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A PRETEST AND QUESTIONNAIRE TO DETERMINE STUDENT LEVELS OF
ACHIEVEMENT PRIOR TO ENROLLMENT IN A BEGINNING CLOTHING
CONSTRUCTION COURSE AT SOUTH DAKOTA STATE COLLEGE

BY

ALEXANDRA O. SEMENIUK

A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Science in Home Economics
Education, South Dakota State College
of Agriculture and Mechanic Arts

August, 1961

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**A PRETEST AND QUESTIONNAIRE TO DETERMINE STUDENT LEVELS OF
ACHIEVEMENT PRIOR TO ENROLLMENT IN A BEGINNING CLOTHING
CONSTRUCTION COURSE AT SOUTH DAKOTA STATE COLLEGE**

This thesis is approved as a creditable, independent investigation by a candidate for the degree, Master of Science, and acceptable as meeting the thesis requirements for this degree; but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Advisor

Head of the Major Department

ACKNOWLEDGMENTS

The author expresses her appreciation to Dr. Lilyan Galbraith, Professor and Head of Home Economics Education at South Dakota State College for the guidance she gave in directing this study. The author also extends her thanks to other staff members at South Dakota State College: to Miss Lillian Lund, Professor and Acting Head of Textiles and Clothing for critically reading the pretest and thesis and making valuable suggestions, to Miss Eleanor Johnston, Associate Professor of Home Economics Education and to Mr. Marvin Scholten, Assistant Professor of Education for their assistance and advice in reviewing the pretest items and for other helpful suggestions.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
REVIEW OF LITERATURE	3
PROCEDURE	9
Preparation of Questionnaire	9
Preparation of Pretest	9
Administration of Pretest	14
Pretested Students in the Beginning Clothing Construction Course	15
Retesting the Pretest	15
Administering the Final Questionnaire	15
Grading Students' Work	16
Analysis of Pretest	17
RESULTS	19
Response to Questionnaire	19
Scores Made on Pretest	20
Item Difficulty of Pretest	22
Item Discrimination of Pretest	23
Reliability of Pretest	26
Validity of Pretest	32
Response to Final Questionnaire	37
DISCUSSION	39
SUMMARY AND CONCLUSIONS	42
LITERATURE CITED	45
APPENDICES	47

LIST OF FIGURES

Figure	Page
I. Scattergram of retest scores on pretest scores of sixty-one students from which three groups were evident: groups A and B, represented by calculated significant linear regressions, and group C, by a line representing equal scores on the retest and the pretest	28

LIST OF TABLES

Table		Page
1.	Item Distribution and Proportion of Multiple-Choice and True-False Items for Five Areas of Pretest	12
2.	Questionnaire Responses of Women Classified in Upper, Middle and Lower Groups According to Scores Made on Pretest	21
3.	Possible Scores with Mean Scores and Standard Deviations as Obtained in Five Areas of Clothing and Whole Pretest . .	22
4.	Average Difficulty Index of Test-Objective Items in Five Areas of Clothing Construction	23
5.	Frequency Distribution of 116 Discrimination Indices Derived From the Pretest	24
6.	Frequency Distribution of 57 Nondiscriminating Items	25
7.	Group A Scores on Pretest, Retest of Pretest, Raw SCAT Score, Years of High School and 4-H Clothing Experience, Garment Grade, Percent Correct on Written Tests, and Final Grade	29
8.	Group B Scores on Pretest, Retest of Pretest, Raw SCAT Score, Years of High School and 4-H Clothing Experience, Garment Grade, Percent Correct on Written Tests, and Final Grade	30
9.	Pretest Means and Standard Deviations of Women Classified According to Years of High School Homemaking, Years of 4-H and Total Years of Clothing Experience (High School & 4-H).	33
10.	Pretest Means and Standard Deviations for Women Classified According to Number of Garments Made, Extent of Making Own Clothes, and Raw Scores on SCAT Test	34
11.	Correlation Coefficients (r) Between Pretest Scores and Course Grades	37

