Gage Stonewall Jackson Meade** 51
52 The first book of the Bible is **Genesis Psalms Revelation** 52
53 A state that was once an independent country is **Missouri Ohio Texas** 53
54 A great lawgiver of the Hebrews was **Abraham Moses Saul** 54
55 The American Revolution began in **1762 1775 1783** 55
56 "Alice in Wonderland" tells about **Little John The Mad Hatter The Ruggles** .. 56
57 One of the thirteen original colonies was **Alabama Florida New York** 57
58 The scene of "Evangeline" is laid in **Acadia Maryland Pennsylvania** 58
59 The north pole was discovered by **Greely Peary Scott** 59
60 Congress makes the laws for the **cities nation states** 60
61 The battle of Bunker Hill was fought in **Massachusetts New York Virginia** .. 61
62 "The Call of the Wild" is the story of a **bear dog horse** 62
63 Admiral Sims fought in the **Civil War World War War of 1812** 63
64 A king famous for his wisdom was **David Pilate Solomon** 64
65 "Little Women" was written by **Louisa Alcott George Eliot Anna Sewell** 65
66 U. S. abolished slavery by a **Senate bill Constitutional amendment court decision** ... 66
67 Solomon was a **Greek Hebrew Egyptian** 67
68 The Peace Treaty of 1919 is known as the Treaty of **Berlin London Versailles** .. 68
69 Long John Silver is a character in **Ivanhoe Robin Hood Treasure Island** 69
70 Robin Hood dressed in **blue green red** 70
71 The battle of Lexington was fought in **1620 1775 1812** 71
72 "The Lady of the Lake" was written by **Longfellow Scott Tennyson** 72
73 The oracle of Apollo was located at **Amalfi Capua Delphi** 73
74 A measure which safeguards the people's rights is **income tax prohibition referendum** .. 74
75 The Odyssey was written by **Homer Milton Virgil** 75
76 Romulus and Remus were cared for by a **dwarf lion wolf** 76
77 The Jesuits were noted for their **agriculture inventions schools** 77
78 A word that expresses strong emotion is an **adverb conjunction interjection** .. 78
79 Federal authority is the authority of the **county state United States** 79
80 Vulcan was the god of **fire lightning thunder** 80
81 The Hohenzollerns were kings of **Prussia Russia Sweden** 81
82 A coroner is ordinarily a **doctor lawyer mayor** 82
83 The Peloponnesian War was fought in **Greece Rome Spain** 83
84 A character in Hiawatha is **Crowfoot Minnehaha Pocahontas** 84
85 Mark Twain's real name was **Clemens Howells Riley** 85
86 The soviet is a system of **exchange government religion** 86
87 Ichabod Crane is a character from **Cooper Irving Mark Twain** 87
88 The Reichstag is the law-making body of **Germany Holland Sweden** 88
89 The prefix "anti-" means **against over beyond** 89
90 "The Man Without a Country" was written by **Aldrich Emerson Hale** 90
91 Haig commanded the forces of **England France Italy** 91
92 Representing France at the Versailles peace conference was **Clemenceau Foch Poincaré** . 92
93 "The Jungle Book" tells about **Bagheera Hiawatha Friar Tuck** 93
94 Cherubim are a kind of **angel chariot throne** 94
95 Sindbad was a **dwarf knight sailor** 95

Number right .....

Number wrong ..... ÷ 2 = ...

Test 7. Score (subtract) .....

TEST 8. LANGUAGE USAGE

Samples

Apples $\frac{\text{is}}{\underline{\text{are}}}$ good.

He $\frac{\underline{\text{told}}}{\text{telled}}$ me.

1 She was just about to $\frac{\text{sit}}{\text{set}}$ down.

2 I will $\frac{\text{teach}}{\text{learn}}$ him to do better.

3 There was a large $\frac{\text{mob}}{\text{crowd}}$ at church.

4 Four men and a boy $\frac{\text{are}}{\text{is}}$ in the party.

5 Jane is $\frac{\text{more prettier}}{\text{prettier}}$ than Helen.

6 She dances $\frac{\text{elegantly.}}{\text{gracefully.}}$

7 The doctor $\frac{\text{gives}}{\text{grants}}$ us medicine.

8 He did it $\frac{\text{himself.}}{\text{his self.}}$

9 $\frac{\text{That there}}{\text{That}}$ house is ours.

10 He $\frac{\text{could}}{\text{couldn't}}$ scarcely do it.

11 Both Helen and $\frac{\text{I}}{\text{myself}}$ saw him.

12 He is a very $\frac{\text{healthful}}{\text{healthy}}$ man.

13 The noise greatly $\frac{\text{aggravated}}{\text{annoyed}}$ me.

14 $\frac{\text{Although}}{\text{While}}$ I am weak, I will try.

15 That man has $\frac{\text{written}}{\text{wrote}}$ three books.

16 The woman was half $\frac{\text{drowned.}}{\text{drownded.}}$

17 One is a girl, but all the others $\frac{\text{boys.}}{\text{are boys.}}$

18 He $\frac{\text{don't}}{\text{doesn't}}$ seem to understand.

19 I am coming $\frac{\text{right off.}}{\text{immediately.}}$

20 This game is the best of $\frac{\text{any.}}{\text{all.}}$

21 Do it as $\frac{\text{quickly}}{\text{quick}}$ as you can.

22 The guests $\frac{\text{lingered}}{\text{loitered}}$ near the door.

23 Edison $\frac{\text{discovered}}{\text{invented}}$ the electric light.

24 Ten thousand were $\frac{\text{slain}}{\text{murdered}}$ in the battle.

25 I feared you $\frac{\text{should}}{\text{would}}$ fail.

26 They ate it all $\frac{\text{theirselves.}}{\text{themselves.}}$

27 A parent is $\frac{\text{mortified}}{\text{abashed}}$ by a child's rudeness.

28 The climate here is very $\frac{\text{gentle.}}{\text{mild.}}$

29 The man has $\frac{\text{fell}}{\text{fallen}}$ and hurt himself.

30 She dances very $\frac{\text{gracefully.}}{\text{graceful.}}$

Go right on to next page.

TEST 8, CONTINUED

31 I greatly appreciated / esteemed the favor.

32 He related the deeds / adventures of an explorer.

33 The tree has laid / lain for years.

34 They all unanimously / unanimously agreed to go.

35 One is naturally offended / vexed by an insult.

36 The earthquake hurt / damaged four persons.

37 We divided them between / among the four of us.

38 I assure / promise you we did our best.

39 The box was hidden inside / inside of the house.

40 Please try and / to do it.

41 All who / whom I expected were there.

42 Privileges are often given / granted by kings.

43 The battle showed up / exposed his weakness.

44 The miser hoards / treasures his gold.

45 Here they give a person food he / you can't eat.

46 He shall / will be glad to hear from you.

47 False reports have injured his character. / reputation.

48 James is the carefullest / most careful boy in the school.

49 Having said goodby, / When we had said goodby, the train departed.

50 I forgot his name and felt disconcerted. / discomposed.

51 The ship, with all its passengers, was / were lost.

52 He never abandons / forsakes his purposes.

53 They insisted upon observation / observance of the Sabbath.

54 If he was / were here, he would say yes.

55 The lofty mountains inspired us with awe. / amazement.

56 Every pupil should do his / their own work.

57 This is between you and I. / me.

58 He is a notorious / noted gambler.

59 You, the captain, are / is the one to give the order.

60 Pure drinking water is healthy. / healthful.

Number right .....

Number wrong .....

Test 8. Score (subtract) .....

TEST 9. DICTATION EXERCISE

Test 9. Full score for easier sentences not dictated .....

Number right in sentences dictated .....

Sum ..... × 2 = *Score* .....

Stanford Achievement Test

By Truman L. Kelley, Giles M. Ruch, and Lewis M. Terman

ADVANCED EXAMINATION: FORM A

FOR GRADES 4–8

Name.....Grade.....Boy or girl.....

Age.....When is your next birthday?.....How old will you be then?.....

Name of school.....Date.....

Test	Score	Subject Scores	Age Equivalents (Subject Ages)
1. Reading: Paragraph Meaning			
2. Reading: Sentence Meaning			
3. Reading: Word Meaning			
Total Reading Score			
4. Arithmetic: Computation			
5. Arithmetic: Reasoning			
Total Arithmetic Score			
6. Nature Study and Science			
7. History and Literature			
8. Language Usage			
9. Dictation Exercise			
Composite Score (Sum of Subject Scores ÷ 10)			
Educational Age			

Note. This page may be torn off and filed as a record.

