AN ABSTRACT OF THE THESIS OF

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Date Thesis presented July 21, 1939

Title Developing Tests for Measuring Pupil Achievement in High School Foods and Nutrition Classes

Abstract Approved: [redacted]
(Major Professor)

Facts obtained from a review of studies concerning test construction, the reliability of some published tests and information obtained from state surveys showed a need for developing a reliable and valid objective test that would measure achievement of pupils in food and nutrition classes in junior and senior high school.

With this need in mind analyses of state and city courses of s tudy, and of foods textbooks were made in order to formulate objectives on which to base test items for such a test. Items comprising a test should be consistent with what has been taught and should include a wide range of sampling of material covered. In order to meet these requirements a table of specifications was compiled by the writer as she taught each unit. This procedure quarded against over-emphasis of any particular phase of the work thus insuring uniform distribution of test items over the material taught.

An effort was made to construct items which would measure not only facts but also the application of these facts. The

test items were arranged according to topical sections of subject matter as designated by the objectives. These items made up the two Forms "A" and "B" of the test. The Preliminary Test with directions for administering and scoring were sent to 250 high school pupils in Salt Lake City, Utah. The data from the scored tests, numbering 157, were used for revising the test.

After revision 1000 copies of the completed tests were sent to six high school in Salt Lake City, Utah and to four high schools in other sections of the state.

When the tests were returned to the author a general survey and check-up of them was made. A total of 977 tests was available for use in compiling data.

By using the Pearson Product Moment method a reliability coefficient of correlation of .91 was obtained between the two forms of the test which had been administered to 931 high school pupils.

The validity of the test was proved by using teachers' assigned grades for the term as a criterion. A validity coefficient of correlation of .86 was obtained between this criterion and the scores on the test.

The coefficient of objectivity of the test was determined by correlating independent rating given by nine university students and the writer which yielded a coefficient of correlation of .97. Also a coefficient of correlation of .96 was obtained from rating of thirty high school students and the writer.

Recommended Use of Test Results

The results of this study may be used in the following ways:

1. As a means of measuring schievement -- by administering the test at the beginning of the semester and giving the equivalent form at the end of the semester a teacher may measure the progress the pupil has made during the term and also discover definite weaknesses of the individual pupil;

2. As a means of determining semester grades -- scores on the test can be turned into school marks by using the plan suggested in thet table on percentile scores. (See table VIII p. 41)

3. For purposes of motivation or as a learning exercise --the test being constructed in blocks or units of work can be broken up into sections and used for these purposes.

4. As a means of placing new entries -- a pretest would aid in determining the particular grade level in foods in which the pupil belonged.

5. As a means of determining how a particular group compares with the general standard of comparable groups -- giving of a standardized test to group will show the teacher and the pupils how the group ranks with other groups of the same grade level in foods.

Suggestions for Further Investigations

In Home Economics a need is felt for a greater variety of of measuring instruments. Desirable outcomes such as right attitudes, correct habits, and efficiency in performance cannot

be measured by achievement tests but are important in preparing pupils to live more successfully in their family groups. Were reliable devices available to measure these "intangibles" the results could be used to detect weaknesses, and to show growth in pupils along these lines. As a result of a more complete testing program the teacher of foods would be in a better position to know and consequently to meet the various needs of her pupils.

DEVELOPING TESTS FOR MEASURING PUPIL ACHIEVEMENT IN HIGH SCHOOL FOODS AND NUTRITION CLASSES

by

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A THESIS

submitted to the

OREGON STATE COLLEGE

in partial fulfillment of
the requirements for the
degree of

MASTER OF SCIENCE

June 1940

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ACKNOWLEDGMENT

The author wishes to express her gratitude to Dr. Florence B. Blazier who has given so generously of her time, and by her encouragement and constructive suggestions has made possible the completion of this study; to Dr. R. J. Clinton for his suggestions in outlining the problem for research; and to Professor Jessamine Williams for her helpful criticism.

The encouragement and cooperation of family, friends, educational co-workers, teachers, and students of Foods, without whose assistance this study would have been impossible, is gratefully acknowledged.

To Mrs. Winnie M. Thornton, secretary of Irving High School, Salt Lake City, Utah the author wishes to express her sincere appreciation for advice and assistance in editing the manuscript.

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CHAPTER I

THE PROBLEM AND ITS SETTING

Growth of Educational Measurement

Evaluation in education as in every phase of life needs to be made more reliable. In America the examination as a means of measuring intellectual progress is as old as formal education.[1] Oral replies to verbal questions was the first method used for determining what knowledge the students had gained. Horace Mann pointed out the defects of this method in 1845 and gave the following reasons for the use of the written examination:[2] (1) it is impartial; (2) it is just to the pupils; (3) it is more thorough than older forms of examination; (4) it prevents the "officious interference" of the teacher; (5) it "determines, beyond appeal or gainsaying, whether the pupils have been faithfully and competently taught;" (6) it takes away "all possibility of favoritism;" (7) it makes the information obtained available to all. He said, "We venture to predict the mode of examination by printed questions and written

1. Ruch, G. M., "The Objective or New-Type Examination," p. 3.
2. Ibid., p. 4.

answers will constitute a new era in the history of our schools."[3]

A study made in 1931[4] shows that in thirteen leading educational periodicals the number of articles dealing with the question of measurement increased from four during the year 1890 to 844 during the ten year interval from 1920 to 1929. Statements such as these indicate the place of importance that the problem of measurement holds in our educational system.

Some of the factors which fostered the growth of the measurement movement are explained by Clara M. Brown,[5] Professor of Home Economics Education, University of Minnesota, in the following quotation:

> "Until the second decade of the present century, however, few educators or laymen were particularly concerned about the need for improving the techniques of measurement. Then, beginning with the work of Starch and Elliott, there began to accumulate a mass of evidence to show the unreliability of teachers' marks, which had up until then been accepted quite generally as satisfactory evidence of student achievement, and to raise serious questions regarding the value of the usual types of rating of ability or character. During the intervening years a vast amount of material has been written regarding the relative merits of the various types of examination, and of the marks assigned by teachers, and most of the studies have appeared to bear out the conclusions of

3. Lee, J. Murray, assisted by Lee, Doris Mae, "A Guide to Measurement in Secondary Schools," p. 1.
4. Franke, Paul R. and Davis, Robert A., "Changing of Tendencies in Educational Research," Journal of Educational Research, Vol. 23:133-145, February 1931.
5. Brown, Clara M., "Syllabus for Educational Measurement," Home Economics Education 192, Part A, p. 2.

> the pioneer investigators, namely, that teachers' marks were highly unreliable and that one of the chief reasons for this unreliability was that the traditional examinations did not lend themselves to accurate scoring."

A Shifting of Emphasis in Teaching Home Economics and the Effect on the Methods of Evaluation

Pioneers in the field of home economics were, in general, practical-minded rather than analytical and philosophical. In their plans they stressed what seemed most necessary at the time, acquiring of the skills used in cooking and sewing. However, because of the changed emphasis in home making the teaching of skills no longer consumes so large a part of the time devoted to home economics. Elementary nutrition, scientific principles applied to cookery, economics of buying, entertaining in the home, and meeting the needs of the family group in meal preparation now form the basis for work pertaining to foods. This change and development is well shown in a home economics survey made in the state of Utah in 1936.[6] Questionnaires were given to ten girls in each home economics class in the high schools of the State. The results were based on the responses of 3,914 girls from towns of various sizes and sections in the state. The interests and activities of the pupils definitely indicated that they had

6. State of Utah, Course of Study for Homemaking, (Introduction) 1936.

problems relating to buying and wise use of money, social development, nutrition, preparation and serving of meals, and the development of efficient working habits. The findings in this survey and similar ones made in other states resulted in the revision of courses of study to include material which would meet the needs as revealed in the results of the questionnaires.

As these surveys revealed need for revision of courses of study, the new courses of study necessitated better methods of evaluating achievement. As a result, efforts toward the improvement of evaluation techniques were directed toward the development of reliable measuring devices. Without valid techniques of evaluation the teacher cannot discover what learning is taking place or has taken place. When the emphasis in teaching foods was placed on skills, achievement was measured by the quality of the finished product, and by observing the pupil at work to determine the extent to which she had acquired the skill of performance. With the changing emphasis a need for a different means of evaluating outcomes was felt. The objective-type test, which was being used extensively in other fields of study and to some extent in home economics, was considered. In this type of test, questions are constructed in such a way that each demands a definite answer, for example, a word to be written in a certain blank, or

two sets of items to be classified into certain groupings. The pupil, instead of writing down his ideas in any way that he may desire, is forced to respond to the exact item which the teacher has set up.

Need for the new-type objective test as a means of measurement is readily seen when its advantages are compared with the defects of the old-type essay or discussional examination. The most common objection to the traditional type examination is subjectivity of scoring. Objections shown in studies made by Ruch[7] and others are: (1) subjectivity of scoring lowers the reliability of the test; (2) the test sampling must be limited to a small number of extensive questions; (3) the writing of lengthy answers is time consuming; (4) a great deal of time is consumed in scoring tests; (5) bluffing is encouraged. The advantages of the objective-type examination are: (1) objectivity of scoring enhances reliability of measurements; (2) a means of extensive sampling of subject matter is provided; (3) time consumed in answering questions is greatly lessened; (4) there is economy of time in scoring; (5) there is freedom from bluffing.

The objective tests may be used advantageously in food classes for judging the amount and accuracy of information

7. Ruch, G. M., "The Objective or New-Type Examination," p. 70-111.

acquired by the pupil and to a certain extent for measuring her judgment.[8]

The writer having participated in the Utah State survey in Home Economics and having analyzed many published tests realized the need for a more valid and reliable means of measuring achievement. This need was expressed by many others in the field during the time the survey was being carried out. A review of studies pertaining to measurement in Home Economics, also showed a need for standardization of test material in this field.

Review of Studies

In a study made by Loretta Cecelia Hubertz analysis is made of three standardized tests.[9] She states, "Achievement tests measure specific facts and general information in an objective manner." However, she goes on to say, "The present trend in home economics education is away from fact and information as the major objectives in the field."

In 1932 Madeline Walsh made a study of the construction of objective examinations. She found the common objections to the traditional essay-type examination were subjectivity of scoring lowers reliability, sampling must be limited to

8. Williamson, M., and Lyle, M. S., "Homemaking Education in the High School," p. 297-321.
9. Hubertz, Loretta Cecilia, "The Relative Validity of Three Representative Standardized Tests in High School Home Economics (Foods 1 Course)." Master's Thesis, Purdue University, 1934.

a small number of broad questions, time required to write lengthy answers is excessive, and the examinations encourage bluffing. Miss Walsh constructed objective tests for Tennessee High Schools in the subjects of second year foods and second year clothing.[10]

Discussing the merits of standardized foods tests Fay Van Ness Perry says,[11] "The home economics teacher of foods recognizes the value and need of objective tests, but three deterring facts stand as a bar between her need and her use of them." She gives these deterring facts as: first, there are only a limited number of standardized foods tests; second, there is but one form, thus progress cannot be checked; and third, the tests are costly.

In a statement concerning reliability of a prepared test in foods Miss Perry says, "The reliability of the test is such that it should never be used for individual measurement." She also found two other prepared tests unsatisfactory in reliability.[12] Judging from Miss Perry's findings there is a need for the construction of reliable tests in the field of home economics.

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10. Walsh, Madeline, "Home Economics Examinations for Tennessee High Schools in the Subjects of Second Year Clothing." Master's Thesis, University of Tennessee, 1932.
11. Perry, Fay Van Ness, "A Study of Foods Tests for Use in the Secondary School." Master's Thesis, University of Southern California, 1932.
12. Ibid., p. 33, Table X.

Purpose and Scope of This Study

The purpose and scope of this study is to develop a reliable and valid objective test that will measure achievement of pupils in foods and nutrition classes in junior and senior high schools.

CHAPTER II

SOURCE OF DATA AND METHOD OF PROCEDURE IN CONSTRUCTING TEST

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A good test should be objective, reliable, valid, easily administered and scored. It should differentiate between grades of achievement and there should be equivalent forms available. Explaining each of these characteristics briefly Greene and Jorgensen state,[1] "Objectivity in a test exercise makes for the elimination of the opinion of the person who scores it." "Reliability which is the index to the consistency of performance of a test, is commonly expressed in terms of the degree of correspondence between results from two forms of the same test." Administrability: "Clear, simple and direct instructions to the pupil be printed on the test itself,...supplemented by other directions given orally by the examiner." These characteristics are shown and enlarged upon in evaluating the results from the test constructed by the writer.

In test construction Ruch[2] lists the following general order: (1) determining the objectives of instruction in the field; (2) drawing up a table of specifications; (3) drafting items in preliminary form; (4) deciding on the

1. Greene, Harry A., and Jorgensen, Albert N., "The Use and Interpretation of High School Tests," p. 105-113.
2. Ruch, G. M., "The Objective or New-Type Examination," p. 149-187.

scope; (5) editing and selecting final items; (6) rating items for difficulty; (7) formulating equivalent forms; (8) rearranging the items in order of difficulty; (9) preparing instructions for administering and rules for scoring the test. This general order was followed by the writer in the construction of the test in this study. Each of these steps will be discussed in turn.

Formulation of Objectives

Dr. David Segel,[3] specialist in test and measurement, United States Office of Education, in discussing measurement of results of instruction in home economics said, "The first and most important step in test construction is to analyze the course of study to discover the outcomes which may be legitimately expected and the importance of each outcome."

The textbook is the most important factor in determining the selection of subject matter to fit the course of study as outlined for each grade level.[4] It is also the background for the selection of activities and even of methods and procedures used in teaching. Therefore, the textbook and the course of study were the two criteria used in formulating the objectives of this test.

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3. United States Department of the Interior, Office of Education Vocational Division, Home Economics Education Service. Misc. 1716.
4. Ruch, G. M., and Stoddard George D., "Tests and Measurements in High School Instruction," p. 305-307.

Analysis of courses of study. In this study twenty-four foods courses of study were selected for analysis.[5] Of these five were from city schools and nineteen were state courses of study. Contents of each topic of the course were analyzed with the following question kept constantly in mind, "What pupil reaction is expected from this topic?"

These analyses lead to the making of a list of the general objectives of the course and the final grouping of these objectives under the following headings: (1) understanding of underlying principles (i.e., cooking carbohydrates); (2) ability to apply these principles (i.e., cooking a cereal); (3) habit formation (i.e., cleanliness in preparing food); (4) desire on the part of the pupil for social improvement (i.e., to become a gracious hostess). Continued analysis resulted in expanding these into the following eleven objectives:

I. To have an understanding of--

Scientific principles involved in food cookery

Food selection which meets body requirements

5. Maine (1929), New Hampshire (1930), New Mexico (1931), North Dakota (1936), Florida (1928), Georgia (1930), Missouri (1929), Louisiana (1929), Mississippi (1927), Tulsa, Oklahoma (1931), Ohio (1930), Texas (1932), Iowa (1932), Indiana (1928), Manhattan, Kansas (1932), Idaho (1932), Utah (1936), Nevada (1934), Wyoming (1933), Washington (1930), Oregon (1936), Oakland Public Schools, California (1932), New York City, New York (1935), Salt Lake City, Utah (1936).