LIST OF APPENDICES

Appendix	Page
A. Clothing Construction Experience Questionnaire	48
B. Test for Beginning Clothing Construction	51
C. Copy of I.B.M. Form Answer Sheet	66
D. Final Questionnaire	68
E. Difficulty Index, Discrimination Index and Types of Test Items	70
F. Scores Made on Pretest, Retest of Pretest, Written Course Tests, Garments Made, Final Grade and SCAT Raw Scores	74

INTRODUCTION

As an instructor in the Beginning Clothing Construction classes at South Dakota State College, the writer became aware of the varying amounts and kinds of clothing experiences of students enrolled in the course, and felt a need for determining student achievement levels to provide optimum learning experiences for all.

All incoming freshman Home Economics students were placed in Beginning Clothing Construction sections regardless of their past experience or training. Students with no experience were grouped with those having little or a great deal of clothing experience. The practice does not encourage the weaker students to learn, nor does it motivate or challenge the stronger ones to excel. Repetitious learnings may result in an unfavorable attitude toward a course, whereas gaps in knowledge are not always apparent without an evaluative device to focus them. Knowledge of past experience and subject matter weaknesses and strengths are required for more effective guidance of students and for necessary course revision to meet the specific needs of students. Accordingly, a study was undertaken with the following objectives:

1. To develop a valid pretest in the area of clothing construction based upon facts, principles (or generalizations) and their application which might be used:

- (a) to determine individual and group weaknesses and strengths in clothing construction and to determine individual and class levels of achievement prior to instruction,

- (b) to aid the instructor in wiser selection of course content,

and provide clues as to the amount of emphasis which should be placed on topics in the various areas of clothing construction,

(c) to possibly aid in classifying freshmen in the Beginning Clothing Construction course.

2. To prepare a questionnaire which would provide information about the students' past experiences in clothing construction. This would be used for more effective guidance of students in meeting their needs.

3. To obtain students' opinions at the end of the term as to whether they felt the course was on a sufficiently challenging level, and to use the results in future course planning.

REVIEW OF LITERATURE

Pretests in general have been valuable to teachers and students in (a) placing students into homogeneous groups, (b) exempting students from certain courses, and (c) gaining background information about the student to determine the level at which instruction should begin. Pretests have been given to incoming freshman Home Economics women in clothing in a number of colleges and universities.

At Purdue University, Henkel and Seronsy¹ reported on dividing students into advanced or beginning groups of an introductory course in Clothing and Textiles. The factors used for dividing were:

- (1) The Home Economics Orientation Test in Textiles and Clothing constructed by Textiles and Clothing staff members
- (2) The American Council on Education Psychological Examination
- (3) The Experience Checklist (Numerical scores assigned to each item gave a quantitative measure of experience.)

All three measurements were administered prior to instruction. Raw scores were converted to standard T-scores, with double weighting given to the achievement score in the orientation test. A total T-score was gained by adding all T-scores. The total T-score was used for placing students in advanced or beginning sections.

Course grades were correlated with the three factors used for divisioning and with the total T-score. The course grades were

¹Jean Henkel and Louise Baird Seronsy, "First Course in Clothing and Textiles," Journal of Home Economics, Vol. 43, March 1951, pp. 195-197.

significantly related to all factors except the score on the Experience Checklist. Thus it showed that achievement as measured by a reliable test was more basic in predicting course grades than was a record of previous learning experiences. The results of the psychological test were equally strong in predicting course grades. A highly significant improvement in attitude toward the introductory course was found among divisioned students as compared to non-divisioned students of the previous year.