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 SAT: ADV. A-28

PRINTED IN U.S.A.

To the Examiner: Do not administer this test without first reading carefully the Manual of Directions. The Manual must be ordered extra.

EDUCATIONAL PROFILE CHART: ADVANCED EXAMINATION

Test 1, Parag. Mean.	Test 2, Sent. Mean.	Test 3, Word Mean.	Read. total	Test 4, Arith. Comp.	Test 5, Arith. Reas.	Arith. total	Test 6, Na. St. & Sci.	Test 7, Hist. & Lit.	Test 8, Lang. Usage	Test 9, Dictation	Total Score	Educational Age	Chronological Age	Grade*
-102	**-75**	**-82**	**-259**	**-179**	**-132**	**-311**	**-86**	**-84**	**-54**	**-206**	**-100**	**18-6**		
-102	-75	-81	-258	-175	-132	-307	-85	-83	-53	-204	- 99	-18-4		
-101	-74	-80	-255	-171	-131	-302	-85	-83	-53	-202	- 98	-18-1		
-101	-74	-79	-254	-166	-131	-297	-84	-83	-52	-200	- 97	-17-11		
-101	-73	-79	-253	-161	-130	-291	-84	-83	-51	-198	- 96	-17-8		
-101	**-73**	**-78**	**-252**	**-157**	**-130**	**-287**	**-83**	**-83**	**-50**	**-195**	**- 95**	**-17-6**		
-100	-72	-78	-250	-152	-130	-282	-82	-82	-50	-194	- 94	-17-4		
-100	-72	-77	-249	-148	-129	-277	-82	-82	-49	-191	- 93	-17-2		
- 99	-71	-76	-246	-147	-127	-274	-81	-81	-48	-190	- 92	-17-1		
- 98	-70	-75	-243	-147	-124	-271	-80	-80	-47	-189	- 91	-16-11		
- 96	**-70**	**-74**	**-240**	**-146**	**-122**	**-268**	**-80**	**-78**	**-47**	**-187**	**- 90**	**-16-9**		
- 95	-69	-73	-237	-146	-119	-265	-79	-77	-46	-186	- 89	-16-8		
- 94	-68	-73	-235	-145	-117	-262	-78	-75	-45	-185	- 88	-16-6		
- 92	-67	-72	-231	-145	-114	-259	-78	-74	-45	-183	- 87	-16-5		
- 90	-67	-71	-228	-145	-112	-257	-77	-72	-44	-182	- 86	-16-3		
- 89	**-66**	**-70**	**-225**	**-144**	**-110**	**-254**	**-77**	**-70**	**-43**	**-181**	**- 85**	**-16-2**		
- 88	-65	-69	-222	-144	-107	-251	-76	-69	-43	-179	- 84	-16-1		
- 87	-65	-68	-220	-143	-105	-248	-75	-67	-42	-178	- 83	-15-11		
- 86	-64	-67	-217	-142	-104	-246	-74	-66	-41	-176	- 82	-15-10		-10.0
- 85	-63	-66	-214	-141	-103	-244	-73	-65	-40	-174	- 81	-15-9		- 9.8
- 84	**-62**	**-65**	**-211**	**-140**	**-102**	**-242**	**-72**	**-63**	**-40**	**-172**	**- 80**	**-15-7**	-Adult	**- 9.7**
- 83	-61	-64	-208	-139	-101	-240	-71	-62	-39	-170	- 79	-15-6	-17-9	- 9.5
- 83	-60	-63	-206	-138	-100	-238	-69	-61	-38	-168	- 78	-15-4	-16-9	- 9.3
- 82	-59	-62	-203	-137	- 99	-236	-68	-60	-38	-165	- 77	-15-2	-16-2	- 9.2
- 81	-58	-61	-200	-136	- 98	-234	-67	-59	-37	-163	- 76	-15-1	-15-9	- 9.0
- 81	**-57**	**-60**	**-198**	**-134**	**- 97**	**-231**	**-66**	**-58**	**-36**	**-161**	**- 75**	**-14-11**	**-15-4**	**- 8.9**
- 80	-56	-59	-195	-133	- 96	-229	-65	-56	-36	-159	- 74	-14-9	-15-0	- 8.8
- 79	-55	-58	-192	-132	- 95	-227	-64	-55	-35	-157	- 73	-14-8**	-14-9	- 8.6
- 78	-54	-58	-190	-131	- 93	-224	-63	-54	-34	-155	- 72	-14-6	-14-6	- 8.5
- 77	-54	-57	-188	-129	- 92	-221	-62	-52	-34	-153	- 71	-14-4	-14-4	- 8.4
- 77	**-53**	**-56**	**-186**	**-128**	**- 91**	**-219**	**-61**	**-51**	**-33**	**-150**	**- 70**	**-14-2**	**-14-2**	**- 8.2**
- 76	-53	-56	-185	-127	- 89	-216	-60	-49	-32	-148	- 69	-14-0	-14-0	- 8.1
- 75	-52	-55	-182	-125	- 87	-212	-60	-48	-32	-146	- 68	-13-10	-13-10	- 8.0
- 74	-52	-54	-180	-124	- 86	-210	-59	-46	-31	-144	- 67	-13-8	-13-8	- 7.9
- 74	-51	-54	-179	-123	- 84	-207	-58	-44	-31	-141	- 66	-13-6	-13-6	- 7.7
- 73	**-51**	**-53**	**-177**	**-121**	**- 83**	**-204**	**-57**	**-43**	**-30**	**-139**	**- 65**	**-13-5**	**-13-5**	**- 7.6**
- 72	-50	-53	-175	-120	- 81	-201	-56	-42	-29	-137	- 64	-13-3	-13-3	- 7.5
- 71	-50	-52	-173	-119	- 80	-199	-55	-40	-29	-134	- 63	-13-2	-13-2	- 7.4
- 71	-49	-51	-171	-118	- 78	-196	-54	-39	-28	-132	- 62	-13-0	-13-0	- 7.3
- 70	-48	-51	-169	-117	- 77	-194	-52	-38	-28	-129	- 61	-12-11	-12-11	- 7.2
- 70	**-47**	**-50**	**-167**	**-117**	**- 75**	**-192**	**-51**	**-37**	**-27**	**-126**	**- 60**	**-12-9**	**-12-9**	**- 7.1**
- 69	-46	-49	-164	-116	- 73	-189	-50	-36	-27	-124	- 59	-12-8	-12-8	- 7.0
- 68	-45	-49	-162	-115	- 72	-187	-49	-35	-26	-121	- 58	-12-7	-12-7	- 6.8
- 67	-45	-48	-160	-114	- 70	-184	-48	-34	-25	-119	- 57	-12-6	-12-6	- 6.7
- 67	-44	-47	-158	-113	- 68	-181	-47	-33	-25	-116	- 56	-12-5	-12-5	- 6.6
- 66	**-43**	**-46**	**-155**	**-112**	**- 67**	**-179**	**-46**	**-31**	**-24**	**-114**	**- 55**	**-12-4**	**-12-4**	**- 6.5**
- 65	-43	-46	-154	-110	- 66	-176	-44	-30	-24	-112	- 54	-12-2	-12-2	- 6.4
- 64	-42	-45	-151	-109	- 65	-174	-43	-29	-23	-110	- 53	-12-1	-12-1	- 6.3
- 64	-41	-44	-149	-107	- 63	-170	-42	-28	-23	-108	- 52	-12-0	-12-0	- 6.2
- 63	-40	-44	-147	-105	- 62	-167	-40	-27	-22	-107	- 51	-11-11	-11-11	- 6.1
- 62	**-39**	**-43**	**-144**	**-103**	**- 61**	**-164**	**-39**	**-26**	**-22**	**-105**	**- 50**	**-11-10**	**-11-10**	**- 6.0**
- 61	-38	-42	-141	-102	- 60	-162	-38	-25	-21	-103	- 49	-11-9	-11-9	- 5.9
- 60	-38	-41	-139	-100	- 59	-159	-36	-24	-21	-101	- 48	-11-8	-11-8	- 5.8
- 59	-37	-41	-137	- 98	- 58	-156	-35	-23	-20	- 99	- 47	-11-7	-11-7	- 5.7
- 58	-37	-40	-135	- 96	- 56	-152	-34	-22	-20	- 97	- 46	-11-6	-11-6	- 5.7
- 57	**-36**	**-39**	**-132**	**- 95**	**- 55**	**-150**	**-33**	**-21**	**-19**	**- 95**	**- 45**	**-11-5**	**-11-5**	**- 5.6**
- 56	-35	-38	-129	- 93	- 54	-147	-32	-20	-19	- 93	- 44	-11-4	-11-4	- 5.5
- 55	-35	-37	-127	- 91	- 52	-143	-31	-20	-18	- 91	- 43	-11-3	-11-3	- 5.4
- 55	-34	-36	-125	- 89	- 51	-140	-30	-19	-17	- 89	- 42	-11-2	-11-2	- 5.3
- 54	-33	-35	-122	- 87	- 50	-137	-29	-18	-17	- 87	- 41	-11-1	-11-1	- 5.2
- 53	**-33**	**-34**	**-120**	**- 86**	**- 48**	**-134**	**-28**	**-17**	**-16**	**- 85**	**- 40**	**-11-0**	**-11-0**	**- 5.1**
- 52	-32	-33	-117	- 84	- 47	-131	-27	-16	-16	- 83	- 39	-10-11	-10-11	- 5.0
- 51	-31	-32	-114	- 82	- 46	-128	-26	-16	-15	- 81	- 38	-10-10	-10-10	- 4.9
- 50	-30	-32	-112	- 80	- 44	-124	-25	-15	-15	- 79	- 37	-10-9	-10-9	- 4.9
- 49	-30	-31	-110	- 78	- 43	-121	-24	-14	-14	- 77	- 36	-10-9	-10-9	- 4.8
- 48	**-29**	**-30**	**-107**	**- 76**	**- 42**	**-118**	**-23**	**-13**	**-14**	**- 75**	**- 35**	**-10-8**	**-10-8**	**- 4.7**
- 47	-29	-29	-105	- 74	- 41	-115	-22	-12	-13	- 73	- 34	-10-7	-10-7	- 4.6
- 46	-28	-28	-102	- 73	- 39	-112	-21	-12	-12	- 71	- 33	-10-6	-10-6	- 4.5
- 45	-27	-27	- 99	- 71	- 38	-109	-20	-11	-12	- 69	- 32	-10-5	-10-5	- 4.4
- 43	-26	-26	- 95	- 70	- 38	-108	-18	-10	-11	- 68	- 31	-10-4	-10-4	- 4.4
- 42	**-25**	**-25**	**- 92**	**- 68**	**- 37**	**-105**	**-17**	**-10**	**-10**	**- 66**	**- 30**	**-10-2**	**-10-2**	**- 4.3**
- 40	-24	-24	- 88	- 66	- 36	-102	-16	- 9	-10	- 65	- 29	-10-1	-10-1	- 4.2
- 39	-23	-23	- 85	- 65	- 35	-100	-15	- 8	- 9	- 63	- 28	-10-0	-10-0	- 4.1
- 38	-22	-22	- 82	- 63	- 34	- 97	-13	- 8	- 8	- 62	- 27	- 9-11	- 9-11	- 4.0
- 36	-21	-21	- 78	- 62	- 33	- 95	-12	- 7	- 8	- 60	- 26	- 9-10	- 9-10	- 4.0
- 35	**-20**	**-20**	**- 75**	**- 60**	**- 32**	**- 92**	**-11**	**- 6**	**- 7**	**- 59**	**- 25**	**- 9-8**	**- 9-8**	**- 3.9**
- 34	-19	-19	- 72	- 59	- 31	- 90	- 9	- 5	- 7	- 57	- 24	- 9-7	- 9-7	- 3.8
- 32	-18	-18	- 68	- 57	- 30	- 87	- 8	- 5	- 6	- 56	- 23	- 9-6	- 9-6	- 3.7
- 31	-17	-17	- 65	- 56	- 30	- 86	- 6	- 4	- 5	- 54	- 22	- 9-5	- 9-5	- 3.6
- 30	-16	-16	- 62	- 54	- 29	- 83	- 5	- 3	- 4	- 53	- 21	- 9-4	- 9-4	- 3.5
- 28	**-15**	**-15**	**- 58**	**- 53**	**- 27**	**- 80**	**- 4**	**- 3**	**- 4**	**- 51**	**- 20**	**- 9-2**	**- 9-2**	**- 3.4**
- 27	-14	-14	- 55	- 50	- 26	- 76	- 4	- 3	- 3	- 49	- 19	- 9-1	- 9-1	- 3.4
- 25	-14	-13	- 52	- 47	- 25	- 72	- 3	- 2	- 3	- 48	- 18	- 9-0	- 9-0	- 3.3
- 24	-13	-12	- 49	- 45	- 23	- 68	- 3	- 2	- 2	- 46	- 17	- 8-11	- 8-11	- 3.2
- 22	-13	-12	- 47	- 42	- 22	- 64	- 2	- 1	- 2	- 44	- 16	- 8-10	- 8-10	- 3.1
- 21	**-12**	**-11**	**- 44**	**- 40**	**- 20**	**- 60**	**- 2**	**- 1**	**- 1**	**- 42**	**- 15**	**- 8-9**	**- 8-9**	**- 3.1**