Food terminology[6]

Other homemaking problems (i.e., care of kitchen equipment)

II. To acquire the ability[7] to--

Plan, select and prepare meals to meet the family needs, saving time and energy

Buy wisely for the home

Care for and preserve foods

III. To acquire good working habits[8] for--

Home, and for school laboratory

IV. To develop a desire to know the courtesies--

To be practiced at the table

Connected with serving food

Of being a gracious hostess

To ascertain how completely these objectives were used in building courses of study in foods, nine courses of study were selected at random for a page analysis. The number of pages dealing with each of the eleven objectives is found in Table I. This table reveals that the contents of these

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6. Food terminology--an understanding of technical vocabulary needed to comprehend meaning.*
7. Ability--the power to perform and competence in doing; the result of both capacity and training; implies the possession of judgment.*
8. Habit--the tendency to respond in the same way, with little or no conscious thought, whenever a familar situation presents itself.*

* Definitions adapted from Brown, Clara M., "Syllabus for Educational Measurement"--Home Economics Education 192, Part A, p. 60.

TABLE I

PROPORTION OF NINE COURSES OF STUDY* DEALING WITH SPECIFIED OBJECTIVES

	Objectives	No. of pages	% of Total (501 pages)
I.	To have an understanding of:		
	Scientific principles involved in food cookery	78**	15.6
	Food selection which meets body requirements	86	17.1
	Food terminology	23	4.5
	Other homemaking problems	21	4.1
II.	To acquire the ability to:		
	Plan, select, and prepare meals to meet the family needs saving time and energy	85	17.0
	Buy wisely for the home	63	12.5
	Care for and preserve foods	41	8.0
III.	Good working habits for:		
	Home and school laboratory	32	6.3
IV.	Desire to know the courtesies:		
	To be practiced at the table	24	4.8
	Connected with serving food	23	4.6
	Of being a gracious hostess	25	5.0

* Indiana (1929), Oklahoma (1933), South Bend, Indiana (1928), Iowa (1932), Utah (1936), Idaho (1932), Oakland Public Schools, California (1932), Salt Lake City, Utah (1937), Wyoming (1933). Total number of pages 501.

** Note. The table may read as follows: Of the 501 pages included in the nine courses of study 78 pages were ascribed to the objective, Scientific principles involved in food cookery.

nine courses of study[9] could be classified under one of the eleven objectives.

Analyses of text books. It may be of interest to note the number of times foods books were designated as texts in the twenty-four courses of study analyzed. They were as follows:

Bailey, P. L., Foods Preparation and Serving .. 10
Bailey, P. S., Meal Planning and Table Service 9
Calvert, M. R., First Course in Home Making ... 8
Greer, C. C., Foods and Home Making 23
Harris, E., Speer, L., Everyday Foods 21
Kinyon, Kate W., Hopkins, L. T., Junior Foods . 7
Lanman, F., McKay, H., and Zuill, F., The Family's Food 14
Matthew, M. L., The New Elementary Home Economics 8
Trilling, M. B., Williams, F., Girls Problems in Home Economics 8
Wellman, Mabel T., Food Study for High Schools 13
Wellman, Mabel T., Food: Its Planning and Preparation 12
Willard, Florence, Gillett, Lucy H., Dietetics for High School 18

To further check the extent of use of the eleven objectives a page analysis of the four most widely used texts was made and compiled in Table II. In the judgment of the writer all of the textbook material could be assigned under one of the eleven objectives. (See Table II, page 15) Table III, page 16, shows a compilation of the page analysis of the four most widely used food textbooks and the proportion dealing with each specified objective.

9. Indiana (1929), Oklahoma (1933), South Bend, Indiana (1928), Iowa (1932), Utah (1936), Wyoming (1933), Idaho (1932), Oakland Public Schools, California (1932), Salt Lake City, Utah (1937).

TABLE II

PROPORTION OF FOUR SELECTED FOODS TEXT BOOKS DEALING WITH SPECIFIED OBJECTIVES

Objectives	Foods and Homemaking 521 pages		Everyday Foods 385 pages		Family's Food 478 pages		New Elementary Home Economics 284 pages	
	No.	%	No.	%	No.	%	No.	%
I. To have an understanding for:								
Scientific principles involved in food cookery	92	17.4	70	18.1	109	22.8	54	19.0
Food selection which meets body requirements--food composition	79	15.1	100	25.9	78	16.3	40	14.0
Food terminology	45	8.6	14	3.6	20	4.1	12	4.2
Other homemaking problems	40	7.6	18	4.6	18	3.7	13	4.3
II. To acquire the ability to:								
Plan, select, and prepare meals to meet family needs saving time and energy	83	15.9	81	20.7	87	18.2	45	15.8
Buy wisely for the home	62	11.9	44	11.4	72	15.0	21	7.3
Care for and preserve foods	50	9.5	13	3.3	8	1.6	20	7.0
III. Good working habits for:								
Home and school laboratory	20	3.8	10	2.6	25	5.2	22	7.7
IV. Desire to know the courtesies:								
To be practiced at the table ...	20	3.8	5	1.5	14	2.9	17	5.9
Connected with serving food	15	2.8	18	4.6	35	7.3	20	7.0
Of being a gracious hostess	15	2.8	12	3.1	12	2.7	20	7.0

TABLE III

PROPORTION OF TOTAL PAGES IN FOUR SELECTED FOOD TEXTBOOKS* DEALING WITH SPECIFIED OBJECTIVES

	Objectives	No. of pages	% of Total (1668 pages)
I.	To have an understanding of:		
	Scientific principles involved in food cookery	325	19.4
	Food selection which meet body requirements	297	17.8
	Food terminology	91	5.4
	Other homemaking problems	89	5.3
II.	To acquire the ability to:		
	Plan, select, and prepare meals to meet the family needs saving time and energy	296	17.7
	Buy wisely for the home	199	11.8
	Care for and preserve foods ...	91	5.4
III.	Good working habits for:		
	Home and school laboratory	77	4.6
IV.	Desire to know the courtesies:		
	To be practiced at the table ..	56	3.3
	Connected with serving food ...	88	5.2
	Of being a gracious hostess ...	59	3.5

* Greer, C. C., Foods and Home Making
Harris, E., and Speer, L., Everyday Foods
Lanman, F., McKay, H., and Zuill, F., The Family's Food
Matthew, M. L., The New Elementary Home Economics

In order to find the relationship between the two criteria, namely, the courses of study and textbooks, a rank correlation coefficient was calculated.[10] This yielded

10. See footnote page 17.

a coefficient of correlation of 0.87.[11] This though based on only eleven cases of percentages is conventionally reliable and shows a high relationship between the two criteria.

The percentages from Table I and Table III were used in this computation.

Analysis of teacher-made tests. Tests covering three grade levels of food courses (designated in Salt Lake City as Foods 1, 2, 3) were obtained from twenty teachers in various sections of the United States. These tests were studied and analyzed for the purpose of determining how closely the test items (there were a total of 1,912 items in the twenty tests) could be classified under the eleven objectives. Table IV, page 18, shows this classification. While all of the test items could be included under each objective, it will be interesting to note how widely these percentages differ from those in Tables I and II where material from courses of study and textbooks were analyzed.

Ranking of objectives. As a final step data from Tables I, III, and IV were used to determine the rank order of the eleven objectives. This order is as follows:

1. To have an understanding of scientific principles

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10. Garrett, Henry E., "Statistics in Psychology and Education," p. 361-363.

11. $p = 1 - \frac{6.\Sigma D^2}{N(N^2 - 1)}$ $p = 1 - \frac{6.32.67}{11(11^2 - 1)} = 0.86$

Transmitting p 0.86 into r 0.8705

TABLE IV

PROPORTION OF ITEMS FROM 20 TEACHER-MADE TESTS*

DEALING WITH SPECIFIED OBJECTIVES

	Objectives	No. of Items	% of Total (1912 items)
I.	To have an understanding of:		
	Scientific principles involved in food cookery	471	24.6
	Food selection which meet body requirements	441	23.0
	Food terminology	134	7.0
	Other homemaking problems	55	2.8
II.	To acquire the ability to:		
	Plan, select, and prepare meals to meet the family needs saving time and energy	289	15.1
	Buy wisely for the home	174	9.1
	Care for and preserve foods ...	83	4.3
III.	Good working habits for:		
	Home and school laboratory	78	4.0
IV.	Desire to know the courtesies:		
	To be practiced at the table ..	103	5.3
	Connected with serving food ...	56	2.9
	Of being a gracious hostess ...	28	1.4

* Lewiston, Maine; Brunswick, Georgia; Thomaston, Georgia; Indiana High School Tests; Kemmerer, Wyoming; Denver Public School Semester Test in Home Economics; Spokane Public School Tests in Foods; Centralia, Washington; Salina, Utah; Salt Lake City, Utah.

involved in food cookery

2. To have an understanding of food selection which meets body requirements--food composition

3. To acquire the ability to plan, select, and prepare meals to meet family needs, saving time and energy
4. To acquire the ability to buy wisely for the home
5. To acquire the ability to care for and preserve foods
6. To acquire good working habits for home and for school laboratory
7. To develop a desire to know the courtesies connected with serving food
8. To develop a desire to know the courtesies connected with eating
9. To develop a desire to know the courtesies of being a gracious hostess
10. To have an understanding of food terminology used in food study
11. To have an understanding of other homemaking problems

Drawing up a Table of Specifications

In constructing the test the second step was to draw up a table of specifications of the subject matter to be included in the test. During 1937-1938 as each unit of work was taught in West High School, Salt Lake City, Utah by the writer, she listed important points on cards. This

plan guarded against the omission of essential items, the over-emphasis of minor points and poor balance of sampling. Such a procedure before the drafting of specific items aided considerably in establishing the validity of the final test.

Drafting Items in Preliminary Test

Selection of objective form. The selection of the objective form best fitted for each item was the third step in the constructing of the test items. As one means of deciding this the author surveyed the 1,912 items from other teachers' tests. Table V, page 21, shows the objective techniques used in the teacher-made tests, and also the number and per cent of items used for each technique.

The table shows that the true and false technique was used most extensively, multiple completion second, matching third, one-word answer fourth, multiple choice fifth, and the other forms in a less degree.

Another factor influencing the selection was the author's experience in constructing tests for her own use over a period of years.

There is no complete agreement among educators as to the objective technique best suited to handle particular subject matter, a fact which Ruch[12] summarizes in the

12. Ruch, G. M., "The Objective or New-Type Examination," p. 155.

TABLE V

PROPORTION OF 1,912 TEST ITEMS TAKEN FROM TEACHER-MADE TESTS* CONSIGNED TO EACH OBJECTIVE TECHNIQUE

Objective Technique	No. of Items	% of Total (1912 items)
True-False	700	36.6
Multiple Completion	357	18.6
Matching	270	14.1
One Word Answer	182	9.5
Multiple Choice	169	8.8
Modified True-False	40	2.0
Sincle Choice	166	8.6
Possible Completion	28	1.4

* 20 Tests Analyzed.

following statement, "Adaptability of the form to the particular bit of subject matter is a matter of judgment and experience."

After the selection of the objective forms to be used, the next step was to determine what subject matter should be used for each form. This was done arbitrarily, the subject matter being organized into units or blocks and the technique selected for each as follows:

Part I. Working habits in the home and laboratory--Multiple choice.

Part II. Choosing and preparing food for health--
Single choice.

Part III. Etiquette connected with serving and eating
Matching.

Part IV. How to buy foods in reference to income--
True-False.

Part V. How food functions in the body--relation of
food to health--
Multiple completion.

Deciding on the number of items. The preliminary or tentative test items were then selected and written in appropriate form on cards. In framing the test items, fifty per cent more items than needed were constructed so that items that proved undersirable could be eliminated. This excess of items also gave opportunity for balancing the emphasis on major topics and material for building an equivalent form.

Editing and selecting final items. The questions were criticized by twelve Home Economics teachers and three professors of Home Economics in state colleges. Points considered in criticizing were: clearness of composition, sentence structure, and selection of the subject matter. Any item questioned by one or more of these persons was eliminated or revised. A heading was then devised consisting of the following: spaces for name, grade, school,

and age of the pupil and spaces in which to record the number of possible points, number of errors, score, and grade. Directions for answering and an example for each part were set up. The completed preliminary forms "A" and "B" of the examination were then mimeographed. A set of directions was devised for use in the administration and scoring of the examinations, and this with a test marked with correct answers (Appendix p. 51) was sent to the three teachers who were to administer the tests.

Administering and Determining the Reliability of Preliminary Test

Both forms of the test were given to two hundred fifty pupils in Foods 1, 2, 3, in three high schools of Salt Lake City, Utah. As suggested in the directions pupils scored the examinations. These scored tests were then read and criticized by the teachers giving the tests and by several trainees and the teacher trainer of the University of Utah. The resultant criticisms aided in making the tests more valid and reliable. For reasons such as only one form being taken by some pupils, and one class not being given sufficient time to complete the test--ninety-three tests were invalidated, leaving a balance of 157 for use in revision.

The examinations were graded by the author and record made of the errors in answers. Table VI, page 24, shows

TABLE VI

SCORES MADE BY 157 HIGH SCHOOL PUPILS

ON FORM A OF FOODS TEST*

Scores (Step intervals)	Frequency
120 - 125	2
115 - 119	2
110 - 114	3
105 - 109	5
100 - 104	7
95 - 99	5
90 - 94	12
85 - 89	22
80 - 84	17
75 - 79	19
70 - 74	15
65 - 69	24
60 - 64	8
55 - 59	6
50 - 54	4
45 - 49	5
40 - 44	0
35 - 39	1

* Total possible score 129

the scores made on Form "A" by the 157 pupils, the total possible score being 129. The mean of the scores for this form was 79.66. The mean for Form "B" was 77.34.

One method of determining reliability coefficient is to give two equivalent forms of an examination to the same pupils, then correlate the scores. As the two forms of this test were given to the same pupils the scores on Form "A" and Form "B" were correlated, using the Pearson Product moment Coefficient of Correlation.[13] The resulting correlation of 0.95 gives evidence of marked reliability.[14] Odell explains the significance of reliability coefficients as follows:[15]

0.95 - 0.99	Very high, rarely found in present tests
0.90 - 0.94	High, reached by an increasing number of tests
0.80 - 0.89	Reasonably adequate for group measurement, but only fairly so for individuals
0.70 - 0.79	Fairly satisfactory for group measurement
Below 0.70	Low, may be of value in surveys but inadequate for individual measurement

For purposes of revision the upper 20, middle 20, and

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13. Green, Harry A. and Jorgensen, Albert N., "The Use and Interpretation of High School Tests," p. 191-199.