In another study at the same university, Wright and Henkel¹ attempted to find out the effect past clothing experience had on achievement in a freshman clothing course. Achievement included (1) knowledge as measured by pencil and paper tests, (2) skill as measured by actual sewing construction, and (3) attitudes as measured by students' opinions. An objective type of pretest-retest was developed to measure knowledge gained during the semester. The test was valid to the extent of a 0.54 correlation coefficient between the pretest score and course grade. The same test was administered at the end of the school term and the correlation coefficient between that score and course grade was 0.67. Test reliability coefficient by the split-forms method was 0.83, corrected to 0.91 by the Spearman-Brown Prophecy method. Students were selected for "advanced" and "intermediate" classes on the basis of good work shown on a practical two-hour pretest administered during the orientation

¹Janet Smith Wright and Jean Henkel, "Achievement in Clothing Construction," Journal of Home Economics, Vol. 43, October 1951, pp. 626-628.

period, and were encouraged to select more difficult problems for the semester's work. All other students were placed in "beginners" groups. Ninety-two per cent of the students were in favor of being divided into the three classes. Their attitude toward the clothing construction course rated well above the indifference level measured on the Silance-Remmers Form A scale. This was in sharp contrast to the indifferent attitude current among students when there was no divisioning. The correlation between course grade and previous clothing experience in high school or 4-H club work, resulted in a corrected contingency value of + 0.52. Most students claimed their past clothing experiences were either helpful or most helpful in the clothing construction course.

In a survey, Collins¹ sent a questionnaire to 71 selected colleges and universities concerning the use of pretests and determined that 29 per cent of those replying used pretests for placement purposes while 39 per cent used pretests for exemption purposes. Of 32 institutions using pretests for placement or exemptions purposes, 13 felt the test served the intended purpose, nine felt it served it partially, and two felt it did not serve its purpose. The tests were of the written objective type in 22 schools, of the written objective plus practical type in seven, and of the interview or checklist type to learn the students' previous experience in three schools. Most schools gave pretests to all

¹Mildred Hart Collins, "Pretests for Placement in Beginning Clothing Courses at Southern Illinois University," unpublished Master's Thesis, Southern Illinois University Library, 1957, p. 19.

students while several gave them only to transfer students or to those expressing an interest in them.

Collins formulated a multiple-choice type pretest covering the subject matter included in a beginning clothing course as taught at Southern Illinois University. A two hour practical test was given. On the basis of the results, she felt students could be sectioned according to common weaknesses. Those making high scores on both the objective and practical tests should be sectioned together. She stated the pretest gave students a preview of the course content and of their own deficiencies and would be helpful in guiding the students. She did not explore the effect sectioning would have on student achievement. The reliability and validity of the pretest were not determined.

In 1959, Hoskins¹ developed a pretest at New Mexico State University on broad generalizations and basic principles of clothing construction in an effort to determine areas of strength and weakness of students tested. High school students comparable in experience to incoming college freshmen took the test. Students enrolling in a first clothing course at New Mexico State University were found to possess relatively high levels of skill, but frequently lacked understanding of basic principles or generalizations. Separate area scores and a composite score helped diagnose area strengths and weaknesses. In the 35 most discriminating items, 24 were multiple choice and nine were true-false

¹Mercedes Nelson Hoskins, "Construction of a Basic Clothing Pretest for Use in the Colleges and Universities in New Mexico," New Mexico State University, University Park, New Mexico, May 1959, p. 2.

items. She felt a practical test should accompany the written one for exemption purposes. The pretest was considered valuable in course planning, in increasing student motivation, and might aid in placing transfer students.

A pretest to determine the competencies of students entering the College of Home Economics in Karachi, Pakistan, was developed by Gaya.¹ The objective pretest was limited to the principles of clothing construction and to the use and care of the sewing machine. The test was tried on Pakistani graduate women students at the University of Oklahoma for interpretation of terms. Gaya recommended continuous revisions of the pretest and questionnaire and the inclusion of other phases of clothing. She stated the pretest eventually would be used to place or exempt students in Pakistan when home economics became more extensively developed there.

At Iowa State College in 1955, Lamborn² determined from a checklist the types of problems students recognized in care, selection and construction of clothing. The author wished to know the relationship between the number and type of area problems, and the students' past experience. Items that 50 per cent of the women checked as "recognized

¹Nargis Ahmed Gaya, "Development of a Pretest for Clothing Construction for the first Year Students to be Used in the College of Home Economics in Karachi," an unpublished Master's Thesis, Oklahoma State University, Oklahoma State University Library, 1960, pp. 44-45.