* Grade defined as in Table 5, Manual of Directions, Revised.
** Educational ages above this point are extrapolated values.
For explanation of vertical bars see Manual of Directions, Revised.

TEST 1. READING: PARAGRAPH MEANING

Sample: Dick and Tom were playing ball in the field. Dick was throwing the ball and ..... was trying to catch it.

Write JUST ONE WORD on each dotted line.

---

1 Fanny has a little red hen. Every day the hen goes to her nest and lays an egg for Fanny to eat. Then she makes a funny noise to tell Fanny to come and get the.....

2 A kitten can climb a tree, but a dog cannot. This is very lucky for Nellie's kitten. Every time Joe's big dog comes along the kitten climbs a tree and the..... cannot follow.

3 Anna had never seen a squirrel in her life, although she had always wanted to very much. One day when she was playing under a tree she heard a funny little noise over her head. She looked up, and what do you think she saw? Up there in the..... was the very thing she had always wanted to see, a .....

4 John and Joe played one day till they were very hungry; so John went into the house and asked his mother for something to ..... When he came out again he had a big apple for himself and another for .....

5 One day when Jane was sweeping she found a dime on the floor under the bed. They could not find out whose dime it was, so Jane's mother gave it to her. Now, every time Jane .... the floor she looks carefully under the bed for another.....

6 Helen and Kate pulled their sled through the deep snow to the top of the hill and soon were coasting swiftly down again. They did this over and over. The ..... was so deep that they found it hard work to drag the ..... to the top.

7 Once a black raven wanted to have white feathers like a swan. The raven saw that the swan lived in the water, and thought it was the water that made the swan's feathers so white. So the ..... decided to wash his feathers every day to see if it would not make them .....

8 Birds' eggs are almost as different from each other as are the birds themselves. The robin lays four or five blue eggs. The dove lays two white eggs. The sparrow lays six or eight speckled eggs. If we should find a nest with four blue eggs in it, we could be pretty sure that it was the nest of a ..... rather than of a ..... or dove.

9 Once there lived on a mountain near a village an immense giant whose cruelty kept the people of the village in great terror. However, there was one person in the village who was not afraid of the giant. This was a young soldier who carried a magic sword that a fairy had given him. Once when the ..... came down from the ..... the soldier attacked him with his magic ..... and killed him.

10 Once a hen was so foolish as to go to a fox and ask him to look after her chicks while she went to the barnyard to find some worms for her chicks. The fox was of course quite willing. The hen was gone a long time. When she finally returned, she found that the fox had eaten all her chicks. Since then no ..... has employed a ..... as a nurse.

Turn the page and go right on.

TEST 1, CONTINUED

11 When the bear appeared near the hut, Walter was alone. His father had driven to the village, that morning, several miles away. Fortunately he had left his gun hanging on the wall loaded and ready for service. Walter was excited, but he did not hesitate. Quickly seizing the ..... he ..... the .....

12 In a certain village a ton of coal costs just as much as a cord of wood, but it produces twice as much heat. Therefore the poor families in this village should be advised to burn ..... rather than .....

13 "Come on," called Joe, "let's go for a swim down by Jones' Point, where the river is deep." "No," said Pete, "let's swim down by Duggan's, where the water is warmer." "It isn't because the water is warm that you want to go to ....., but because you can't swim," said .....