14. $r = \dfrac{\frac{\Sigma xy}{n} - cx.cy}{\sigma x.\sigma y}$ $\quad r = \dfrac{\frac{1678}{157} - 0.159 \cdot 0.140}{3.401 \cdot 3.267} = 0.95$

15. Odell, C. W., "Educational Measurement in High School," p. 65.

lower 20 of 157 cases were used. Table X (Appendix p. 70) shows the number and per cent of these cases missing each item. It also shows where there was no differentiation among the upper, middle, and lower cases. Items marked "O" show a greater per cent of errors in papers of the lower cases than in papers of the upper cases. Those marked "X" show a higher per cent of errors in papers of the upper than in papers of lower cases. Items marked "Y" show no differentiation among the three levels.

The data in Table X (Appendix p. 70) were analyzed to determine the degree and order of difficulty of items and pupil differentiation.

Revision of Test

In making a revision of the test, the items were rearranged. The easier items as shown by the fewer number of pupils failing them, were placed at the beginning or near the beginning of the test with the more difficult items being arranged in order of difficulty. This arrangement increased both the validity and reliability of the test since a better distribution of time and effort on the part of the pupil in answering the questions was obtained, and because of increased motivation--the pupil being able to answer the easier questions which come first are encouraged to try the more difficult ones which follow.

A discussion of the revision of the Preliminary Test

is included under each of the five divisions.

Revision of Part I. In Part I, Items 4 and 7 pertaining to gas stoves were eliminated as all schools do not use gas stoves. This fact accounted for the large per cent of errors on these items and also for the large number of pupils who did not answer the questions. Two items on the care of important food products were included. Five teachers reading the tests listed a need for a question on laboratory standards. A question of this type was included in the revised test.

Revision of Part II. In Part II three teachers listed a need for a question dealing with factors pertaining to menu planning. Item 1 lists three factors with one more important than the others (i.e. food values). Items 2, 3, and 8 pertaining to selection of best bread for breakfast, the most common cereals and the preparation of dried fruit respectively showed very slight differentiation so were discarded. Item 7 pertaining to the purchasing of prunes was a poorly selected question since it was misunderstood by students and so was eliminated. Item 9 was also eliminated since there were already three questions pertaining to beverages. Five teachers checked this item as one to be discarded. Item 11 was changed from listing the method to be used in preparing cocoa to a reason for the method used in preparation. Item 13 showed very slight differentiation

so was changed to selecting the correct sauce for vegetables rather than method of preparing the sauce. Four items on food preparation were included to take the place of those discarded.

Revision of Part III. In the Preliminary Test, Part III proved to be the most difficult section as is shown in the Table X (Appendix p. 72). A larger number of errors were made in this part than in any other. Therefore, it was placed last in the Final and is discussed under revision of Part V.

Part IV of the Preliminary Test was brought forward and is now discussed as to the factors in revision. In this section "Matching" was the technique used. Many of the answers were too obvious. Ruch states, "Avoid having a small number of distinctive facts, in a general list, since these obviously reduce the field of choice to selection among a very few alternatives."[16] This factor is shown in Item 1 (amount of space allowed each person at the dining table). From the answer column "A" it is readily seen that there is only one possible answer Item 8 (twenty to twenty-four inches).

This "small number of distinctive facts" for upper, middle and lower cases in Items 3 and only slight differentiation in Items 7, 11, 12, and 15. In the Final Test

16. Ruch, G. M., Op. Cit., p. 277-278.

more than one suggested answer is given, for example in Item 1 there is a possible selection of (F) twelve to fifteen inches and (S) twenty to twenty-four inches. In Item 6 the word "formal" was eliminated as most pupils do not attend formal dinners. Item 8 was changed for clarity to read--"In setting the table the knife blade is turned ____." Six teachers indicated a need for questions on appearance of the table. Items 16 and 17 were included to meet this request.

Part III was originally nineteen items long. Since very long exercises are wasteful of pupils' time, and since Items 13, 15, and 17 showed no errors for the upper twenty cases, these three items were discarded. This left a total of seventeen items to be answered.

Revision of Part IV. Part V of the Preliminary Test was moved up to the position of Part IV in the Final Test and factors for revision of this section are discussed under this number. The method of designating the correct and incorrect statements in this section was changed from placing a plus sign (+) in front of true and an "O" in front of false statements, to encircling a "T" if the statement was true and an "F" if the statement was false. Pupils criticized the former method as being time consuming and confusing since it was necessary to reread directions repeatedly in order to have clearly in mind which sign to use. Item 6

pertaining to foods grown in hot houses, showed only slight differentiation in the three groups so was discarded. This Item and Item 21 were checked by six teachers as not being items of great importance. Six teachers suggested that there be a question on amount of money in the budget to apportion for food. A question of this type was added. Four teachers indicated need for a question on selecting canned fruits since there were items on selecting canned vegetables. Item 10 in the revised copy filled this request.

Revision of Part V. Part V which was Part III in the Preliminary Test was changed in certain particulars. Item 12 relating to the function of iron in the blood stream seemed too difficult as one-half the pupils in the upper cases and over three-fourths of the pupils in the lower cases missed this item and it was discarded. Item 17 pertaining to vitamin D was discarded as Item 18 included practically the same answers. Six teachers suggested that there should be some questions on special food needs such as those for the underweight. Two such questions were added. Since there were four items on vitamins, two of them, Items 19 and 20, were discarded.

Revision of form of Final Test. The rearranging of test items and the eliminating of some items resulted in a different numbering of items as well as of parts in the re-

vised form. In the Preliminary Test answer blanks were placed to the left of the page, in the Final Test they were placed to the right. With this arrangement the pupil read the item and placed the answer logically at the end of the line. The sub-items under each question were lettered rather than numbered. In the heading of the final form a space in which to record the number of items correct is included. Having this information recorded the teacher can readily see in which section of the work the pupil is weakest. After these revisions had been made the tests were corrected by an English teacher for sentence structure, punctuation, and wording.

The same procedure was carried out in the revision of Form "B" as that used for Form "A".

Determination of Reliability of Scoring Key

The next step was the development of a scoring key. To test the objectivity of the scoring key nine college students--three freshmen, four sophomores, and two seniors, all presumably ignorant of the subject matter in the tests--each scored a set of nine tests which had been selected by the writer. The tests were chosen to include three from the upper, three from the middle and three from the lower cases so as to have a wide range of scoring. These tests represented a total of 1080 items, as each test totaled one hundred twenty points. A comparison between the total

scores obtained by the author and those obtained by the college students, showed a coefficient correlation of 0.97. This correlation indicates that scoring with the key is reliable when done by persons unacquainted with the subject matter. The same method was carried out with high school pupils scoring papers. The papers were also scored by the writer and a comparison made. A coefficient correlation of 0.96 was obtained. This comparison gave additional proof of the reliability of the key and also proved that it was entirely feasible to have the tests scored by high school pupils.

Administering of Final Test

The completed test was then mimeographed and with the scoring key and a set of directions for administering, one thousand copies were sent to six high schools in Salt Lake City, Utah and to four high schools in other sections of the state. Five of these schools were senior high schools, teaching Foods 1, 2, and 3, each of which was one semester in length. The other five were junior high schools, two teaching Foods 1 and 2 and three offering only Foods 1. The suggestion was made that the tests be used as the final test for the semester ending January 1939 if the teacher thought the tests could serve this purpose.

When the tests were returned to the author a general survey and check-up of them was made. As in the case of

the Preliminary Test it was found that some papers were invalidated. A total of 977 was available for use in compiling data.

CHAPTER III

ANALYSIS AND INTERPRETATION OF THE DATA

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ANALYSIS AND INTERPRETATION OF THE DATA

Scoring the Final Test

In scoring the examinations the number correct were counted, one point being allowed for each item. The score was placed on the first sheet in the space provided. A question arose as to the method of scoring Part IV. Authors Ruch and Lee state that the reliability of a test is increased by scoring true and false questions by the formula R-W.[1] However, since pupils had been urged not to guess they left out answers about which they were uncertain. The result was that the scores were so low when scored by the R-W method that the writer thought the pupils would be discouraged. In view of this and as many of the teachers giving the test were of the opinion that R-W over penalized the pupil the number correct was taken as the score in Part IV as in other parts of the test.

In order to make a comparison of the two methods of scoring Part IV, namely R-W and counting number correct, the writer selected fifteen cases from the highest, fifteen cases from the middle, and fifteen cases from the lowest scores. These forty-five cases were scored by R-W method and by number correct. A coefficient correlation of

---

1. In this formula R = correct answers and W = wrong answers.

the two methods was worked out by applying the formula of rank correlation coefficient. (See p. 17) The resultant correlation of 0.86 showed satisfactory reliability of the method of scoring by counting number correct.

Length of Time Required to Take the Final Test

"The longer the test the more reliable it tends to be, longer in the sense not only of the length of time required by pupils to answer it, but of the actual number of test items which can be scored individually," states Brown in discussing length of tests.[2] The average time taken from the 977 cases was thirty-eight minutes. The time for student scoring was listed as twenty minutes thus making it possible to take the test and also to score it within an hour.

Validity of the Final Test

Gilliland in "Educational Measurements and the Classroom Teacher" says, "The test should be valid; that is, it should measure the ability or subject-achievement which it purports to measure."[3]

The content of the test constructed in this study was based on the content of courses of study and four leading

2. Brown, Clara M. "Syllabus for Educational Measurement," Home Economics Education 192, p. 47.
3. Gilliland, A. R., Jordan, R. H., and Freeman, Frank S. "Educational Measurement and the Class-Room Teacher," p. 32.

textbooks. A coefficient of correlation of 0.90 between textbooks and Form "A" of the test and a coefficient of correlation of 0.87 between courses of study and Form "A" of the test shows that the subject matter on which the test was based follows closely the material in courses of study and textbooks. (See formula p. 17)

Of the 977 tests returned, only 822 pupils had final semester grades listed. These 822 cases formed the basis for the following comparison. The degree to which the test parallels actual instruction and the degree to which scores in the test were used in determining semester marks is shown in the coefficient of correlation of 0.86 between the scores and the final semester marks. Garrett states,[4] "The validity of a test is determined directly, whenever possible, by finding the correlation between the test and some independent criterion." (See formula p. 25)

The validity of test items. Hawkes and others state,[5]

> "If an item is to function in a general achievement test, it must of itself discriminate between pupils at different levels of general achievement in the field tested.
>
> "The worth or effectiveness of a test item depends therefore...upon its power to discriminate between pupils of high and low levels of general achievement in the field involved."

After the tests were scored, the fifty test papers

4. Garrett, Henry, E., "Statistics in Psychology and Education," p. 324-325.
5. Hawkes, Herbert E., Lindquist, E. F., and Mann, C. R., "The Construction and Use of Achievement Examinations," p. 39.

with the highest scores, the fifty test papers with the lowest scores together with the fifty grouped most closely around the median were selected for the purposes of analysis. The number and per cent of these cases giving correct answers on each item for Form "A" of the test were listed and tabulated in a table.[6] The questions which show the largest amount of differentiation between the three groups in favor of the best group are the most valid questions. The tabulation shows that the test items have discriminated between pupils of the different levels except in four different cases. It reveals that in Part I of Form "A" of the Test, Item B under question 3 shows a higher per cent correct in the lower level than in the upper level of cases. This is also true in Part II where Item B in question 1 and Item 19 in Part IV show a lower per cent correct for the upper cases than for the lower cases. In two cases, (Part IV Item 2 and Part V Item 1) the items show no discriminating power between the upper and lower levels. In the above mentioned cases it would be necessary to analyze the items carefully and reword or eliminate them entirely if the Final Test is to achieve the highest degree of validity.

6. The table showing these data is on file in the Home Economics Education Office. It is not included because of its length and because the significant findings could be included in the body of this text.

Reliability of the Final Test

Greene and Jorgensen state,[7] "Reliability has been described as the expression of the consistency with which a test performs...

"The method of finding the reliability coefficients for a test which appears to be most acceptable today calls for administration of two approximately equal alternate forms of the same test to the same pupils under controlled conditions."

The reliability of the Final Test was proved by finding the coefficient of correlation between the two forms, "A" and "B". Of the 977 tests returned only 931 pupils had been given the equivalent form. These 931 cases formed the basis for the comparison between the two forms. The obtained correlation of 0.91 and the probable error of 0.003 gives evidence of very marked reliability of the test. (See p. 25)

Norms

The distribution of scores. The norms established for the test were based on the median scores obtained from the 977 cases. These norms provided the basis for the interpretation of the scores for each level in foods as well as of individual accomplishment. When the tests were sent out

7. Greene, Harry A., and Jorgensen, Albert N., "The Use and Interpretation of High School Tests," p. 142-143.

they were accompanied with a set of rules for administering and scoring them. (Appendix p. 95) The pupils were tested in their class rooms. Form "A" of the Test was given the first day and Form "B" the second day.

Table VII, page 40, gives the distribution of scores on Form "A" of the Test of 977 high school pupils tested in January 1939. The standard diviations of the three distributions were 13.55, 14.83, and 13.70.

Median and percentile scores. "The percentiles obtained make possible comparison for pupils in the same group and in groups of comparable ability," states Lindquist.[8] Table VIII, page 41, gives the median scores and the 95th, 75th, 50th, 25th, and 5th percentile scores of the three levels in foods.

Converting scores into school marks. Table VIII can be used as a means for converting the scores on the test into school marks as A, B, C, D, and E. This can be done in the following way:[9]

A - highest 5% (95th - 100th percentile)
B - next-highest 20% (75th - 95th percentile)
C - middle 50% (25th - 75th percentile)
D - next lowest 20% (5th - 25th percentile)
E - lowest 5% (0 - 5th percentile)

In Foods 1 assign mark of "A" to pupils making scores of 92 and above, "B" to pupils making scores of 78 to 91, "C" to pupils making scores 57 to 77, "D" to those making

8. Lindquist, E. F., "A First Course in Statistics," p. 37.
9. Hawkes, Herbert E., Op. Cit., p. 120.

TABLE VII

DISTRIBUTION OF 977 SCORES OF HIGH SCHOOL PUPILS IN FOODS CLASSES OF JANUARY 1939

Score Intervals	Foods 1 N = 527	Foods 2 N = 275	Foods 3 N = 175
110 - 114		1	2
105 - 109	1*	2	1
100 - 104	5	5	3
95 - 99	11	18	16
90 - 94	20	27	17
85 - 89	37	28	19
80 - 84	43	29	20
75 - 79	59	30	25
70 - 74	65	37	20
65 - 69	68	25	21
60 - 64	65	28	18
55 - 59	63	17	7
50 - 54	49	16	2
45 - 49	24	10	2
40 - 44	11	1	1
35 - 39	5	1	1
30 - 34	1		

* Note: The table may be read as follows; of the 527 pupils in Foods 1, one made a score in the interval of 105-109; five made scores in the interval of 100-104; etc.