²Amy Lucille Lamborn, "Previous Experience Related to Clothing Problems of Women in Elementary Construction Course at Four Liberal Arts Colleges," unpublished Master's Thesis, Iowa State College, Iowa State College Library, Ames, Iowa, 1955, pp. 73-74.

problems" were selected for further study. There were 37 such items and 34 dealt with construction. Three dealt with care of clothes. None dealt with clothing selection. The number of clothing construction problems selected by the women was most significantly influenced by the amount of past experience. The author recommended sectioning, if feasible, on the amount of previous education and experience, and recommended different learning experiences for women with different amounts of experience.

Glenn¹ studied the fitting problems of an unselected group of 53 college women in a beginning clothing construction course. Commercial patterns were used. The objective of the study was to determine the fitting problems and their frequency, and from this to decide whether a knowledge of pattern fitting and alteration would be valuable to the average person in making clothes. It was found that each girl had some alterations to make on her pattern or garment. Each problem was caused by individual variations from the standard measurements and the average erect posture on which pattern companies based their pattern slopers. She concluded that a need for knowledge of pattern fitting and alteration was apparent as all 53 women required some changes in their garments.

¹Maryalice Kelly Glenn, "A Survey of the Fitting Problems of 53 College Girls Using Commercial Patterns in Beginning Construction Classes," an unpublished Master's Thesis, East Lansing Michigan, Michigan State College Library, 1953.

PROCEDURE

Preparation of Questionnaire

A questionnaire shown in Appendix A, was developed to gain the following information about students:

1. Number of years of high school homemaking experience.
2. Number of years of 4-H experience in the clothing area.
3. Extent to which they did their own sewing, that is made none, some, or most of their own clothing.
4. Approximate number and kinds of garments made from various types of fabric.
5. Attitude of students toward sewing, such as liking it not at all, quite well or very well.
6. Type of sewing experience students felt was most helpful in learning to sew.

Preparation of Pretest

The pretest was based on content and objectives of the Beginning Clothing Construction course as taught at South Dakota State College. The course content was as follows:

1. Taking accurate body measurements.
2. Selecting appropriate pattern type and size for individual figure.
3. Altering patterns for satisfactory length and ease requirements.
4. Selecting fabric, interfacing, notions, sewing equipment, and

appropriate marking equipment.

5. Interpreting pattern markings, layout, and preparing fabric before cutting out garment.

6. Directional cutting, stitching and pressing.

7. Understanding sewing machine principles, adjusting machine for balanced tension, appropriate stitch length and pressure on presser foot. Caring for machine by cleaning and oiling and proper adjustments.

8. Machine stitching, temporary and permanent hand stitching, stay-stitching and understitching.

9. Making and finishing seams of various kinds, selecting appropriate hemming stitches and hem finishes.

10. Fabric problems.

11. Principles and techniques of fitting and altering garments.

12. Pressing techniques.

13. Basting, altering, stitching and pressing darts and tucks.

14. Finishing waistline seam, making belts and applying waistbands.

15. Applying zippers and plackets.

16. Binding slashed openings and applying gussets.

17. Gathering and easing fullness.

18. Bias facings and binding, collars and cuffs.

19. Setting in regulation sleeve.

20. Miscellaneous--belt-carriers, swing tacks, sewing on snaps, hooks and eyes and buttons, trimming and grading seams, reinforcement of corners and seams.

The objectives of the course were:

1. To foster optimum achievement for each individual.
2. To develop an understanding and application of the basic principles of clothing construction and selection.
3. To develop an understanding and use of the sewing machine, and of small hand-sewing equipment.
4. To develop an understanding and use of commercial patterns, of principles of pattern alteration, and the application of these principles.
5. To develop an appreciation for fine workmanship and high quality garments so they may apply this information to intelligent selection and construction of garments.
6. To develop a knowledge of construction techniques in handling at least two different types of fabrics, such as wool and wash-and-wear (resin-treated) cotton.
7. To encourage good management of time and energy and to foster continuous evaluation of all aspects of clothing.
8. To develop an understanding of principles of fitting for future selection and construction of garments.