14 Richard and Miss Cabot quickly found their way alone to the house of Mr. Smith on Craven Street. Miss Cabot left Richard in the carriage, walked quickly to the door, and sending up her card by the servant, requested to see Mr. Smith. The ..... soon returned and begged her to come in. As soon as she had done so, Miss Cabot introduced herself to Mr. ..... and begged him to come out and talk with ....., who was waiting outside in the carriage.

15 Joe made up a game which he called "Jac-alack." One person called Jack must climb a tree and hang by his arms from a low bough. The others stand behind him and say in unison, "Alas, alack, he fell on his back," and while they are saying it, one of them hits Jack with a bean bag. If Jack can see or guess who did it, he may drop down, and the guilty person takes his place. Otherwise he has to ..... there for another turn and sing out, "Alas, alack, another whack." It is quite a game and Jack must have strong .....

16 It is well established that the bee, which is commonly supposed to be so industrious, really works only two or three hours a day. The man who works eight or ten hours a day is therefore far more ..... than the .....

17 Boys and girls know my name. And mothers and fathers, too. Big folks love me. You do, too. The first letters in the first four sentences of this paragraph spell my name; so write it here.....

18 Energy is a measure of the fullness of life and is indispensable for genius. No energy at all is death. Idiots are feeble and listless. Nearly all the leaders of mankind have been noted for their remarkable .....

19 Deciduous trees lose their leaves in winter, while evergreens, as their name implies, do not. Therefore, in forests composed of ..... trees the ground is less shaded in winter than is the case in forests whose trees are .....

20 Some historians believe that the spread of anti-slavery feeling among the people of the North previous to the Civil War was due less to the moral issue involved than to the fact that they recognized the system of ..... as a menace to the industrial system of free labor.

Go right on to next page.

TEST 1, CONTINUED

21 If I were writing about the rich, I should be inclined to divide them, according to their attitude toward life, into workers and parasites. The motto of the worker is, " I owe the world a life," and the motto of the ..... is, " The ..... owes me a living."

22 Caution, when not present in excess, is a desirable trait. Often it saves one from disappointment or failure. Occasionally, however, one finds a person so extremely ..... that his will is paralyzed and he is totally unable to set about any new undertaking. Too much ..... is indeed often ..... than too little.

23 A whale is not a fish, even though it does live in water. A fish has no lungs, is cold-blooded, and absorbs oxygen from the water through its gills; but a whale is warm-blooded and has a genuine set of lungs. In consequence, in bodily structure the ..... is ..... like a shark, which is a true fish, than it is like a horse.

24 The brook on our farm has many whims. It ripples over bright and shiny rocks, and falls into a placid little pool so clear that I can see the pebbles on the bottom and can see myself down there, too. As I look straight down, it is hard to tell whether what I see is my nose or a ....., but as I move a little, that which I see stands still, so I know it is not .... Farther on the brook forgets the placid pool and tumbles over roots and rocks. It does, indeed, have many .....

25 To pant for recognition, to yearn to impress one's personality upon one's fellow-men, is the essence of ambition. The ambitious person may think that he merely thirsts to " do something" or "be somebody," but really what he craves is to figure potently in the minds of others, to be greatly loved, admired, or feared. To reap a success which no one ..... does not satisfy the yearnings of the ..... individual.

26 Washington was a very silent man. Of no man in the world's history do we have so few sayings of a personal kind. As for talking about himself, that was something in which he almost never indulged. Yet it would be a great error to interpret his ..... as an indication that he was in any sense cold or unfeeling.

27 As a rule, it is more economical to remember things by associating them clearly and vigorously than by going through many repetitions of them. Thus, a clear understanding of the causes for the Democratic victory in the national election in 1916 will be ..... effective in remembering the fact than a dozen ..... of the statement " Woodrow Wilson was elected in 1916."

28 Fundamentally, education depends upon the capacity of a person to profit by past experiences. Past situations modify present and future adjustments. Education in its broadest sense means acquiring experiences that serve to ..... existing inherited or acquired tendencies of behavior.

29 "Naïve" and " unsophisticated " are frequently confused. The former suggests a type of behavior which is artless, spontaneous, and free from the restraints of custom. The latter implies fully as great lack of knowledge of social usage, and, in addition, conduct which is primitive and perchance inelegant. Thus, the ..... youth was the first to enter the car, and his ..... little sister warmly kissed him in the presence of the king. We may also say that a country boy is ..... with respect to city life and customs.

Test 1. Number of blanks correctly filled..... × 2 = *Score*.....

TEST 2. READING: SENTENCE MEANING

Samples: Can dogs bark? ..... Yes No
Does a cat have six legs? ..... Yes No

Read each question and draw a line under the right answer.

1 Is milk white? ..... Yes No 1
2 Do we sleep in beds? ..... Yes No 2
3 Is the day as dark as night? ..... Yes No 3
4 Is green a color? ..... Yes No 4
5 Is smoke always yellow? ..... Yes No 5

6 Do men and women dress just alike? .. Yes No 6
7 Do ships sail on the sea? ..... Yes No 7
8 Are all chimneys made of brass? ..... Yes No 8
9 Are rocks hard? ..... Yes No 9
10 Is everybody as huge as a giant? ..... Yes No 10

11 Do pupils always have excellent memories? ..... Yes No 11
12 Are brooms used to sweep bedrooms? ..... Yes No 12
13 Are machines ever useful? ..... Yes No 13
14 Are sugar and salt sold in stores? ..... Yes No 14
15 Are geese generally clad in bonnets? ..... Yes No 15

16 Do lambs roar? ..... Yes No 16
17 Does crime always bring happiness? ..... Yes No 17
18 Does justice sometimes seem cruel? ..... Yes No 18
19 Could one cradle hold eighty infants? ..... Yes No 19
20 Is a beetle very different from a mole? ..... Yes No 20

21 Does the friendship of a cheerful person make us unhappy? .. Yes No 21
22 Is a dime less than a nickel? ..... Yes No 22
23 Is the guilty thief always located? ..... Yes No 23
24 Is it ever important to hurry? ..... Yes No 24
25 Might a prisoner feel sorrow at the ruin he has caused? ..... Yes No 25

26 Are all antique benches made of bamboo? ..... Yes No 26
27 Are battleships dedicated to warfare? ..... Yes No 27
28 Can we discern things clearly in a dense fog? ..... Yes No 28
29 Might a person suffer confusion during an examination? ..... Yes No 29
30 Are marmalade and gruel made of milkweed? ..... Yes No 30

31 Could delicious chocolate be served at a festival? ..... Yes No 31
32 Do all university professors give instruction in science? ..... Yes No 32
33 Does it take courage to perform a very dangerous task? ..... Yes No 33
34 Should one always be censured for playing a flute by the fireplace? ..... Yes No 34
35 Are homely people always loathed and disliked? ..... Yes No 35

36 Is it deemed delightful to suffer a bloody defeat? ..... Yes No 36
37 Would a man be fortunate if he could flee from a famine? ..... Yes No 37
38 May careful observation be of considerable help in decreasing mistakes? .. Yes No 38
39 Does speaking with brevity necessarily mean that one is peevish? ..... Yes No 39
40 Are chimes ever played in a cathedral? ..... Yes No 40

Go right on to next page.

TEST 2, CONTINUED

41 Do repeated interruptions sometimes exasperate us? ..... Yes No 41
42 Should thieves be encouraged by giving them magnificent rewards? ..... Yes No 42
43 Are locusts and gnats generally believed to enjoy immortality? ..... Yes No 43
44 Might an accidental outbreak cause anxiety? ..... Yes No 44
45 May shortages often be prevented by foresight? ..... Yes No 45

46 Is an annual appeal made once a week? ..... Yes No 46
47 May occasional opposition awaken us to greater endeavor? ..... Yes No 47
48 Is every earl destined to become a genius or a conqueror? ..... Yes No 48
49 Might a person show unfeigned enjoyment of a symphony? ..... Yes No 49
50 Are we irresistibly led to confide in every near-by idler? ..... Yes No 50

51 Do any considerable percentage of motorists use headlights? ..... Yes No 51
52 Does an auctioneer boost prices with earnestness? ..... Yes No 52
53 Is it advisable to use dynamite as a lubricant? ..... Yes No 53
54 Is a person in a frenzy likely to make wild gestures? ..... Yes No 54
55 Should the captain of a yacht consider the weather forecast? ..... Yes No 55