TABLE VIII

MEDIANS AND PERCENTILE SCORES OF THE HIGH SCHOOL PUPILS IN FOODS CLASSES AS TAKEN IN JANUARY 1939

Percentile	Scores		
	Foods 1 N = 527	Foods 2 N = 275	Foods 3 N = 175
95th	92	97	98
75th	78	86	88
50th Median	68*	74	77
25th	57	63	67
5th	46	50	56

* Note: The table may be read as follows; of the 527 pupils in Foods 1 the median (50th percentile) score was 68. Of the 275 pupils in Foods 2 the median (50th percentile score) was 74 and of the 175 pupils in Foods 3 the median (50th percentile) score was 77.

scores 46 to 56, and "E" to those with scores below 45. Marks assigned in this way are entirely objective.

Percentile ranks. Table IX, page 42, gives the percentile ranks of the 977 scores. The table shows that a pupil making a score of 90 in the test would have a percentile rank of 93 among Foods 1 pupils, 81 among Foods 2 pupils and 78 among Foods 3 pupils. It shows that 93 per cent of Foods 1 pupils failed at mid-year to make a score of 90. By interpolation between scores it is possible to give an approximate percentile rank to any pupil making any

TABLE IX

PERCENTILE RANKS CORRESPONDING TO VARIOUS SCORES OF FOODS PUPILS IN JANUARY 1939

Scores	Percentile Ranks		
	Foods 1 N = 527	Foods 2 N = 275	Foods 3 N = 175
115		100	100
110	100	99	99
105	99	98	98
100	98	97	96.7
95	96	91	88
90	93	81	78
85	86	71	67
80	78	61	56
75	67	50	42
70	55	36	30
65	41	27	18.9
60	30	17	8.4
55	18	10.8	3.4
50	8.7	4.9	2.4
45	3.6	1.0	1.2
40	1.3	0.4	0.62
35	0.28		

score on the test. A pupil in Foods 1 making a score of 62 would have an approximate percentile rank between 30 and 41 which would be 35.5.[10] In this way it is possible to interpretate a single measure in a distribution of measures.

10. Lindquist, E. F., Op. Cit., p. 33-37.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

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CONCLUSIONS AND RECOMMENDATIONS

Summary

In the first part of this study a review was made of other studies concerning test construction and the reliability of some published tests. Facts obtained as a result of this review and information obtained from state surveys showed a need for developing a reliable and valid objective test that would measure achievement of pupils in foods and nutrition classes in junior and senior high schools.

With this need in mind analyses of state and city courses of study, and of foods textbooks were made in order to formulate objectives on which to base test items for such a test. Items comprising a test should be consistent with what has been taught and should include a wide range of sampling of the material covered. In order to meet these requirements a table of specifications was compiled by the writer as she taught each unit. This procedure guarded against over-emphasis of any particular phase of the work thus insuring uniform distribution of test items over the material taught.

An effort was made to construct items which would measure not only facts but also the application of these

facts. The test items were arranged according to topical sections of subject matter as designated by the objectives. These items made up the two Forms "A" and "B" of the test.

By using the Pearson Product Moment method a reliability coefficient of correlation of 0.91 was obtained between the two forms of the test which had been administered to 931 high school pupils.

The validity of the test was proved by using the teachers' assigned grades for the term as a criterion. A validity coefficient of correlation of 0.86 was obtained between this criterion and the scores on the test.

The coefficient of objectivity of the test was determined by correlating the independent ratings given by nine university students and the writer which yielded a coefficient of correlation of 0.97. Also a coefficient of correlation of 0.96 was obtained from ratings of thirty high school students and the writer.

Limitations of the Study

The study based on 977 tests. The writer hoped to have 1000 as the basis. Had 1100 tests been sent out the return would have been nearer the 1000 cases desired.

Criticism may be raised concerning the fact that the proportion of pupils in Foods 1 so far exceeded the number in either Foods 2 or Foods 3. Giving the tests at the end of the first semester accounted for this large group of

Foods 1 scores since every girl in the junior high schools of Salt Lake City is required to take Foods 1 and only Foods 1 is offered in the junior high schools. Foods classes during the first semester of senior high school are made up largely of Foods 2 pupils. This accounts for a larger group in Foods 2 than in Foods 3 for the first semester. The above condition also holds true generally in the high schools outside Salt Lake City. While the reliability and the validity of the test would not be affected by equal sized groups, the percentile scores might represent a truer picture for purposes of comparing groups in other schools with the established norms.

Since the Final Test was given to a larger group of pupils than the Preliminary Test, foods teachers who had not previously come in contact with the test were involved. These teachers were asked to give criticisms of the test. There is no doubt in the writer's mind but that changes made as suggested in these criticisms and rearrangement of some test items as to degree of difficulty would result in improvement of the test material. Further a wider sampling of Foods 2 and 3 would have made the results of the data more comprehensive.

Recommended Use of Test Results

The results of this study may be used in the following ways:

1. As a means of measuring achievement--by administering the test at the beginning of the semester and giving the equivalent form at the end of the semester a teacher may measure the progress the pupil has made during the term and also discover definite weaknesses of the individual pupil;

2. As a means of determining semester grades--scores on the test can be turned into school marks by using the plan suggested in Table VIII (p. 39);

3. For purposes of motivation or as a learning exercise--the test being constructed in blocks or units of work can be broken up into sections and used for these purposes (i.e. Part IV "How to Buy Foods in Reference to Income");

4. As a means of placing new entries--a pretest would aid in determining the particular grade level in foods in which the pupil belonged (see Tables VIII and IX, pages 41 and 42);

5. As a means of determining how a particular group compares with the general standard of comparable groups--giving of a standardized test to a group will show the teacher and the pupils how the group ranks with other groups of the same grade level in Foods.

Suggestions for Further Investigations

In Home Economics a need is felt for a greater variety of measuring instruments. Desirable outcomes such as right attitudes, correct habits, and efficiency in performance

cannot be measured by achievement tests but are important in preparing pupils to live more successfully in their family groups. Were reliable devices available to measure these "intangibles" the results could be used to detect weaknesses, and to show growth in pupils along these lines. As a result of a more complete testing program the teacher would be in a better position to know and consequently to meet the various needs of her pupils.

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APPENDIX A

PRELIMINARY TEST

Form A
Page 1

Foods

Selection - Preparation - Serving

Name_____ Number of points_____
Grade_____ Number of errors_____
School_____ Score_____Grade_____
Age_____
Check classes in "Foods"
you have completed.
Foods 1.___Foods 2.___Foods 3.___

Working Habits in the Home and Laboratory.

Directions: Each statement contains one or more correct answers. Underline the ones which are correct and list the number or numbers in the blank in the right-hand margin.

Example: 1,2,3,5 Less tender cuts of meat may be:
1. Ground
2. Scored
3. Served in stews
4. Broiled
5. Pot roasted

3,4 1. In washing dishes, wash:
1. Under the tap, then wipe
2. In lukewarm water
3. In hot soapy water
4. Then rinse in hot water
5. In lukewarm soapy water

1,2,3,5 2. Dishes should be prepared for washing by:
1. Scraping all dishes
2. Stacking kinds together
3. Soaking in cold water dishes in which uncooked eggs, uncooked flour, or milk have been used
4. Soaking in cold water dishes in which sugar or sirup have been used
5. Wiping all dishes containing fat with soft paper

1,2,4,5 3. There are several points to remember in caring for an ice-refrigerator:
1. Keep it clean and dry
2. Keep it well-iced
3. Place food wrapped in paper on top of ice
4. Keep door tightly closed
5. Place no hot foods in refrigerator

1,2,3,5 4. It is important that the gas flame be blue in order to get the best results because:
1. A blue flame is clean
2. A yellow flame deposits soot on cooking utensils
3. A blue flame is hotter than a yellow flame
4. A yellow flame is more economical
5. A yellow flame denotes escape of poisonous gas, carbon monoxide

1,2,3,4 5. In order to be an efficient worker in the home; one should:
1. Collect all food supplies needed
2. Collect all utensils needed for work
3. Use the right tools for the task to be performed
4. If possible, finish one kind of motion before changing to another
5. Save time at the expense of the quality of work

1,2,5 6. In measuring flour:
1. Sift before measuring
2. Sift by heaping tablespoons lightly into measuring cup
3. Cut through with knife
4. Shake down after measuring each spoonful
5. Level with a spatula

2,3,4,5 7. Points to remember in caring for a gas stove:
1. Wash the removable tray after each time of using
2. When food spills on burners, wipe as soon as possible
3. Take burners to pieces and wash in soapy water
4. Wipe off the grease and pick out the holes of the burner with a wire
5. After washing apply light paraffin to uncoated metallic parts

1,2,3,4 8. A person has grown in ability to plan and carry out preparations for a meal if she:
1. Reads over and understands recipe before beginning to work
2. Gets all supplies out before starting recipe
3. Puts supplies away after using, and finishes things started, even to cleaning up
4. Understands how to use tools
5. If she takes ample time for each simple form of cookery

2,4,5 9. The coldest part of the refrigerator is the correct place for:
1. Fruits
2. Eggs
3. Vegetables
4. Milk
5. Meat

Score_____

Part II

How to Choose and Prepare Food for Health.

Directions: Each of the following statements may be completed in more than one way. In each group one answer is better than the rest. Underline the answer and place the number in the blank in the left margin.

Example: 2 The bran contains:
1. The starch part of grain
2. The layers of fiber or cellulose
3. The part from which the grain sprouts

2 1. A good breakfast for a growing child is:
1. Stewed prunes, cereal, coffee, toast
2. Stewed prunes, cereal, poached egg, milk, toast
3. Stewed prunes, griddle cakes

2 2. The best bread to select for breakfast for daily use is:
1. Griddle cakes
2. Toast
3. Popovers or muffins

2 3. The most common cereals are:
1. Barley, millet, rye
2. Wheat, corn, oats, rice
3. Buckwheat, kaffircorn

1 4. When selecting cereals more nourishment is obtained from:
1. Whole-grained cereals
2. Brown cereals
3. Partly cooked cereals

1 5. The most desirable way of cooking cereals is:
1. Add cereal to boiling salted water, boil 10 minutes directly over flame, steam over hot water
2. Add cereal to water, cook one hour
3. Add cereal to cold water and boil 30 minutes

3 6. Fruit needs to be washed to:
1. Make it keep better
2. Improve the flavor
3. Remove dirt and poison substances used in spraying

1 7. When purchasing prunes select according to:
1. Size
2. Moisture
3. Dryness

3 8. To prepare dried fruit:
1. Cover with water and boil
2. Wash, add sugar and water and cook until tender
3. Wash, cover with water, let soak few hours or over night, cook slowly until tender, add sugar

2 9. The chief value of cocoa and chocolate as breakfast beverage is due to:
1. The fat in the chocolate and cocoa
2. The amount of milk the beverage contains
3. The sugar used to sweeten the beverage

2 10. Cocoa may be substituted for chocolate by the use of:
1. 5 to 6 tablespoons of cocoa to one square of chocolate
2. 3 to 4 tablespoons of cocoa to one square of chocolate
3. 4 teaspoons of cocoa to one square of chocolate

1 11. To prepare cocoa:
1. Mix cocoa and sugar, add water and boil for few minutes add milk let mixture heat to scalding
2. Boil milk and water, add cocoa and sugar
3. Mix all ingredients and boil

3 12. When selecting a 15 cent lunch from the school lunch room, of the choices given here, the best combination of food would be:
1. Meat, potato, ice cream
2. Soup, sandwich, gingerbread
3. Creamed vegetable soup, sandwich, fruit salad
4. Potato salad, baked beans, tapioca pudding

2 13. The best method of preparing white sauce is to:
1. Add the flour to hot milk and stir in the butter
2. Melt the butter, add flour, add milk
3. Add butter to hot milk and stir in the flour

2 14. The flavor of strong vegetables is modified by:
1. Steaming
2. By cooking in uncovered kettle in large amount of water
3. By cooking in small amount of water

1 15. In order to preserve the green color in vegetables:
1. Cook in uncovered kettle
2. Add vinegar to the water in which they are to be cooked
3. Cook in small quantity of water

2 16. The elasticity of the dough in yeast bread is due to:
1. The use of soft wheat which produces flour rich in starch

2. The use of hard wheat flour which is rich in gluten
3. Yeast which produces carbon dioxide

2 17. The toughness or tenderness of meat is due to the:
1. Amount of extractives present in the meat
2. Connective tissue in the meat
3. Complete protein present in the meat

1 18. The tough connective tissue of less tender cuts of meat is softened by:
1. Heating meat for some time in water, thus forming gelatin of the tissue
2. Applying dry heat
3. Searing

2 19. A good jelly-making fruit is the:
1. Peach
2. Currant
3. Pear

1 20. Good jelly-making fruits contain:
1. Pectin
2. Water
3. Starch

2 21. One way to control the growth of microorganisms is:
1. Keeping foods moist
2. Sterilization
3. Sprinkling food with salt

2 22. Non-acid vegetables should be canned by the following method:
1. Open kettle
2. Pressure cooker
3. Oven canning

Score 22 possible

Part III--How Food Functions in the Body--Relation of Food to Health

Directions: In the blanks at the right hand side of the statements write the word or words or numbers that best complete the statement.
Example: There are____cups of milk in a quart. 4

1. For health, one should drink at least _____ _____of water daily. 1. six glasses
2. The nourishing materials contained in foods are known as_____. 2. foodstuffs
3. Of the foods eaten those which supply energy in the most concentrated forms are_____and_____. 3. fats carbohydrates

4. The amount of energy needed is influenced by the _____ of the individual. 4. activity
5. The energy requirement of the body may be estimated in _____. 5. calories
6. A material contained in the skins of fruit in large quantity is _____. 6. cellulose
7. Proteins are made up of smaller parts known as _____ _____. 7. amino acids
8. Proteins _____ and _____ the body tissues. 8. build repair
9. Proteins are classified into two classes _____ and _____. 9. complete incomplete
10. The mineral elements in foods that are needed by the body are _____ _____ _____ _____ 10. calcium phosphorus iron iodine
11. Milk is very rich in the mineral _____. 11. calcium
12. Iron is a necessary food element because it carries _____ in the blood stream. 12. oxygen
13. Calcium is needed by the body for building _____ _____. 13. teeth bones
14. The most common indication of thyroid disturbance is _____. 14. simple goiter
15. The thyroid gland cannot function normally unless supplied with the correct amount of _____. 15. iodine
16. Vitamin "B" resists a disease of the _____ known as _____. 16. nerves beri-beri
17. Vitamin "D" helps to prevent _____ a disease common among children, affecting the _____ and all parts of the body. 17. rickets bones
18. Science has made it possible to irradiate foods, so that they may be used as a source of _____. 18. vitamin D
19. When the diet consists largely of cooked and dried foods and is lacking in fresh fruits and vegetables _____, a dietary disease, results. 19. scurvy
20. When the diet is deficient in vitamin "A", _____ is retarded. 20. growth

Score 32 possible

Part IV Courtesies Connected With Serving and Eating

Directions: Column "A" contains a list of items. Column "B" is made up of phrases. For each phrase in column "B" fill in the blank with the number from "A" which is most closely related.

Example: Column "A" 1.Milk 2.Beans 3.Lard

Column "B"

1. A food that is the best source of calcium.

Column "A"	Column "B"
1. All are served	1. 8 Amount of space allowed each person at the dining table.
2. Customs	2. 13 Style of serving where food is placed on individual serving dishes and passed.
3. Do not criticize	3. 7 The first person to sit down at the table.
4. Good posture	4. 9 Article placed one inch from the edge of the table.
5. Table talk	5. 27 Used for crumbing the table.
6. Knife not in use	6. 24 For a formal dinner, the table should be covered with.
7. Hostess	7. 17 Water glasses are filled.
8. 20 to 24 inches	8. 19 In setting the table, knife turned.
9. Flat silver	9. 25 Style of table service suitable for home, serving with no maid.
10. Straight on the table	10. 12 Remove most dishes from.
11. Orderly way	11. 14 Be seated at the table from.
12. From the left of a person	12. 15 Napkins at the end of meal if you are a member of the family.
13. Russian	13. 21 Not left in the cup after tasting.
14. Left of your chair	14. 26 An article placed at left of forks.
15. Fold at the close of meal	15. 6 Place across the rim of the plate.
16. Until the hostess starts	16. 20 Dip the spoon from you.
17. Three-fourths full	17. 5 Avoid disagreeable subjects.
18. With fingers	18. 4 Aids good looks also good digestion.
19. Toward the plate	19. 18 Firm cake may be eaten.
20. In eating soup	
21. Spoon	
22. Glasses	
23. Serving	
24. An all-over white cloth	
25. Compromise or family	
26. Napkin	
27. Napkin and plate	

Score_____

Part V How to Buy Foods in Reference to Income

Directions: Some of the following statements are true and some are false. Put a plus sign in front of those that you think are true and a zero in front of those that you think are false.

Example: 0 A buyer should not allow a clerk to pick out peaches.

\+ 1. Each food purchased offers a different problem in selection.

0 2. The type of a store you shop at has no effect on the price of food.

\+ 3. A budget is a plan for spending the income.

\+ 4. Perishable foods are more expensive than non-perishable supplies.

0 5. In buying potatoes one should select deep-eyed ones.

\+ 6. Foods grown in hot houses are usually more expensive and inferior in flavor.

0 7. Bleached lettuce leaves contain more vitamin than green leaves.

0 8. When citrus fruits are light in weight, good quality is indicated.

0 9. The cost of a food is a good indication of its food value.

\+ 10. One should not handle perishable products while shopping.

\+ 11. The greener the celery the richer it is as a source of vitamin A.

\+ 12. Buy as many articles as possible by weight.

0 13. Cereals put up in packages cost less than those sold in bulk.

0 14. The most expensive canned peas are large and uniform in size.

0 15. The shell of a fresh egg is smooth and shinny.

0 16. Oranges and grapefruits are most plentiful during the summer months.

0 17. Prepared biscuit and griddle cake flours are more inexpensive than those prepared at home.

\+ 18. High grade beet sugar can be used as effectively in every way that high grade cane sugar can be used.

0 19. Included on the label of a can is the size of the can.

0 20. The law requires the grade of the product to be on the label.

0 21. Only meats of interstate commerce are government inspected.

\+ 22. Tough cuts of meat are as nutritious as the tender cuts of meat.

0 23. The Federal Food and Drugs act specifies what substances in food are injurious to health.

0 24. Purchase graded peas to use for soups.
+ 25. Plan menus so that the food needed can be purchased in season.

Score_____

List the number of minutes it has taken you to complete this test_____

Form B
Page 1

Foods

Selection - Preparation - Serving

Name_____ Number of Points_____
Grade_____ Number of Errors_____
Age_____ Score_____Grade_____
Check classes in "Foods"
you have completed.
Foods 1.___Foods 2.___Foods 3.___

Working Habits in the Home and Laboratory.

Directions: Each statement contains one or more correct answers. Underline the ones which are correct and list the number or numbers in the blank in the right-hand margin.

Example: 2,3,4 The fruits to select for jelly making should be:
1. Overripe
2. Underripe
3. Rich in pectin
4. Acid fruit
5. Rich in protein

3,4,5 1. In washing dishes, it is necessary for sanitary reasons to wash dishes:
1. In running water
2. In warm soapy water
3. In hot soapy water
4. Then rinse in hot water
5. Then dry on clean towel

1,2,3,4 2. In preparing dishes for washing, dishes:
1. Should be scraped with dish scraper or soft paper
2. Used with fat should be wiped with soft paper
3. Used for egg, flour, or milk, should be soaked in cold water
4. Should be stacked in piles, kinds together
5. Used with sugar should be soaked in cold water

1,4,5 3. In cleaning an ice-refrigerator each week:
1. Wash with cold water containing washing soda
2. Clean with scouring powder
3. Wash with soapy water
4. Wipe with dry cloth after washing
5. Pour washing soda solution down drain pipe

2,3,5 4. A good habit to form in preparing food is:
1. To use a different utensil for each food measured
2. To use the same utensil to measure as many ingredients as possible
3. To wash and put away utensils used while product is cooking
4. To take time to wash the utensil after each ingredient is measured
5. To put away food supplies and utensils as product is made

1,2,5 5. In measuring flour:
1. Flour should be sifted before measuring
2. Flour should be lifted by tablespoons into cup
3. Flour should be cut down with knife
4. Flour should be shaken down after each 3 to 4 tablespoons is measured
5. Flour should be leveled with a spatula

2,3,4,5 6. A student may feel she is capable of planning, preparing and serving a meal if she:
1. Saves on time at the expense of the product
2. Understands recipes as to proportions and method of procedure
3. Understands the use of tools
4. Can make substitutions both in supplies and use of tools
5. Is able to think through recipe, while getting ingredients and utensils collected

1,2,5 7. The coldest part of the refrigerator is the correct place for the:
1. Eggs
2. Milk
3. Fruits
4. Vegetables
5. Meat

2,3,4,5 8. In order to keep a gas stove in good condition:
1. Never touch the burners
2. Take burners apart and wash in soapy water
3. Wipe off the grease and pick out the holes of the burner with a wire
4. After using oven leave door open until oven has dried out
5. After washing oil metallic parts

1,2,3,4 9. In observing good laboratory standards a girl will:
1. Have an apron large enough to protect her dress

2. Have a pocket in her apron for her handkerchief
3. Have a band or hair net to keep her hair in place
4. Keep her working space clean and in order
5. Keep her note book and pencil in general locker

Score_____

Part II

How to Choose and Prepare Food for Health.

Directions: Each of the following statements may be completed in more than one way. In each group one answer is better than the others. Underline the answer and place the number in the blank in the left margin.

Example: 1 It is a good plan to include vegetables in the school lunch because they are rich in:
1. Minerals
2. Sugar
3. Protein

3 1. A good breakfast for the high school boy and girl is:
1. Tomato juice, cereal, coffee, toast
2. Tomato juice, milk, white toast
3. Tomato juice, cereal, poached egg, milk, toast

2 2. In selecting bread for breakfast for a family with two children select:
1. Griddle cakes
2. Toast
3. Waffles

1 3. The most common cereals used in the home are:
1. Wheat, corn, oats, rice
2. Barley, millet, rye
3. Buckwheat, corn, oats

1 4. The best method to use in cooking cereals is:
1. Add cereal to boiling salted water, boil 10 minutes directly over flame, steam over boiling water
2. Add cereal to water, cook one hour
3. Soak cereal in cold water and boil 10 minutes

1 5. Fruits should be washed before using to:
1. Remove the dirt, and poisons used in spraying
2. Improve the flavor
3. Improve its appearance

2 6. When sugar is added to fruit sauces after cooking rather than before, it is thought the fruit is:
1. Better in appearance
2. Finer in flavor

3. Better in color

1 7. When one desires to prevent fruit from breaking up, she should:
1. Make a sirup and cook fruit slowly in sirup
2. Cook fruit in water
3. Add sugar after fruit is tender

3 8. The best method of preparing dried fruit is to:
1. Cover with water and boil
2. Wash, add sugar and water, and cook until tender
3. Wash, cover with water, let soak for few hours or over night, cook slowly until tender, and add sugar

1 9. Cheese souffle is cooked at:
1. Moderate temperature
2. Low temperature
3. High temperature

1 10. In order to get the supply of calcium needed for the diet a child should have daily:
1. One quart of milk
2. One-half orange
3. One-half cup carrots

2 11. The best method of preparing white sauce is to:
1. Add the flour to hot milk and stir in the butter
2. Melt the butter, add the flour, add the milk
3. Add butter to hot milk and stir in the flour

2 12. The flavor of strong vegetables is modified by:
1. Steaming
2. Cooking in an uncovered kettle
3. Cooking in a small amount of water

2 13. In flour there is a substance called gluten necessary for making good bread. The gluten is necessary:
1. As a leavening agent
2. To make an elastic dough
3. To make a sweet bread

1 14. The proportion of flour and liquid in making popovers is:
1. One cup flour to one cup liquid
2. One cup flour to two cups liquid
3. One cup liquid to two cups flour

1 15. Muffins should be baked in:
1. Hot oven
2. Moderate oven
3. Cool oven

1 16. Pastry or soft wheat flour feels:
1. Smooth
2. Gritty
3. Coarse

2 17. A food which may be used as a substitute for meat is:
1. Butter
2. Cheese

3. Peas

1 18. The way in which you cook meat depends upon:
1. The cut of meat
2. The kind of animal
3. Animal acids found in meat

2 19. A baked custard is cooked until:
1. It sets to form a jell and is quite thick
2. A pointed knife carefully inserted comes out clean
3. It coats the spoon

2 20. For each cup of sour milk used in making quick bread add:
1. One teaspoon of soda
2. One-half teaspoon soda
3. Two teaspoons of soda

3 21. Non-acid vegetables should be canned by the following method:
1. Oven canning
2. Open kettle method
3. Pressure cooker method

1 22. In selecting fruits for jelly making, select those containing:
1. Pectin
2. Large amounts of water
3. Protein

Score_____

Part III--How Food Functions in the Body--Relation of Food to Health

Directions: In the blanks at the right hand side of the statements write the word or words or numbers that best complete the statement.

Example: Soak milk bottles in_____water. cold

1. One aid to good health is to drink_____ glasses of water daily.	1. six (6)
2. Foods are classified into_____classes. These classes are known as_____.	2. six (6) foodstuffs
3. Energy is supplied by_____and_____ is most concentrated in these two forms.	3. fats carbohydrates
4. The amount of energy needed by the individual is influenced by his_____.	4. activity
5. The_____is used as a measurement of the energy required by the body.	5. calorie
6. The woody fiber of the plant is known as_____.	6. cellulose
7. The chief purpose of protein in the body is_____and_____tissues and muscles	7. building repairing

of the body.

8. Proteins are made up of twenty to twenty-two_____ _____. 8. amino acids
9. Because the minerals_____,_____, _____, and_____are often deficient in our diet we need to be especially concerned about them in planning balanced meals. 9. calcium, phosphorus, iron, iodine
10. When an athlete is taking systematic exercise increasing the size of his muscles, the need for_____is increased. 10. protein
11. The mineral_____, of which milk is an excellent source, is needed by the body for building_____and_____. 11. calcium, teeth, bones
12. The iron content of the red blood corpuscles enables the blood to carry _____to every cell of the body. 12. oxygen
13. The most common thyroid disturbance is_____. 13. goiter
14. The correct amount of_____is necessary for normal functioning of the thyroid gland. 14. iodine
15. In feeding babies orange juice you supplement the_____in the milk and add_____which is lacking in milk. 15. calcium, vitamin C
16. Beri-Beri, a disease of the_____, is resisted by_____. 16. nerves, vitamin B
17. The lack of vitamin "D" causes_____, a bone deficiency disease among children. 17. rickets
18. Irradiated foods may be used as a source of_____. 18. vitamin D
19. Scurvy, a dietary disease, is caused by the lack of_____. 19. vitamin C
20. Growth is retarded when the diet is deficient in_____. 20. vitamin A

Score_____

Part IV. Courtesies Connected With Serving and Eating

Directions: Column "A" contains a list of items. Column "B" is made up of phrases. For each phrase in column "B" fill in the blank with the number from "A" which is most closely related.

Example: Column "A" 1.Milk 2.Beans 3.Lard Column "B" 1. A food that is the best source of calcium.

Column "A"	Column "B"
1. Use of teaspoon	1. 9 Service dignified, somewhat more formal than family service.
2. 20 to 24 inches	2. 1 Tasting, not sipping.
3. From left side of chair	3. 7 Cutting firm foods.
4. Simple	4. 2 Space for each person at the table.
5. Guest for only one meal	5. 8 Be seated at the table.
6. Three-fourths full	6. 4 Rule for table decoration.
7. Use of knife	7. 3 Rise from the table.
8. Left of chair	8. 5 Napkin left unfolded on left of cover.
9. English service	9. 6 Fill water glasses.
10. Knives are placed	10. 15 Dip the spoon from you.
11. Serving spoons	11. 21 Good posture at the table.
12. Bread	12. 10 To the right of the cover.
13. Fork	13. 11 Placed at the side of serving dish never in the dish.
14. Pleasant	14. 12 Butter each small piece as you eat it, not the whole piece at once.
15. Eating soup	15. 13 To left of cover.
16. Placed at the side of dish	16. 20 Placed at the left of fork, open corners nearest to the plate.
17. Bread and butter plate	17. 18 At tip of knife.
18. Water glass	18. 22 Do not remove from the table.
19. Conversation	19. 17 At the tip of the fork.
20. Napkin	
21. Aids digestion	
22. In filling glasses	
23. Custom	
24. Good humor	
25. Sugar bowl	
26. Toothpicks	

Score_____

Part V How to Buy Foods in Reference to Income

Directions: Some of the following statements are true and some are false. Put a plus sign (+) in front of those that you think are true and a zero (0) in front of those that you think are false.

Example: 0 Vitamin "B" in fruit prevents scurvy.

0 1. The same standards for selection can be used in selecting all foods.
0 2. The cash and carry store has somewhat higher prices.
+ 3. Having a grocery budget will help the housewife to balance the meals.
0 4. Non-perishable foods are more expensive than perishable supplies.