56 Would it take a considerable income to provide a sumptuous wardrobe? .. Yes No 56
57 Is it disgraceful to teach a defenseless person decimals? ..... Yes No 57
58 Is the idea of burial usually attractive? ..... Yes No 58
59 May allies make exertion to enter into a federation? ..... Yes No 59
60 Should enthusiastic homage make a man indignant? ..... Yes No 60

61 Could the imperious actions of a lordly person become notorious? ..... Yes No 61
62 Is all adventurous activity to be deplored? ..... Yes No 62
63 Should a person be advised to sacrifice a good opportunity? ..... Yes No 63
64 Is a harmonious alliance sometimes expedient? ..... Yes No 64
65 Could an eloquent lawmaker do anything heinous? ..... Yes No 65

66 Is boric acid a chemical made of graphite? ..... Yes No 66
67 Are all festivities characterized by extravagance? ..... Yes No 67
68 May imposition upon others become habitual? ..... Yes No 68
69 Is a scarecrow a kind of inoffensive imitation? ..... Yes No 69
70 Does bliss always befall desperate people? ..... Yes No 70

71 Could congressional action cause the people to be dissatisfied? ..... Yes No 71
72 May seeing a person drunk decrease one's admiration for him? ..... Yes No 72
73 Could an inexperienced person be jovial and fascinating? ..... Yes No 73
74 Is one often assaulted by a boon companion? ..... Yes No 74
75 Ought accursed liars to be suppressed? ..... Yes No 75

76 Might an involuntary impulse impel one to be malicious? ..... Yes No 76
77 Is one necessarily inhospitable who dislikes an obnoxious guest? ..... Yes No 77
78 Does extreme audacity sometimes make us stand aghast? ..... Yes No 78
79 Is humanity subject to joyous emotions? ..... Yes No 79
80 Might a hysterical person given to rashness be intolerable? ..... Yes No 80

Number right .....
Number wrong .....
Test 2. Score (subtract) .....

TEST 3. READING: WORD MEANING

Samples: Bread is something to catch drink <u>eat</u> throw wear
A robin is a <u>bird</u> cat dog girl horse

In each sentence draw a line under the word that makes the sentence true.

---

1 March is the name of a day food month week year 1
2 A fat person is always bad blue cold heavy little 2
3 A thing that is perfect is always close early hard little right 3
4 A farmer often raises bears corn gold paper pictures 4
5 Cotton is cool dark heavy soft sweet 5

6 A husband is sometimes a father flower mother sister town 6
7 A path is a place to eat dress die live walk 7
8 A maiden is a bird boy girl king plant 8
9 A lion is blue fine hot strong sweet 9
10 Islands are land ships soldiers time water 10

11 The ocean is fire land paper water wood 11
12 Rice is a battle beast bell cloud grain 12
13 A dove is a bird boat fish horse sheep 13
14 To be silent is to be heard loud quick still wild 14
15 Olives are to burn drink eat ride wear 15

16 To crush is to break escape guard hold plant 16
17 Rapid means long much quick small soft 17
18 A moment means color form money time place 18
19 To stitch is to reward sew starve suggest tempt 19
20 A question is something we answer build eat grow kill 20

21 Harbors are for churches cows gardens horses ships 21
22 To polish is to bribe brighten smite thrive traverse 22
23 To pronounce is to sail show speak stand watch 23
24 A physician is a child doctor master noise valley 24
25 A customer is a person who buys draws fishes hunts sells 25

26 To wander is to improve locate roam situate wail 26
27 To be sober is to be funny grave happy noisy wild 27
28 An orphan is one who has no clothing education hair parents teeth ... 28
29 To be active is to be hospitable humorous ignoble indolent sprightly .. 29
30 To be wretched is to be proud silent swift unhappy valuable 30

31 Independence means blame custom freedom mercy virtue 31
32 Agriculture refers to authority appearance defense farming mystery 32
33 To inquire is to appear ask rest sleep watch 33
34 A tavern is a companion funeral parcel park hotel 34
35 To be saucy is to be affectionate agreeable devoted dignified rude ... 35

36 An argument is a discussion gully gymnasium penance perjury 36
37 Jealous means affectionate appeased benevolent envious sympathetic 37
38 Meek means gaudy gentle mean strength tight 38
39 Gorgeous means frisky gigantic hereditary magnificent malicious 39
40 A barge is a kind of animal boat castle fruit vegetable 40

Go right on to next page.

TEST 3, CONTINUED

41 Situation refers to noise number place pleasure time 41
42 To plan is to banish bestow design betray defeat 42
43 Behavior refers to position conduct progress revenge temper 43
44 A vagabond is a kite lantern nightingale tramp scholar 44
45 Ambition means aspiration frivolity loitering remorse slothfulness 45

46 A sluggard is ambitious considerate divine earnest lazy 46
47 Victorious means baffled frustrated triumphant unstable vagrant 47
48 To mingle is to mislead blend sanction screech scurry 48
49 To heed is to escape fancy hurry notice prove 49
50 Dignified means lonely monstrous prominent spiritual stately 50

51 An opponent is a delicacy antagonist detective diplomat hostess 51
52 To prophesy is to assess bemoan cancel disclaim foretell 52
53 Imperial affairs concern cities garments kingdoms machines patterns . 53
54 To massacre is to investigate lament manifest misunderstand slaughter . 54
55 To be prompt is to be formal frightful hospitable punctual purified . . . 55

56 Listless means indifferent loathsome malicious merciless presumptuous . 56
57 To lament is to flatter humor injure lend mourn 57
58 A prologue is a kind of introduction knell prohibition sermon tempest . 58
59 Lifeless means inanimate indefinite infamous undecided untidy 59
60 An impression is a century compass copy globe pasture 60

61 Crafty means accurate proficient slavish submissive wily 61
62 Liberality means promotion robbery reproof scandal generosity 62
63 Jubilant means abrupt abject confused triumphant doleful 63
64 A bulwark is a hospital hotel protection punishment purchase 64
65 A legacy is an inheritance inscription levy receptacle regulation 65

66 Maintenance means contention continuance corruption cowardice resource . 66
67 To meditate is to escort gossip ponder transgress withhold 67
68 Covetous means avaricious bountiful gaudy gray-headed harassed 68
69 Minimum means the largest least most newest oldest 69
70 To chastise is to promise publish punish purchase trifle 70

71 A sequel is something that excels follows interrupts precedes yields . 71
72 Ceaseless means boisterous diminished discontented ended incessant . 72
73 Emphatic means forcible frantic incurable pernicious reluctant 73
74 To subvert means to overturn shorten sling sojourn spurn 74
75 To be infamous is to be doubtful polished shameful sorrowful valuable . 75

76 To be languid is to be courteous domestic doubtful spiritless jolly 76
77 An associate is an adversary ally antagonist emigrant ensign 77
78 To be vigilant means to be aloof betrothed betwixt lawless watchful . 78
79 Decisive means conclusive dazzled genuine profane prudent 79
80 A scullion is a grasshopper gymnasium haycock hedgehog servant 80

81 Usury has to do with chivalry fiction homage loans manufactures 81
82 Perspective has to do with drawing expenses mining religion warfare . 82
83 An insurrection is a fugitive rebellion publication punishment hermit . 83
84 A reprobate is one who is very cowardly ugly wealthy wicked youthful . 84
85 Candid means illegitimate impeccable imperious incisive ingenuous . . 85

Test 3. Score . . . . . .

TEST 4. ARITHMETIC: COMPUTATION

Get the answers to these examples as quickly as you can without making mistakes. Look carefully at each example to see what you are to do.

Begin here.

(1)

$3 + 2 =$

(2)

$3 + 4 =$

(3)

Add

$\begin{array}{r} 2 \\ 5 \\ \hline \end{array}$

(4)

Add

$\begin{array}{r} 7 \\ 4 \\ \hline \end{array}$

(5)

Add

$\begin{array}{r} 13 \\ 2 \\ \hline \end{array}$

(6)

Add

$\begin{array}{r} 17 \\ 2 \\ \hline \end{array}$

(7)

Subtract

$\begin{array}{r} 4 \\ 2 \\ \hline \end{array}$

(8)

Subtract

$\begin{array}{r} 7 \\ 4 \\ \hline \end{array}$

(9)

$2 \times 3 =$

(10)

Add

$\begin{array}{r} 16 \\ 53 \\ 32 \\ \hline \end{array}$

(11)

Subtract

$\begin{array}{r} 16 \\ 5 \\ \hline \end{array}$

(12)

Subtract

$\begin{array}{r} 96 \\ 25 \\ \hline \end{array}$

(13)

Subtract

$\begin{array}{r} 13 \\ 5 \\ \hline \end{array}$

(14)

Subtract

$\begin{array}{r} 765 \\ 327 \\ \hline \end{array}$

(15)

Multiply

$\begin{array}{r} 26 \\ 2 \\ \hline \end{array}$

(16)

Multiply

$\begin{array}{r} 253 \\ 6 \\ \hline \end{array}$

(17)

Divide

$2\overline{)6}$

(18)

Divide

$4\overline{)8}$

(19)

Add

$\begin{array}{r} 684876542 \\ 791654220 \\ 587339364 \\ \hline \end{array}$

(20)

$6 \div 3 =$

(21)

Add

$\begin{array}{r} 24 \\ 12\frac{4}{5} \\ \hline \end{array}$

(22)

Multiply

$\begin{array}{r} 6389 \\ 7 \\ \hline \end{array}$

(23)

Multiply

$\begin{array}{r} 4679 \\ 68 \\ \hline \end{array}$

(24)

$2\overline{)15.8}$

(25)

$2\frac{7}{8} - 1 =$

Go right on to next page.

TEST 4, CONTINUED

(26) $\frac{1}{4}$ of 8 2 8 =

(27) $9\frac{3}{5} - 4\frac{1}{5}$ =

(28) Subtract

7 9

$1\ 6\frac{3}{8}$

(29) $\frac{1}{7} \times 2$ =

(30) $.4\,5\overline{)27.90}$

(31) $3\frac{6}{7} \div 1\frac{1}{2}$ =

(32) Multiply

9 . 7 2

2 1 . 9

(33) Multiply

$6\ 9\ 7\frac{1}{2}$

1 8

(34) $\frac{27}{28} \div \frac{6}{7}$ =

(35) 4.40 + .00044 + 4400 + .04 =

(36) $48.76 - 4\frac{9}{10}$ =

(37) $\frac{1}{2} + \frac{3}{4} + \frac{1}{6} + \frac{2}{3} + \frac{7}{8}$ =

(38) $27.34 + 2\frac{1}{4} + 89.2 + 4\frac{3}{4}$ =

(39) $3\frac{1}{4} \times 5\frac{1}{2} \times 3\frac{1}{2}$ =

(40) $1\frac{3}{4} + 25.2 + 4\frac{1}{5} + 48.961$ =

(41) $\sqrt{45369}$ =

(42) $(4)^3$ =

(43) Subtract

8 yd. 1 ft. 3 in.

6 yd. 3 ft. 9 in.

(44) Add

5 yr. 9 mo.

6 yr. 7 mo.

8 yr. 2 mo.

(45) 67.36 ÷ $\frac{2}{3}$ =

(46) Multiply

4 gals. 3 qts. 1 pt.

4

(47) Express as a decimal to three places

$\frac{29}{64}$ =

Test 4. Number right ..... × 4 = *Score* .....

TEST 5. ARITHMETIC: REASONING

Find all the answers as quickly as you can.
Write the answers on the dotted lines.
Use the blank sheets of paper to figure on.

Begin here.

1 How many are 3 eggs and 2 eggs? *Answer*.....
2 Mary is 7 years old. How old will she be in 3 years? *Answer*.....
3 A hen had 9 chicks and 3 of them died. How many were left? *Answer*.....
4 Milk costs 8 cents a pint and the milkman is going to raise the price 2 cents. What will it then cost? *Answer*.....
5 If you buy a pencil for 4 cents and pay for it with a dime, how much change should you get? *Answer*.....

6 How many dimes are there in a dollar? *Answer*.....
7 How many eggs are there in 7 nests if each nest has 3 eggs? *Answer*.....
8 How many cents will 8 oranges cost at 3 cents each? *Answer*.....
9 David earned \$3.50 in June, \$2.25 in July, and \$1.50 in August. How much did he earn in all? *Answer*.....
10 Frank bought 3 two-cent postage stamps and 13 one-cent stamps. How much did he pay for all? *Answer*.....

11 Five girls buy a present costing 25 cents. How many cents does each pay? *Answer*.....
12 If a train goes 60 miles in three hours, how far does it go in one hour? *Answer*.....
13 John has saved \$3.75. How many dollars more does he need to buy a pony which costs \$45.75? *Answer*.....
14 A man pays the street-car fare for himself and two friends. If the fare is 7¢, how much change should he receive from a half dollar? *Answer*.....
15 A train which was due at 2 P.M. was $3\frac{1}{2}$ hours late. When did it arrive? *Answer*.....

16 What is the cost of 10 oranges at 2 for 5 cents? *Answer*.....
17 Edward has \$1.67 in the bank and takes out 2 quarters, a dime, and a cent. How much does he have left in the bank? *Answer*.....
18 What is the cost of a $4\frac{3}{4}$-pound roast at 40 cents a pound? *Answer*.....
19 A boy saved 5 cents a day for two weeks, and 10 cents a day for the next four weeks. How much money does he then have? *Answer*.....
20 A gallon is equal to 231 cubic inches. How many gallons are there in a tank $6 \times 7 \times 11$ inches? *Answer*.....

21 The tax rate in an Eastern city has varied as follows: 1910, 21¢ on each \$100; 1911, 17¢ on each \$100; 1912, 27¢ on each \$100; 1913, 26¢ on each \$100; 1914, 34¢ on each \$100; 1915, 33¢ on each \$100. The highest rate was how many times as great as the lowest? *Answer*.....

Go right on to next page.

TEST 5, CONTINUED

22 Henry was marked 87 in geography the first month, 91 the second, and 93 the third month. What was his average grade? *Answer*.....

23 If the butcher's scales read one ounce too much on each weighing, how much is a customer overcharged on a pound of steak at 48¢ a pound? *Answer*.....

24 At $1.00 a bushel for potatoes and $30.00 a car for freight, how much will a 400-bushel carload of potatoes cost? *Answer*.....

25 Tom has just 4 weeks' vacation and wishes to spend it in a city which it takes two days to reach by train. How many days can he spend in the city? *Answer*.....

26 If a fence rail is 10 feet long, how many rails will it take to reach a mile? *Answer*.....

27 Sound travels about 1100 ft. a second. If you see the flash of a cannon and 12 seconds later the sound reaches you, how far away is the cannon? *Answer*.....

28 A man had $5000, from which he received 6 per cent income each year. In addition he earned $1500 in business. What was his total income for the year? *Answer*.....

29 Frank and George buy 300 marbles for 50 cents. Frank pays 35 cents and George 15 cents. How many marbles should George receive? *Answer*.....

30 If a watch gains 20 seconds in 24 hours, what fraction of a minute will it gain between noon and 6 P.M.? *Answer*.....

31 The heights of 4 boys in a class are 5 feet 10 inches, 5 feet 9 inches, 5 feet 7 inches, and 5 feet 6 inches. What is the average height? *Answer*.....

32 An article which formerly sold at 12 cents was raised to 18 cents. What per cent was the price advanced? *Answer*.....

33 A broker charges $25 commission on every sale plus 5 per cent on all over $200. What would be his commission on a $500 sale? *Answer*.....

34 If 72 per cent of potatoes is water, how many pounds of solid material are there in a ton of potatoes? *Answer*.....

35 A man invested $1000 in each of 3 different bonds. The first paid 8 per cent dividend and the second 6 per cent, but on the third he lost $5 on each hundred dollars invested. What was his net yearly gain on the three investments? *Answer*.....

36 If the circumference of a circle is 12.5664 feet, what is its diameter? *Answer*.....

37 The regular price of a certain piece of linen is $4 per yard. A remnant $1\frac{1}{4}$ yards long is offered at $2.50. What per cent reduction is made? *Answer*.....

38 A man six feet tall casts a shadow 8 feet long at 9 A.M. A telephone pole casts a shadow 100 feet long at the same time. How high is the pole? *Answer*.....

39 It costs 43 cents to send a 10-pound parcel post package from New Orleans to Dallas. What will it cost to send an 8-pound package if the cost is 3 cents more on the first pound than on additional pounds? *Answer*.....

40 If the hour hand of a clock is 3 inches long and the minute hand is 4 inches long, how far apart are the tips of the two hands at 9 A.M.? *Answer*.....

Test 5. Number right ..... × 4 = *Score* .....

TEST 6. NATURE STUDY AND SCIENCE

Samples: The number of cents in a dollar is 200 <u>100</u> 300
Our rain comes from the <u>clouds</u> moon stars
Draw a line under the word that makes the sentence true.