_+_ 5. In buying potatoes one should select smooth-skinned, shallow-eyed ones.
_+_ 6. When citrus fruits are light in weight, they are pithy and contain little juice.
_0_ 7. The cost of food is an indication of its food value.
_+_ 8. A wise housewife buys as many articles of food by weight as possible.
_0_ 9. Uncooked cereals cost less than ready-to-eat cereals.
_0_ 10. The most inexpensive canned peas are the small-sized peas.
_+_ 11. In the average market the only information available for purchasing eggs is whether they are fresh or storage, and information as to size.
_+_ 12. There is more meat in a pound of large prunes than in a pound of small prunes.
_+_ 13. A medium-sized, smooth, deep-colored, firm tomato is a desirable standard.
_+_ 14. Oranges and grapefruit are most plentiful during the late winter and early spring months.
_0_ 15. An excellent quality of canned foods is labeled "Standard."
_+_ 16. Tomatoes for home use are commonly sold in number 2½ size cans.
_0_ 17. Prepared gelatin powders with sugar, coloring and flavoring are no more expensive than plain granulated gelatin.
_0_ 18. Prepared biscuit and griddle cake flours are less expensive than those prepared at home.
_0_ 19. Beet sugar does not bring as favorable results in cookery as cane sugar.
_0_ 20. Included on the label of the can is the number of servings the can contains.
_+_ 21. The law does not require the grade of the product to be on the label.
_0_ 22. Transportation and season of the year, do not affect the price of food.
_+_ 23. In small towns many markets sell home killed meats that do not come under government regulations.
_+_ 24. Fine-grained, smooth meat is more tender than stringy coarse meat.
_+_ 25. The Federal Food and Drug Act forbids misbranding or adulterating of any food entering interstate commerce.

Score_____

List the number of minutes it has taken you to complete this test_____

DIRECTIONS FOR ADMINISTERING AND SCORING THE PRELIMINARY TEST

Directions to Teachers

1. The test consists of two forms, "A" and "B". If possible give form "A" the first day and Form "B" the following day. If this is not possible give form "A" to 1st, 3rd, and 5th period classes and form "B" to 2nd, 4th, and 6th period classes.
2. The tests may be corrected by pupils. Read the key to them while they score the answers. If you do not care to use the grade from these tests you do not need to correct them.
3. Record the score earned for each part in the space provided for that purpose at the end of the part.
4. Ask pupils to make critical comments on the test.

Directions to Pupils

1. Leave test face down until you are told to begin.
2. Note time of beginning and ending as there is a space at the end of the test to record the time taken to complete the test.
3. Fill in all blanks at the top of first page.
4. You are urged not to guess.

Scoring

A scoring key is included for use in scoring tests.

Rules for Scoring

Part I. Mark as an error each omission or incorrect response.

Part II. Mark as an error each blank filled incorrectly or omitted.

Part III. Mark as an error each blank filled incorrectly.

Part IV. Mark as an error each one answered incorrectly.

Part V. Mark as an error each blank filled incorrectly or omitted.

TABLE X

CASES IN THE UPPER, MIDDLE, AND LOWER LEVELS MISSING EACH ITEM

Part I Item		Upper 20 Cases		Middle 20 Cases		Lower 20 Cases		
		No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	
1.	1	1	5	1	5	1	5	
	2	2	10	3	15	5	25	
	3	11	55	11	55	14	70	0*
	4	0	0	2	10	6	30	
	5	11	55	12	60	14	70	
2.	1	0	0	1	5	5	25	0
	2	2	10	2	10	1	5	
	3	7	35	10	50	8	40	
	4	7	35	9	45	4	20	
	5	1	5	5	25	4	20	
3.	1	0	0	4	20	2	10	0
	2	3	15	5	25	4	20	
	3	4	20	3	15	6	30	
	4	0	0	1	5	3	15	
	5	4	20	4	20	4	20	
4.	1	1	5	3	15	4	20	0
	2	7	35	9	45	12	60	
	3	6	30	9	45	5	25	
	4	0	0	1	5	3	15	
	5	10	50	13	65	14	70	
5.	1	2	10	2	10	3	15	0
	2	1	5	2	10	6	30	
	3	2	10	0	0	0	0	
	4	1	5	3	15	8	40	
	5	5	25	6	30	7	35	
6.	1	4	20	4	20	5	25	0
	2	2	10	9	45	5	25	
	3	10	50	6	30	10	50	
	4	1	5	1	5	6	30	
	5	3	15	6	30	11	55	
7.	1	13	65	15	75	15	75	0
	2	3	15	4	20	4	20	
	3	10	50	10	50	13	65	
	4	3	15	7	35	6	30	

* Items marked "0" have a higher per cent of errors in papers of the lower cases than in papers of the upper cases.

TABLE X (Continued)

		Upper 20 Cases		Middle 20 Cases		Lower 20 Cases		
		No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	
	5	7	35	12	60	12	60	
8.	1	0	0	1	5	3	15	0
	2	0	0	1	5	4	20	
	3	3	15	5	25	9	45	
	4	2	10	1	5	2	10	
	5	15	60	2	55	5	25	
9.	1	3	15	5	25	9	45	0
	2	8	40	9	45	10	50	
	3	2	10	2	10	6	30	
	4	1	5	1	5	3	15	
	5	7	35	5	25	5	25	
Part II Item								
1.	1	0	0	0	0	1	5	0
	2	0	0	1	5	0	0	
	3	0	0	0	0	5	5	
2.	1	1	5	1	5	2	10	0
	2	0	0	0	0	1	5	
	3	2	10	3	15	1	5	
3.	1	0	0	0	0	1	5	0
	2	0	0	0	0	0	0	
	3	0	0	0	0	1	5	
4.	1	0	0	0	0	0	0	0
	2	0	0	0	0	3	15	
	3	0	0	0	0	1	5	
5.	1	0	0	0	0	0	0	0
	2	0	0	3	15	1	5	
	3	0	0	1	5	0	0	
6.	1	0	0	0	0	1	5	
	2	0	0	1	5	1	5	
	3	0	0	0	0	1	5	
7.	1	0	0	0	0	0	0	
	2	10	50	13	65	11	55	0
	3	3	15	3	15	0	0	
8.	1	0	0	0	0	1	5	0
	2	1	5	1	5	1	5	
	3	0	0	0	0	0	0	
9.	1	2	10	10	50	5	25	0
	2	1	5	0	0	1	5	
	3	0	0	0	0	3	15	
10.	1	1	5	3	15	3	15	0
	2	1	5	0	0	3	15	
	3	3	15	6	50	5	25	

TABLE X (Continued)

	Upper 20 Cases		Middle 20 Cases		Lower 20 Cases		
	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	
11. 1	0	0	0	0	0	0	
2	3	15	0	0	1	5	
3	0	0	4	20	7	35	0
12. 1	1	0	1	5	1	5	
2	2	10	1	5	2	10	
3	0	0	1	5	1	5	0
13. 1	0	0	0	0	1	5	
2	0	0	0	0	0	0	
3	0	0	0	0	2	10	
14. 1	0	0	4	20	2	10	0
2	1	5	0	0	0	0	
3	4	20	2	10	8	40	
15. 1	0	0	1	5	0	0	
2	0	5	2	10	3	15	
3	6	30	11	55	7	35	0
16. 1	2	0	1	5	15	15	
2	8	10	0	0	1	5	0
3	0	40	7	35	9	45	
17. 1	0	0	2	10	2	10	
2	0	0	3	15	0	0	
3	0	0	3	15	12	60	0
18. 1	0	0	0	0	1	5	0
2	1	5	2	10	3	15	
3	4	20	9	45	12	60	
19. 1	2	10	3	15	0	0	
2	0	0	0	0	2	10	
3	0	0	0	0	1	5	0
20. 1	0	0	0	0	0	0	
2	0	0	0	0	0	0	Y*
3	0	0	0	0	0	0	
21. 1	0	0	6	30	4	20	
2	0	0	0	0	0	0	
3	0	0	2	10	4	20	
22. 1	4	20	10	45	7	35	0
2	0	0	0	0	0	0	
3	3	15	4	20	4	20	
Part III Item 1	1	5	1	5	2	10	0

* Items marked "Y" show no differentiation among the three levels of cases.

TABLE X (Continued)

	Upper 20 Cases		Middle 20 Cases		Lower 20 Cases		
	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	
2	6	30	14	70	12	60	0
3	6	30	11	55	11	55	0
	10	50	12	60	9	45	X**
4	9	45	9	45	10	50	0
5	6	30	9	45	10	50	0
6	6	30	16	80	11	55	0
7	7	35	16	80	15	75	0
8	1	5	5	25	6	30	0
	1	5	6	30	10	50	0
9	12	60	15	75	14	70	0
	12	60	14	70	13	65	0
10	1	5	8	40	7	35	0
	2	10	9	45	9	45	0
	0	5	10	50	9	45	0
	0	15	11	55	9	45	0
11	3	15	8	40	12	60	0
12	10	50	15	75	18	90	0
13	1	5	4	20	10	50	0
	0	0	7	35	7	35	0
14	7	35	12	60	13	65	0
	7	35	12	60	13	65	0
15	8	40	12	60	10	50	0
16	14	70	13	65	13	65	X
	6	30	0	0	10	50	0
17	3	15	1	5	9	45	0
	2	10	5	25	9	45	0
18	9	45	17	85	11	55	0
19	11	55	14	70	14	70	0
20	5	25	14	70	14	70	0
Part IV Item							
1	0	0	0	0	0	0	Y
2	1	5	5	25	4	20	0
3	0	0	0	0	0	0	Y
4	7	35	15	75	13	65	0
5	5	25	13	65	14	70	0
6	1	5	2	10	5	25	0
7	0	0	0	0	5	25	0
8	1	5	3	15	4	20	0

** Items marked "X" show a high per cent of errors in papers of the upper cases than in papers of the lower cases.

TABLE X (Continued)

	Upper 20 Cases		Middle 20 Cases		Lower 20 Cases		
	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	No. of Errors	Per Cent of Errors	
9	3	15	6	30	14	70	0
10	3	15	3	15	7	35	0
11	0	0	5	5	5	25	0
12	0	0	2	10	5	25	0
13	0	0	1	5	3	15	0
14	6	30	7	35	10	50	0
15	0	0	1	5	8	40	0
16	1	5	2	10	4	20	0
17	0	0	4	20	9	45	0
18	2	10	5	15	4	20	0
19	0	0	10	10	4	20	0
Part V Item							
1	0	0	0	0	2	10	0
2	0	0	5	5	4	20	0
3	1	5	2	10	3	15	0
4	4	20	2	10	5	25	0
5	3	15	5	25	4	20	0
6	1	5	1	5	2	10	0
7	0	0	2	10	4	20	0
8	6	25	3	15	9	45	0
9	3	15	3	15	6	30	0
10	0	0	0	0	5	25	0
11	4	20	8	40	6	30	0
12	5	25	10	50	11	55	0
13	4	20	5	25	4	20	Y
14	8	40	11	55	8	40	Y
15	5	25	5	25	12	60	0
16	7	35	11	55	13	65	0
17	8	40	11	55	9	45	0
18	3	15	8	40	7	35	0
19	18	90	17	85	19	95	0
20	13	65	14	70	12	60	X
21	12	60	14	70	15	75	0
22	12	60	13	65	15	75	0
23	12	60	14	70	16	80	0
24	8	40	9	45	11	55	0
25	1	5	1	5	5	25	0

APPENDIX B

FINAL TEST

Form A
Page 1

FOODS

Selection - Preparation - Serving

Name_____
Date of Birth--Month_____
Day_____Year_____
Age_____
School_____Grade____
Check ( ) number of semesters in "Foods" which you have completed--1____2____3_____

	Number correct	Perfect score
Part I		25
Part II		22
Part III		17
Part IV		24
Part V		32
Total		120

Grade_____

Part I

Working Habits in the Home and Laboratory

Directions: Each of the following statements contains more than one correct answer. Underline the ones which are correct and list the letters in the blank in the right-hand margin.

Example: The coldest part of the refrigerator is the best place for storing: ..... B, C, E
(A) Fruits
(B) Eggs
(C) Meats
(D) Vegetables
(E) Milk

1. In washing dishes which have been used for a meal, results are better if you wash them: . _____
(A) Under the tap
(B) In luke warm water
(C) In soapy water as hot as is comfortable for the hands
(D) In luke warm soapy water
(E) Then rinse in very hot water

2. Dishes should be prepared for washing by: ... _____
(A) Scraping all dishes
(B) Stacking like dishes together
(C) Soaking dishes which have contained mixtures of egg, flour, or milk in cold water
(D) Soaking in cold water dishes which have

Form A
Page 2

Part I (continued)

contained sugar or sirup mixtures
(E) Stacking dishes on the right-hand side of the washing pan

3. To observe good laboratory standards a girl must: ..... _____
(A) Have an apron that is large enough to protect her dress
(B) Have her hair under net or head-band
(C) Keep her handkerchief in the desk drawer
(D) See that all used dishes and utensils are neatly piled
(E) Keep her working space clean and neat

4. Several points to remember in using an ice refrigerator are: ..... _____
(A) Keep it clean and dry
(B) Keep it well iced
(C) Place food wrapped in paper on top of ice
(D) Keep door tightly closed
(E) Place hot food in refrigerator to cool

5. In order to become an efficient worker one should: ..... _____
(A) Assemble all materials and equipment for a piece of work before work is started
(B) Select tools which are most efficient for the work to be done
(C) As far as possible do all work involving one type of motion before changing to another
(D) Realize that saving time is the most important factor in any piece of work
(E) Put out of the way any materials and equipment no longer needed in a piece of work

6. In measuring flour: ..... _____
(A) Sift before measuring
(B) Fill measuring cup, then cut through with knife
(C) Shake measuring cup after filling with flour
(D) Lift by tablespoons and pile lightly in measuring cup
(E) After filling measuring cup, level with a spatula or knife

7. Eggs will spoil easily if they are not cared for properly. They must be: ..... _____
(A) Washed before storing in the refrigerator

Form A
Page 3

Part I (continued)

(B) Kept with other foods
(C) Kept in a cool dry place
(D) Kept away from foods with strong odors
(E) Kept at room temperature

8. Bacteria multiplies rapidly in milk. In order to retard this and prevent bacteria entering the milk after delivery: ..... _____
   (A) Milk should be refrigerated at forty-five to fifty degrees
   (B) The top of the milk bottle should be washed and wiped before pouring milk
   (C) Milk should be kept at room temperature
   (D) If all milk is not poured from bottle, cover with tight fitting cap
   (E) Pour back into the bottle milk which has not been used

Number correct Part I

Part II

Choosing and Preparing Food for Health

Directions: Each of the following statements may be completed in more than one way. In each group one answer is better than the rest. Underline the best answer and place the letter in the blank in the right-hand margin.