Begin here.

1 Thanksgiving comes in **July January November** 1
2 The earth is shaped most like a **baseball football pear** 2
3 A sweet-smelling flower is the **daisy poppy rose** 3
4 The month before July is **May June August** 4
5 The axle is a part of an **ax typewriter wagon** 5

6 Alfalfa is a kind of **corn fruit hay** 6
7 Bacon comes from the **cow hog sheep** 7
8 An animal that builds dams is the **alligator beaver turtle** 8
9 Raisins are dried **currants gooseberries grapes** 9
10 London is in **England Scotland Wales** 10

11 The dahlia is a kind of **animal flower fruit** 11
12 The tractor is used in **farming mining racing** 12
13 Tarts are a kind of **drink pastry vegetable** 13
14 Planes are used chiefly by **barbers blacksmiths carpenters** 14
15 Rubber is obtained from **animals oil trees** 15

16 The antelope is a kind of **deer rabbit wolf** 16
17 The number of quarts in a gallon is **2 4 6** 17
18 A telescope makes things look **larger prettier smaller** 18
19 Chop suey is a dish of the **Chinese Indians Mexicans** 19
20 A flower that grows from a bulb is the **lily marigold poppy** 20

21 The compass is used chiefly by **sailors surgeons tailors** 21
22 Serge is a kind of **cloth drink wood** 22
23 The article costing the least is **coat gloves overcoat** 23
24 The anvil is used by **blacksmiths carpenters printers** 24
25 A food requiring many eggs is **"angel food" bread marmalade** 25

26 Rye is most like **beans corn wheat** 26
27 The cotton gin was invented by **Arkwright Watt Whitney** 27
28 Beets are used for making **catsup sugar jellies** 28
29 The earth moves completely around the sun in about **7 days 30 days 365 days** 29
30 The most gold is produced in **Alaska New York Tennessee** 30

31 The lungs take from the air **carbon dioxide nitrogen oxygen** 31
32 The tadpole is the young of the **fish frog lizard** 32
33 Most of our anthracite coal comes from **Alabama Colorado Pennsylvania** 33
34 Molasses is obtained from **grapes honey sugar cane** 34
35 A great clothing-manufacturing state is **Massachusetts Oregon Texas** 35

36 A food rich in fats is **butter eggs tapioca** 36
37 An important meat-packing city is **Chicago New Orleans Seattle** 37
38 Lard comes from **butter cattle hogs** 38
39 A food containing considerable oil is **rice potatoes walnuts** 39
40 Linen is made from **cotton flax hemp** 40

41 The United States exports **coffee cotton tea** 41
42 A tree that will grow from cuttings is the **oak pine willow** 42
43 Organdie is a kind of **cloth marmalade musical instrument** 43
44 The common house fly often lays its eggs in **leaves manure water** 44
45 The greatest sugar-exporting country is **Brazil Cuba Mexico** 45

Go right on to next page.

TEST 6, CONTINUED

46 The Leghorn is a kind of **cow fowl goat** 46
47 The panther is most like the **cat dog wolf** 47
48 Electric lights were invented by **Edison Marconi Volta** 48
49 The most wool is produced in **Australia France Holland** 49
50 Calcutta is a city in **China Egypt India** 50
51 Tapioca is chiefly **fat starch sugar** 51
52 The largest state in the Union is **California New York Texas** 52
53 The freezing point on the Centigrade thermometer is **0° 32° 100°** 53
54 The tooth's enamel is broken down by **acids carbon dioxide starches** 54
55 Air and gasoline are mixed in the **accelerator carburetor gear-case** 55
56 A crop which enriches the soil is **clover potatoes tobacco** 56
57 Distance above sea level is known as **altitude latitude longitude** 57
58 The house fly spreads **bubonic plague typhoid yellow fever** 58
59 A very important product of Minneapolis is **automobiles flour meat** 59
60 A food that has much the same food substance as rice is **beans peas potatoes** 60
61 A gross equals **64 144 500** 61
62 Milk testers were devised by **Babcock Bell Edison** 62
63 The coarsest of these threads is No. **40 60 80** 63
64 The differential is a part of an **auto bicycle typewriter** 64
65 The largest planet is **Jupiter Neptune Saturn** 65
66 A plant that can be grafted is the **apple tree lily potato** 66
67 The normal temperature of the human body is about **60° 98° 112°** 67
68 Alcohol is made from **gasoline grains oils** 68
69 An avalanche causes destruction by **burning sliding spouting** 69
70 Most automobiles are manufactured in **Michigan New York Iowa** 70
71 The Nile is in **Africa Asia Europe** 71
72 A country that imports nearly half its food is **England France Germany** 72
73 Bronchitis resembles most **dyspepsia headaches sore throat** 73
74 A common ingredient of matches is **calcium iodine phosphorus** 74
75 A body that shines by reflected light is the **moon North Star sun** 75
76 Monsoons are a kind of **plain plateau storm** 76
77 The days are longest in **March July October** 77
78 The largest amount of corn is shipped from **Denver Omaha Pittsburgh** 78
79 Tokyo is a city of **China India Japan** 79
80 A place for storing weapons is called an **abattoir arsenal cafeteria** 80
81 A plant that thrives best in dry places is the **lichen lily mushroom** 81
82 The dictaphone is a kind of **multigraph phonograph typewriter** 82
83 The Wyandotte is a kind of **fowl sheep watermelon** 83
84 Linotypes are used in **printing surveying weaving** 84
85 An eight-sided figure is called an **octagon scholium trapezium** 85
86 "Pi" is equal to **.7854 3.1416 .6666** 86
87 Croquettes are a kind of **food ornament weapon** 87
88 A botanist is one who studies **animals minerals plants** 88
89 The technical name for hard coal is **anthracite bituminous lignite** 89
90 Air brakes are used on **automobiles balloons trains** 90
91 Deltas tend to grow **larger smaller wetter** 91
92 The Angora is a kind of **chicken goat sheep** 92
93 One of the lightest-known metals is **aluminum tin zinc** 93
94 The most expensive of these rugs is **Axminster Brussels Oriental** 94
95 Fondant is a kind of **candy meat salad** 95

Number right .....

Number wrong ..... ÷ 2 = ...

Test 6. Score (subtract) .....

TEST 7. HISTORY AND LITERATURE

Draw a line under the word that makes the sentence true.

1 An elf is a kind of **animal** **brownie** **dragon** 1
2 "The Glass Slipper" reminds us of **Ali Baba** **Cinderella** **Goldilocks** 2
3 The first President of the United States was **Adams** **Jefferson** **Washington** ... 3
4 The shepherd boy who became king was **David** **Saul** **Solomon** 4
5 Columbus made his first voyage to America in **1492** **1620** **1776** 5

6 The highest officer of a city is the **alderman** **chief of police** **mayor** 6
7 Apollo was the god of **rivers** **the sun** **wind** 7
8 A battle of the Revolution was **Bull Run** **Bunker Hill** **Tippecanoe** 8
9 The god of mischief was **Asgard** **Loki** **Mimir** 9
10 Mount Olympus is located in **Greece** **Italy** **Washington** 10

11 Hiawatha was written by **Bryant** **Longfellow** **Whittier** 11
12 The Declaration of Independence was signed in **1776** **1781** **1789** 12
13 A name made famous by Longfellow is **Matthew Arnold** **Admiral Dewey** **Paul Revere** .. 13
14 Kings are supposed to rule for **4 years** **8 years** **life** 14
15 "The Children's Hour" was written by **Longfellow** **Riley** **Stevenson** 15

16 The Quakers came from **England** **France** **Holland** 16
17 Ulysses captured Troy by hiding in a **forest** **load of hay** **wooden horse** 17
18 The country which helped America in the Revolution was **England** **France** **Germany** .. 18
19 Goliath was slain by **David** **Joseph** **Samson** 19
20 Thor lost his **armor** **chariot** **hammer** 20

21 "Uncle Tom's Cabin" was written by **Alger** **Sewell** **Stowe** 21
22 Louisiana was purchased by **Jefferson** **Madison** **Polk** 22
23 Peter Pan is the name of a **boy** **dog** **man** 23
24 The slaves were freed by **Jefferson** **Lincoln** **Washington** 24
25 The first white man to see the Pacific was **Balboa** **Cabot** **Vespucci** 25

26 The United States was allied in the Great War with **Bulgaria** **France** **Turkey** .. 26
27 "Treasure Island" tells about **Long John** **Micawber** **Uncas** 27
28 Madame Curie is noted for the discovery of **platinum** **radium** **pyrite** 28
29 "The Star-Spangled Banner" was written by **Alcott** **Burns** **Key** 29
30 The earliest of these inventions was **railroad** **stagecoach** **steamboat** 30

31 Foreigners can obtain the right to vote by **habeas corpus** **naturalization** **purchase** .. 31
32 "The Legend of Sleepy Hollow" tells about **Ichabod Crane** **Hiawatha** **Pinocchio** .. 32
33 Robert E. Lee surrendered to **Grant** **Sheridan** **Sherman** 33
34 New York was settled by the **Dutch** **English** **French** 34
35 Minnehaha means **falling leaves** **laughing waters** **whispering pines** 35

36 The most important qualification for a voter is **generosity** **intelligence** **wealth** .. 36
37 The king who let the cakes burn was **Alfred** **Arthur** **William** 37
38 Inability to pay debts is called **bankruptcy** **embezzlement** **vagrancy** 38
39 The messenger of the gods was called **Mercury** **Perseus** **Vulcan** 39
40 Virginia was settled by the **English** **French** **Spanish** 40

41 "Oliver Twist" was written by **Dickens** **Scott** **Thackeray** 41
42 Roger Williams was a **colonizer** **judge** **merchant** 42
43 Valley Forge relates to the **Civil War** **Revolution** **War of 1812** 43
44 Sherlock Holmes was a **detective** **sailor** **thief** 44
45 A man who betrayed his country was **Arnold** **Cornwallis** **Lee** 45

Go right on to next page.

TEST 7, CONTINUED

46 The number of United States Senators from each state is **1 2 4** 46
47 "The Man Without a Country" was written by **Cooper Hawthorne Hale** ... 47
48 A general in the Civil War was **Lincoln Sherman Washington** 48
49 The name "Old Ironsides" refers to a **man mountain ship** 49
50 A President who was assassinated was **Garfield Roosevelt Taylor** 50
51 The British Prime Minister in 1918 was **Lloyd George Balfour Asquith** 51
52 The Red Cross was founded by **Clara Barton Jenny Lind Rockefeller** 52
53 Legal authority over a dead man's estate is given to an **administrator judge jury** .. 53
54 Barbara Frietchie sympathized with the **English South Union** 54
55 Grover Cleveland was **a general an inventor a President** 55
56 The crime which brings the greatest punishment is **larceny manslaughter murder** .. 56
57 The chief cause of the Mexican War was **disputed territory immigration slavery** .. 57
58 The stork reminds us of **Holland Italy Scotland** 58
59 Cornwallis surrendered at **Appomattox Bunker Hill Yorktown** 59
60 "Treasure Island" was written by **Alger Defoe Stevenson** 60
61 The "spoils system" refers to **farming political offices tariff** 61
62 Jesus was betrayed by **Herod Judas Pilate** 62
63 Louisiana was purchased from the **French Indians Spanish** 63
64 The son of Abraham was **Isaac Moses Solomon** 64
65 Lewis and Clark explored **The Great Lakes The Mississippi Valley The Northwest** .. 65
66 The number of men in the Light Brigade was **600 500 400** 66
67 The War of 1812 was fought against **England Mexico Spain** 67
68 Among the allies of Germany was **Belgium Bulgaria Roumania** 68
69 One of Robin Hood's men was **Ivanhoe Lancelot Little John** 69
70 Each state has the power to **coin money declare war establish schools** 70
71 A great Scotch poet was **Burns Chaucer Milton** 71
72 The general who surrendered at Yorktown was **Burgoyne Cornwallis Lafayette** .. 72
73 A gnome is a kind of **dwarf giant priest** 73
74 "Treasure Island" tells about **Black Dog Fagin Miss Hazy** 74
75 The vessel which overcame the Merrimac was the **Monitor Old Ironsides Wasp** .. 75
76 A man known for his strength was **Abel David Samson** 76
77 One who lives in the poorhouse is legally a **bankrupt delinquent pauper** 77
78 "A Tale of Two Cities" tells of the **American Revolution Civil War French Revolution** .. 78
79 Ivanhoe is a character from **Dickens Scott Wordsworth** 79
80 Circe changed the men of Odysseus into **horses stones swine** 80
81 In 1917 there was a great Revolution in **Germany Russia Turkey** 81
82 A writer of mystery tales was **Dickens Poe Scott** 82
83 "Styx" was the name of a **giant god river** 83
84 A city is most likely to own its **electric lights gas plant water system** 84
85 The author of "Innocents Abroad" is **Hawthorne Stevenson Mark Twain** ... 85
86 The American Revolution was chiefly a dispute over **boundary lines slavery taxation** 86
87 "The Last of the Mohicans" was **Hiawatha Mowgli Uncas** 87
88 Wallace Irwin is an **actor baseball player writer** 88
89 Coleridge wrote **"Ancient Mariner" "Hiawatha" "Thanatopsis"** 89
90 The Chautauqua is a kind of **entertainment museum music** 90
91 A word that means exactly the opposite of joy is **sad sorrow sorry** 91
92 Marco Polo was a famous **philosopher traveler warrior** 92
93 "The Charge of the Light Brigade" was written by **Burns Longfellow Tennyson** .. 93
94 The Mohammedan Bible is the **Bagavad-gita Koran Zend-Avesta** 94
95 The singular of "are" is **is was were** 95

Number right .....
Number wrong ..... ÷ 2 = ...
Test 7. Score (subtract) .....

TEST 8. LANGUAGE USAGE

Samples

Apples is / <u>are</u> good.

He <u>told</u> / telled me.

1 I calculate / expect to go soon.

2 Last year uncle gave / give me a pair of skates.

3 His leg was broke. / broken.

4 They have gone / went to town.

5 He isn't any / no better than you.

6 Always bathe / wash your hands before eating.

7 I have a heap / great deal of work to do.

8 We had a delicious / delightful time at the party.

9 The earthquake hurt / damaged four buildings.

10 I had sat / set there for an hour.

11 Yourself / You and your guests are invited.

12 I saw / seen him do it.

13 I think dominoes is an interesting game. / sport.

14 My father is very mad at / angry with me.

15 We had only started till / when Joe came.

16 The news are / is bad today.

17 Where are you going? / going to?

18 They fight as / like demons.

19 I told him to quickly run home. / to run home quickly.

20 He doesn't / don't know anything.

21 I think you had ought / ought to go.

22 I asked him which one he chose. / choosed.

23 This battle transpired / occurred in 1863.

24 He does not go / He goes to school only on Mondays.

25 The idea that the moon is made of cheese is erroneous. / ridiculous.

26 It is they / them who should be blamed.

27 He went to prison for his crimes. / sins.

28 That fellow is no good. / worthless.

29 I remember / remember of seeing him there.

30 He burst / busted a blood vessel.

Go right on to next page.

TEST 8, CONTINUED

31 He acted the part perfect. / perfectly.

32 He worked with much snap. / vigor.

33 He sat / set the vase on the table.

34 Rain has been plenty / plentiful this season.

35 The prisoner finally admitted / declared he was guilty.

36 I have often ridden / rode a horse.

37 He went in search of / for his sheep.

38 I have often risen / rose early.

39 The honest person is to be applauded. / commended.

40 He is disinterested / uninterested in history.

41 He has an appointment / a date with the president.

42 We charged and occupied / possessed their trenches.

43 Slavery was abolished / destroyed in 1863.

44 His attack on my character made me indignant. / peevish.

45 One is not qualified / fit to vote at the age of 18.

46 I have often rang / rung this bell.

47 My work is much / very different this year.

48 He caught nearly / nearly caught a hundred fish.

49 He laid / lay down and went to sleep.

50 All went but I. / me.

51 Charity is when one gives / means giving to the poor.

52 It is now plain and evident / evident why he left.

53 Are you sure he shall / will succeed?

54 Arson means where one sets / setting fire to property.

55 I can hardly endure / stand him.

56 Each man and woman was / were present.

57 Why cherish / pursue a vain hope?

58 I wish John was / were here.

59 He has no fear; nothing can confuse / daunt him.

60 Is that he? / him?

Number right .....

Number wrong .....

Test 8. Score (subtract) .....

TEST 9. DICTATION EXERCISE

Test 9. Full score for easier sentences not dictated .....

Number right in sentences dictated .....

Sum ..... × 2 = *Score* .....

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