Example: The bran coats of cereal contain: ..... B
   (A) The starch part of the grain
   (B) The layers of fiber or cellulose
   (C) The part from which the grain sprouts

1. When planning the menu for breakfast, the most important factor to consider is: ..... _____
   (A) Variety
   (B) Food values
   (C) Cost
2. It is necessary to wash fresh fruit before using in order to: ..... _____
   (A) Improve its keeping qualities
   (B) Remove the dirt and the poison substances used in spraying
   (C) Improve the flavor
3. Of the combinations listed the best breakfast to select for the school boy or girl would be: _____

Form A
Page 4

Part II (continued)

(A) Stewed prunes, cereal, toast
(B) Stewed prunes, cereal, milk, toast
(C) Stewed prunes, griddle cakes, soft cooked egg

4. In selecting whole-grained cereals for breakfast it is best to choose them because they are: ..... ____
(A) The most easily prepared cereals
(B) Good sources of minerals, vitamins and cellulose
(C) Excellent sources of building and repairing food

5. To make a selection of protein foods to substitute for meat in the diet it would be best to select: ..... ____
(A) Peas, beans, carrots
(B) Cheese, eggs, milk
(C) Bread, gelatin, rice

6. Good fruits to select for jelly making are: ____
(A) Peaches
(B) Currants
(C) Pears

7. The most desirable way of cooking cereal for breakfast is: ..... ____
(A) Add the cereal to boiling, salted water. Boil five to ten minutes directly over flame, steam in double-boiler
(B) Add cereal to water, cook one hour
(C) Add cereal to cold water, boil ten minutes, steam thirty minutes

8. When making cocoa, the mixture of cocoa, sugar and water should be boiled before adding the milk because it: ..... ____
(A) Cooks the starch in the cocoa
(B) Blends the cocoa with the sugar
(C) Gives a better flavor to the cocoa

9. In muffins we seek to avoid tunnels. They are apt to appear because: ..... ____
(A) Over mixing has developed gluten-like strands in the batter
(B) Too hot an oven is used in baking
(C) Of using double-acting baking powder

10. The elasticity of the dough is necessary for making good yeast bread and is due to: ..... ____
(A) The use of soft wheat which produces flour rich in starch

Form A
Page 5

Part II (continued)

(B) The use of hard wheat flour which is rich in gluten
(C) The yeast which produces carbon dioxide

11. From the foods listed the best lunch to choose would be: ..... _____
(A) Potato salad, baked beans, tapioca pudding
(B) Creamed vegetable doup, sandwich, fruit salad
(C) Meat balls, gravy, potato, ice-cream

12. To thicken one cup of milk to make a medium white sauce for creaming vegetables use: ... _____
(A) Two tablespoons of flour
(B) Three to four tablespoons of flour
(C) One tablespoon of flour

13. If pieces of fruit or vegetable are to be molded in jello it is best to add them when the jello mixture is: ..... _____
(A) Cool and in liquid condition
(B) Dissolved and is warm
(C) Cool and slightly stiff

14. Lettuce and tomatoes are desirable vegetables to include in the diet because they : ..... _____
(A) Give energy
(B) Promote growth
(C) Build fatty tissue

15. Eggs are most easily digested when they are: _____
(A) Cooked in boiling water
(B) Cooked below the boiling temperature
(C) Baked at a high temperature

16. The tough connective tissue of less tender cuts of meat is softened: ..... _____
(A) By heating meat for some time in water, thereby forming gelatin
(B) By applying dry heat
(C) By searing

17. The tenderness or toughness of meat depends upon: ..... _____
(A) The amount of extractives in the meat
(B) How much the muscle has been used during the life of the animal
(C) The amount of complete protein present in the meat

18. In order to retain the flavor and food value of mild flavored vegetables, such as carrots, cook in: ..... _____
(A) Large amount of boiling water in an un-

Part II (continued)

covered saucepan
(B) Small amount of boiling water in covered saucepan
(C) Large amount of cold water in an uncovered saucepan

19. Cocoa may be substituted for chocolate in a recipe by the use of: ..... _____
(A) Five to six tablespoons of cocoa to one square of chocolate
(B) Three to four tablespoons of cocoa to one square of chocolate
(C) Four teaspoons of cocoa to one square of chocolate

20. In order to modify the strong flavor of cabbage: ..... _____
(A) Boil in a large amount of water in an uncovered kettle
(B) Steam
(C) Boil in a small amount of water in an uncovered kettle

21. In order to preserve the green color in vegetables: ..... _____
(A) Cook in uncovered kettle
(B) Add vinegar to the cooking water
(C) Cook in small quantity of water

22. One way to control the growth of micro-organisms is: ..... _____
(A) Keeping foods moist
(B) Sterilizing foods
(C) Sprinkling foods with salt

Number correct _____

Part II

Part III

Etiquette Connected with Serving and Eating

Directions: For each phrase or group of words in column "B" select from column "A" the answer which is most closely related to it. Use the answer from column "A" only once.

Example: Column "A"	Column "B"
(A) Neighbor	1. If uncertain about correct procedure at the table watch ..... 1. B
(B) Hostess	
(C) Host	

Form A
Page 7

Part III (continued)

Column "A"	Column "B"	
(A) Low bowl	1. Amount of space allowed each person at the table	1.__
(B) From the right		
(C) Good posture	2. The style of serving where food is placed on individual dishes and passes	2.__
(D) Lay unfolded on the table		
(E) Guest	3. The first person to sit down at the table	3.__
(F) Twelve to fifteen inches	4. Articles placed one inch from the edge of the table	4.__
(G) Silverware		
(H) Outward from the plate	5. Used for crumbing the table	5.__
(I) To the top	6. For a dinner the table should be covered with	6.__
(J) From the left of the chair	7. Water glasses are filled ...	7.__
(K) Russian	8. In setting the table the knife blade is turned	8.__
(L) From the left of the person	9. Styles of table service suitable for home serving without a maid	9.__
(M) Fold	10. Remove most dishes from the	10.__
(N) Doiles	11. Be seated at the table from	11.__
(O) Three-fourths full	12. Napkins at the end of meal if you are a member of the family	12.__
(P) Fingers	13. An article placed at left of forks	13.__
(Q) Toward the plate	14. Aids good looks and good digestion	14.__
(R) Hostess		
(S) Twenty to twenty-four inches	15. Firm cake may be eaten with	15.__
	16. Used to deaden the noise of dishes at the table	16.__
(T) An all-over white cloth	17. Flowers for the dining table arranged in	17.__
(U) Compromise or family		
(V) Napkin		
(W) Napkin and plate		
(X) Pleasant conversation		
(Y) Table-pad		
(Z) Tall glass container		

Number correct ____Part III

(Over for Part IV)

Form A
Page 8

Part IV

How to Buy Foods in Reference to Income

Directions: Some of the following statements are true and some are false. Encircle the "T" if the statement is true. Encircle the "F" if the statement is false.

Example: 1. A buyer should not allow a clerk to pick out peaches ..... 1. T F

1. Plan menus so that the food needed will be that which is in season ..... 1. T F
2. A budget is a plan for spending the income ... 2. T F
3. Purchase graded peas to use for soups ..... 3. T F
4. One should not handle perishable products while shopping ..... 4. T F
5. Perishable foods are more expensive than non-perishable supplies ..... 5. T F
6. Each food purchased offers a different problem in selection ..... 6. T F
7. In buying potatoes one should select deep-eyed ones ..... 7. T F
8. Cereals put up in packages cost less than those sold in bulk ..... 8. T F
9. Lightness in weight is an indication of good quality in citrus fruits ..... 9. T F
10. For use in making salad it is necessary to buy extra large perfectly shaped fruit put up in heavy sirup ..... 10. T F
11. The most expensive canned peas are large and uniform in size ..... 11. T F
12. The shell of a fresh egg is smooth and shiny . 12. T F
13. The cost of a food is a good indication of its food value ..... 13. T F
14. Buy as many articles as possible by weight ... 14. T F
15. Oranges and grapefruit are most plentiful during the summer months ..... 15. T F
16. Bleached lettuce leaves contain more vitamin than green leaves ..... 16. T F
17. The type of store you shop at has no effect on the price of food ..... 17. T F
18. Families with moderate incomes should spend about one-fourth of the income for food ..... 18. T F
19. Included on the label of the can is the size of the can ..... 19. T F
20. Tough cuts of meat are as nutritious as tender cuts of meat ..... 20. T F
21. High grade beet sugar can be used as effective-

Form A
Page 9

Part IV (continued)

ly in every way as high grade cane sugar ..... 21. T F
22. The law requires that the grade of the product be on the label ..... 22. T F
23. Prepared biscuit and griddle cake flours are more inexpensive than those prepared at home . 23. T F
24. The Federal Food and Drugs Act specifies what substances in food are injurious ..... 24. T F

Number correct _____ Part IV

Part V

How Food Functions in the Body--Relation of Food to Health

Directions: In the blanks at the right-hand side of the statements write the number, word, or words that best complete the statements.

Example: The values of foodstuffs which can be measured by calories are: 1.carbohydrates 2.proteins 3.fats

1. For health one should drink at least_____ glasses of water daily ..... 1._____
2. The nourishing materials contained in foods are known as_____..... 2._____
3. Proteins are classified into two classes namely_____and_____..... 3._____
4. Science has made it possible to irradiate foods so that they may be used as a source of_____, which helps to prevent rickets, a disease among children, affecting the _____..... 4._____
5. A material contained in foods which is valuable for its bulk is known as_____ 5._____
6. Proteins are made up of smaller parts known as_____..... 6._____
7. Milk is very rich in the mineral_____ 7._____
8. The amount of energy needed by an individual is influenced by the_____of the individual ..... 8._____
9. Of the foods eaten those which supply energy in the most concentrated forms are _____and_____..... 9._____

Form A
Page 10

Part V (continued)

10. For the average person sufficient protein of excellent quality will be insured if the following foods are included in the dietary _____, _____, _____, and _____..... 10. _____

11. The energy requirement of the body may be estimated in _____..... 11. _____

12. The most common indication of thyroid disturbance is _____..... 12. _____

13. The mineral elements in food that are needed by the body in large amounts are _____, _____, _____, and _____.... 13. _____

14. The thyroid gland cannot function normally unless supplied with the correct amount of _____..... 14. _____

15. Calcium is needed by the body for building _____ and _____..... 15. _____

16. Vitamin "B" resists disease of the _____ known as _____..... 16. _____

17. The best foods to use for the mid-morning or mid-afternoon lunch for an individual who is underweight are _____, _____, and _____..... 17. _____

18. In selecting a corrective diet for constipation insert the items best suited for this breakfast menu: stewed prunes, _____ cereal, _____ muffins, honey and milk... 18. _____

Number correct _____ Part V

Indicate the number of minutes it has taken you to complete this test _____ minutes.

Form B
Page 1

FOODS

Selection - Preparation - Serving

Name_____	Number correct		Perfect score
Date of birth--Month_____	Part I	_____	26
Day_____Year_____	Part II	_____	22
Age_____	Part III	_____	17
School_____Grade_____	Part IV	_____	24
Check ( ) number of semesters	Part V	_____	32
in "Foods" which you have	Total		121
completed--1_____2_____3_____			

Grade_____

Part I

Working Habits in the Home and Laboratory

Directions: Each statement contains one or more correct answers. Underline the ones which are correct and list the letter or letters in the blank in the right-hand margin.

Example: The fruits to select for jelly making should be: ..... B, C, D

(A) Overripe
(B) Underripe
(C) Rich in pectin
(D) An acid fruit
(E) Rich in protein

1. To make dish-washing sanitary and a pleasant task prepare dishes for washing in the following ways: ..... _____
   (A) Dishes scraped with dish-scraper or soft paper
   (B) Dishes used with egg, flour, milk soaked in cold water before washing .. _____
   (C) Dishes used with sugar soaked in cold water
   (D) Dishes piled to right of washing center
   (E) Dishes stacked in piles, kinds together
2. In cleaning an ice refrigerator: ..... _____
   (A) Food and ice should be taken out and racks removed
   (B) Look over left-overs and discard those which cannot be used

Form B
Page 2

Part I (continued)

(C) Wash inside of box and racks with hot soda water
(D) Pour hot soda water down drain pipe
(E) Wash inside with hot soapy water

3. A good habit to form in preparing food is: _____
(A) To use a different utensil for each food measured
(B) To wash and put away utensils used while product is cooking
(C) To use the same utensil to measure as many ingredients as possible
(D) To take time to wash the utensil after each ingredient is measured
(E) To put away food supplies and utensils as soon as product is made

4. In measuring flour: ..... _____
(A) Flour should be sifted before measuring
(B) Flour should be lifted by tablespoons into cup
(C) Flour should be cut through several times with knife
(D) Flour should be shaken down after each three or four tablespoons
(E) Flour should be leveled in the cup with a spatula

5. A student may feel that she is capable of planning, preparing, and serving a meal if she: ..... _____
(A) Saves on time at the expense of product
(B) Understands recipes as to proportions and method of procedure
(C) Understands how to make substitutions both in supplies and use of tools
(D) Understands use of tools
(E) Is able to think through recipe, collecting ingredients and utensils before beginning to work

6. The coldest part of the refrigerator is the best place for: ..... _____
(A) Eggs
(B) Milk
(C) Fruits
(D) Vegetables
(E) Meats

7. In cleaning greasy utensils select: ..... _____
(A) Cleansing powder
(B) Soap

Form B
Page 3

Part I (continued)

(C) Hot water
(D) Steel wool
(E) Dish-scraper

8. As soon as delivered a cut of fresh meat should be: ..... ____
   (A) Unwrapped
   (B) Washed in running water
   (C) Placed in refrigerator in uncovered dish
   (D) Wiped or scraped
   (E) Covered loosely and placed in refrigerator

Number correct ___ Part I

PART II

How to Choose and Prepare Food

Directions: Each of the following statements may be completed in more than one way. In each group one answer is better than the rest. Underline the best answer and place the letter in the blank in the right-hand margin.

Example: It is a good plan to include vegetables in the school lunch because they are rich in: A
   (A) Minerals
   (B) Sugar
   (C) Protein

1. A good breakfast for the high school boy or girl is: ..... ____
   (A) Tomato juice, cereal, coffee, toast
   (B) Tomato juice, milk, white toast
   (C) Tomato juice, whole-grain cereal, milk, toast
2. Fruits should be washed before using to: ..... ____
   (A) Improve flavor
   (B) Remove the dirt and poisonous substances used in spraying
   (C) Improve its appearance
3. In order to get the supply of calcium needed a child should have each day: ..... ____
   (A) One quart of milk
   (B) One-half orange
   (C) One-half cup carrots
4. Of the methods listed in preparing white sauce the best to use is: ..... ____
   (A) Add the flour to hot milk and stir in the butter

Form B
Page 4

Part II (continued)

(B) Melt the butter, add the flour, add the milk slowly
(C) Add butter to hot milk and stir in flour

5. A dish which may be used as a substitute for meat in a luncheon is: ..... ____
(A) Potato-balls
(B) Cheese and macaroni
(C) Vegetable casserole

6. In selecting fruits for jelly making select those containing: ..... ____
(A) Pectin
(B) Large amount of water
(C) Protein

7. To prepare dried fruit for breakfast it is best to: ..... ____
(A) Cover with water and boil
(B) Wash, add the sugar and water, and soak until tender
(C) Wash, cover with water, let soak for a few hours or over night, cook slowly until tender, then add sugar

8. The best method to use in cooking cereals is to: ____
(A) Add cereal to boiling, salted water, boil ten minutes directly over flame, steam over boiling water
(B) Add cereal to water, cook one hour
(C) Soak cereal in cold water and boil ten minutes

9. In order to prevent fruit from breaking up it is best to: ..... ____
(A) Make a sirup and cook fruit slowly in the sirup
(B) Cook in water
(C) Add the sugar after fruit is tender

10. In flour there is a substance called gluten necessary for making good bread. The gluten is necessary: ..... ____
(A) As a leavening agent
(B) To make an elastic dough
(C) To make a sweet bread

11. Cheese souffle is cooked at: ..... ____
(A) A moderate temperature
(B) A high temperature
(C) A low temperature

12. The white sauce which is most suitable for creaming vegetables is: ..... ____
(A) A very thick white sauce

Form B
Page 5

Part II (continued)

(B) A medium white sauce
(C) A thin white sauce

13. A baked custard is cooked until: ..... ____
(A) It sets to form a jell and is quite thick
(B) A pointed knife carefully inserted comes out clean
(C) It coats the spoon

14. In choosing vegetables valuable for their mineral content select: ..... ____
(A) Potatoes
(B) Spinach
(C) Peas

15. Milk should be heated in the double-boiler because: ..... ____
(A) It is easily scorched on direct heat
(B) Carbohydrates are destroyed
(C) Time is saved in heating

16. When making a selection of proteins for building and repairing tissue, select: ..... ____
(A) Peas, cabbage, potatoes
(B) Fish, eggs, milk
(C) Bread, gelatin, oranges

17. The way in which you cook the meat for dinner depends upon: ..... ____
(A) The cut of meat
(B) The kind of animal
(C) Animal acids found in meat

18. The flavor of strong vegetables is modified by cooking in the following way: ..... ____
(A) Steaming
(B) Cooking in small amount of boiling water
(C) Cooking in an uncovered kettle in boiling water

19. For each cup of sour milk used in making quick bread add: ..... ____
(A) One teaspoon of soda
(B) One-half teaspoon of soda
(C) Two teaspoons of soda

20. The proportion of flour to liquid in making popovers is: ..... ____
(A) One cup of flour to one cup of liquid
(B) One cup of flour to two cups of liquid
(C) One cup of liquid to two cups of flour

21. Muffins should be baked in: ..... ____
(A) A hot oven
(B) A moderate oven
(C) A slow oven

Form B
Page 6

Part II (continued)

22. The amount of baking powder to use with two cups of flour when no egg is used is: ..... ____
    (A) Two teaspoons
    (B) Four teaspoons
    (C) Three teaspoons

Number correct ____ Part II

Part III

Etiquette Connected with Serving and Eating

Directions: For each phrase or group of words in column "A" the answer which is most closely related to it and insert the letter in the blank in the right-hand margin. Use the answer from Column "A" only once.

Example:

Column "A"	Column "B"
(A) Pie (B) Bread (C) Canned fruit	1. A food eaten with the fingers ..... 1. B

Column "A"	Column "B"
(A) Decorative	1. In English style of service all food is served ..... 1.___
(B) Fifteen to nineteen inches	2. Used for tasting not sipping ..... 2.___
(C) One-half full	3. To cut firm foods .. 3.___
(D) Teaspoon	4. Amount of space for each person at table 4.___
(E) Twenty to twenty-four inches	5. When sitting down at the table, one should sit ..... 5.___
(F) A cover	6. The table decoration should be ..... 6.___
(G) Low and simple	7. All the equipment used by one person at the table is called ... 7.___
(H) Member of the family	8. Napkin left unfolded at left of cover .. 8.___
(I) From right of chair	9. Fill water glasses . 9.___
(J) Guest for only one meal	10. To the right of the cover ..... 10.___
(K) Knives are placed	11. Placed at the side of serving dish, never
(L) Serving spoon	
(M) Fork	
(N) Plate	
(O) From left of chair	
(P) After the main course	
(Q) Three-fourths full	
(R) In filling water glasses	
(S) Napkin	
(T) After the soup course	
(U) Bread and butter plate	

Form B
Page 7

Part III (continued)

Column "A"	Column "B"
(V) From the kitchen	in dish ..... 11.____
(W) At the table	12. To left of cover .. 12.____
(X) Use knife	13. At the tip of the fork ..... 13.____
(Y) Use fork	14. Do not remove from the table ..... 14.____
(Z) Water glass	15. At the tip of the knife ..... 15.____
	16. Crumb the table ... 16.____
	17. Placed next to the forks on the left .. 17.____

Number correct _____ Part III

Part IV

How to Buy Foods in Reference to Income

Directions: Some of the following statements are true and some are false. Encircle the "T" if the statement is true. Encircle the "F" if the statement is false.

Example: In observing good business ethics get your order in before the rush orders ..... T F

1. A medium sized, smooth, deep-colored, firm tomato is a desirable standard ..... 1. T F
2. Planning the grocery budget will help the housewife to balance meals ..... 2. T F
3. Because eggs vary a great deal in size, they are sorted and sold in different grades ..... 3. T F
4. Non-perishable foods are more expensive than perishable supplies ..... 4. T F
5. Transportation and season of the year do not affect the price of food ..... 5. T F
6. The same standards can be used in selecting all types of food ..... 6. T F
7. Tomatoes for home use are commonly sold in number 2½ size cans ..... 7. T F
8. In buying potatoes one should select smooth-skinned and shallow-eyed ones ..... 8. T F
9. When citrus fruits are light in weight, they are pithy and contain little juice ..... 9. T F
10. The most inexpensive canned peas are the small peas..... 10. T F

Form B
Page 8

Part IV (continued)

11. Prepared biscuit and griddle cake flours are less expensive than those prepared at home .. 11. T F
12. Prepared gelatin powders with sugar, coloring, and flavoring are more expensive than plain gelatin ..... 12. T F
13. The cost of food is an indication of its food value ..... 13. T F
14. Food advertisers appeal to health, vanity, color, and vitamin consciousness ..... 14. T F
15. Oranges and grapefruit are most plentiful during the late winter and early spring months 15. T F
16. Uncooked cereals cost less than ready-to-eat cereals ..... 16. T F
17. The cash and carry store has somewhat higher prices ..... 17. T F
18. A wise housewife buys as many articles of food by weight as possible ..... 18. T F
19. An excellent quality of canned foods is labeled "standard" ..... 19. T F
20. Beet sugar does not bring as favorable results in cookery as cane sugar ..... 20. T F
21. Included on the label of the can of vegetables or fruit is the number of servings the can contains ..... 21. T F
22. Many markets in small towns sell home-killed meats that do not come under government regulations ..... 22. T F
23. The law does not require the grade of the product to be on the label ..... 23. T F
24. The Federal Food and Drug Act forbids misbranding or adulteration of any food entering interstate commerce ..... 24. T F

Number correct _____ Part IV

Part V

How Food Functions in the Body--Relation of Food to Health

Directions: In the blanks at the right-hand side of the statement write the number, word, or words that best complete the statement.

Example: Vitamin ___ is helpful in improving the appetite ..... ___B___

1. An aid to good health is to drink at least ___

Form B
Page 9

Part V (continued)

glasses of water daily ..... 1._____

2. Foods are classified into____classes known as_____ ..... 2._____

3. The chief function of protein in the body is _____and_____muscles ..... 3._____

4. Irradiated foods may be used as a source of _____ ..... 4._____

5. The woody fiber of the plant is known as_____ and is needed in the diet because of its _____quality ..... 5._____

6. Proteins are made up of twenty to twenty-two _____ ..... 6._____

7. The mineral_____, of which milk is an excellent source, is needed by the body for building _____and_____ ..... 7._____

8. The amount of energy needed by the individual is influenced by his_____ ..... 8._____

9. Energy is supplied by_____and_____and is most concentrated in these two forms .... 9._____

10. Scurvy, a dietary disease, is caused by lack of_____which can be furnished by_____ fruits ..... 10._____

11. The____is used as a measurement of energy required by the body ..... 11._____

12. For the normal functioning of the thyroid the correct amount of_____is necessary ..... 12._____

13. Because minerals _____, _____, _____, and_____are often deficient in our diet, we need to be especially concerned about them in planning balanced meals ..... 13._____

14. The athlete who is taking systematic exercise increasing the size of his muscles needs more _____ ..... 14._____

15. The iron content of the red blood corpuscles enables the blood to carry _____to every cell of the body ..... 15._____

16. Beri-beri, a disease of the_____, is resisted

Form B
Page 10

Part V (continued)

by_____ ..... 16._____

17. In feeding babies orange-juice one supplements the_____in the milk and adds_____which is lacking in milk ..... 17._____

18. In order to increase the caloric value of the following menu for an underweight individual, insert the items needed: creamed chicken on toast, tomato and lettuce salad with_____ dressing, one slice bread with_____, ice-cream, cocoa made with_____ ..... 18._____

Number correct _____Part V

Indicate the number of minutes it has taken you to complete this test _____ minutes.

DIRECTIONS FOR ADMINISTERING AND SCORING THE FINAL TEST

For the Teacher:

1. The test consists of two Forms "A" and "B". Give Form "A" one day and Form "B" the following day.
2. Explain to the pupil that the test is divided into five parts and that each part is provided with directions and an example of how to do the items which follow.
3. At the end of each part there is a space in which to mark the number correct and on the first sheet spaces in which to list these numbers when correcting is completed. There is also a space in which to record the grade.
4. In the upper right hand corner will you please list the final grade for the pupil for this term? These grades are to assist in the correlation of this study and will be greatly appreciated.
5. The test can be corrected by students, by reading the key to them.
6. Will you please account for all tests and return them with the keys as soon as possible? (Two Weeks)

For the Pupil:

1. Pupils are to leave papers face down until all are ready to start.
2. They are to fill in the blanks on the first sheet.

Consider the class in Foods the pupil is now taking as being complete when this test is given.

3. Pupils are to note the time of beginning and finishing as there is a space at the end of the test to record the time taken to complete the test.

4. Urge pupils not to guess.

Rules for Scoring:

Part I--Mark as an error each omission or incorrect response.

Part II--Mark as an error each blank filled incorrectly or omitted.

Part III--Mark as an error each blank filled incorrectly.

Part IV--Mark as an error each one answered incorrectly.

Part V--Mark as an error each blank filled incorrectly or omitted.

SCORING KEY FOR FINAL TEST
(Form "A")

Part I

Item

1. C,E

2. A,B,C,E

3. A,B,D,E

4. A,B,D

5. A,B,C,E

6. A,D,E

Part I cont.

Item

7. C,D

8. A,B,D

Part II
Item

1. B

2. B

3. B

4. B

5. B

6. B

7. A

Part II cont.

Item

8. A

9. A

10. B

11. B

12. A

13. C

14. B

15. B

16. A

17. B

Part II cont.

Item

18. B

19. B

20. A

21. A

22. B

Continued page 98

Scoring Key (Form "A") cont.

Part III

Item	
1.	S
2.	K
3.	R
4.	G
5.	W
6.	T
7.	O
8.	Q
9.	U
10.	L
11.	J
12.	M
13.	Y
14.	C
15.	P
16.	Y
17.	A

Part IV

Item		
1.	T	F
1.	(T)	F
2.	(T)	F
3.	T	(F)
4.	(T)	F
5.	(T)	F
6.	(T)	F
7.	T	(F)
8.	T	(F)
9.	T	(F)
10.	T	(F)
11.	T	(F)
12.	T	(F)
13.	T	(F)
14.	(T)	F
15.	T	(F)
16.	T	(F)
17.	T	(F)
18.	(T)	F
19.	T	(F)
20.	(T)	F
21.	(T)	F
22.	T	(F)
23.	T	(F)
24.	T	(F)

Part V

Item	
1.	Six (6) glasses
2.	Foodstuffs
3.	Complete Incomplete
4.	Vitamin D Bones
5.	Cellulose
6.	Amino Acids
7.	Calcium
8.	Activity, (age) (size)
9.	Fats Carbohydrates
10.	Milk Meat (Fish) Eggs Cheese
11.	Calories
12.	Goiter
13.	Calcium Phosphorus Iron Iodine
14.	Iodine
15.	Teeth Bones
16.	Nerves Beri-beri
17.	Milk Eggs Fruit juices (fruits)
18.	Whole-grain Bran or (whole grain)

SCORING KEY FOR FINAL TEST
(Form "B")

Part I

Item	
1.	A,B,D,E
2.	A,B,C,D
3.	B,C,E
4.	A,B,E
5.	B,C,D,E
6.	A,B,E

Part I cont.

Item	
7.	B,C
8.	A,D,E

Part II

Item	
1.	C
2.	B
3.	A
4.	B
5.	B
6.	A
7.	C

Part II cont.

Item	
8.	A
9.	A
10.	B
11.	A
12.	B
13.	B
14.	B
15.	A
16.	B
17.	A

Part II cont.

Item	
18.	C
19.	B
20.	A
21.	A
22.	B

Continued on page 100

Scoring Key (Form "B") continued

Part III

Item	
1.	W
2.	D
3.	X
4.	E
5.	O
6.	G
7.	F
8.	J
9.	Q
10.	K
11.	L
12.	M
13.	U
14.	R
15.	Z
16.	P
17.	S

Part IV

Item	
1.	(T) F
2.	(T) F
3.	(T) F
4.	T (F)
5.	T (F)
6.	T (F)
7.	(T) F
8.	(T) F
9.	(T) F
10.	T (F)
11.	T (F)
12.	(T) F
13.	T (F)
14.	(T) F
15.	(T) F
16.	(T) F
17.	T (F)
18.	(T) F
19.	T (F)
20.	T (F)
21.	T (F)
22.	(T) F
23.	(T) F
24.	(T) F

Part V

Item	
1.	Six (6)
2.	Six (6) Foodstuffs
3.	Building Repairing
4.	Vitamin D
5.	Cellulose Laxative
6.	Amino acids
7.	Calcium Teeth Bones
8.	Activity (age) (size)
9.	Fats Carbohydrates
10.	Vitamin C Citrus fruits
11.	Calorie
12.	Iodine
13.	Calcium Phosphorus Iron Iodine
14.	Protein
15.	Oxygen
16.	Nerves Vitamin B
17.	Calcium Vitamin C
18.	Mayonnaise Butter Whole milk