Items testing for (a) knowledge of facts, (b) knowledge or understanding of principles or generalizations, and (c) application of facts, principles or generalizations covered the following areas:

Area I. Selecting of pattern, fabric, marking equipment, and sewing equipment.

Area II. Understanding pattern, pattern layouts.

Area III. The sewing machine, machine and hand stitches.

Area IV. Pressing, construction techniques and garment details.

Area V. Fitting garments and altering patterns.

A total of 116 items were selected for the pretest and of this number, 45 items dealt with factual information, 49 with knowledge or understanding of principles or generalizations, and 22 with the application of facts, principles or generalizations of clothing construction. The distribution and proportion of multiple-choice and true-false test items for each area of the pretest are shown in Table 1.

Table 1. Item Distribution and Proportion of Multiple-Choice and True-False Items for Five Areas of Pretest

Areas of Pretest	Multiple-Choice Items	True-False Items	Approximate % of Test
	Numbers	Numbers	
I	1-7	56-62	10
II	8-14	63-69	10
III	15-21	70-76	10
IV	22-46	77-107	55
V	47-55	108-116	15

Approximately 10 per cent of all test items were allotted to each of the first three areas of the pretest (Areas I, II and III) while Area IV had 55 per cent and Area V had 15 per cent of the total test items. Except for Area V, the proportion of items in each of the other four areas was related to the relative importance of those areas, or to the time spent

in those areas in the course. The proportion of items in Area V fell short of the emphasis placed on that area in the course for the reason that the area would be better served by a practical test.

The test was constructed according to accepted criteria for a good test, using Stecklein's¹ suggestions for writing test items. It was placed on a blue-print or grid as suggested by Schumacher.² The test contained 61 items of the true-false type and 55 of the multiple-choice type. Each area of the test contained items that could be discarded, if necessary. The items were checked by a panel of four critics and corrected for clarity of thought, possible inaccuracies in test items or key, test content, and general construction. Three critics were home economics staff members well qualified in the field of clothing and all having had experience in the area of test construction. The fourth critic was a staff member teaching tests and measurements at South Dakota State College.

The test was tried out on three high school senior girls with high school homemaking experience, who completed the test within one hour and encountered no difficulty in understanding the items. (See Appendix B for pretest)

¹John E. Stecklein, "Why Do We Test?" No. 1, "What Is A Good Test?" No. 2, "How to Write Multiple-Choice Test Items," No. 4, and "How to Write True-False Items," No. 5, Bulletin on Classroom Testing, No. 5, Bureau of Institutional Research, University of Minnesota, 1955, pp. 1-8.

²Charles Schumacher, "How to Make a Content-Objectives Test Analysis," Bulletin on Classroom Testing, Bureau of Institutional Research, No. 9, University of Minnesota, St. Paul, 1957, pp. 1-8.

Administration of Pretest

Notices were sent to all Home Economics freshman and transfer women students who would be enrolling in the Beginning Clothing Construction course, giving the date, time and testing place for the pretest. The women were informed as to the purposes of the test and questionnaire, and 75 women completed both of these on the day of winter quarter registration for the academic year 1960-1961. Five students took the test and questionnaire several days later as they were not reached previously. One student indicated she had no previous sewing experience and was not asked to complete the questionnaire or take the pretest. Eighty women with previous sewing experience completed the questionnaire and pretest.

Test administrators were instructed to record the particular test items about which the students might raise questions. No questions were raised and the pretest and questionnaire were completed by both groups within a period of 45 to 60 minutes. The questionnaire was completed before taking the test.

The response to the test items were recorded on I.B.M. Form I.T.S., 100 B 108 (See Appendix C) and were machine-scored for five area scores and for a total composite score. The total possible score was 116 since each test item received a score of one when marked correctly. Only the number of right answers was recorded. The writer later manually computed the number of wrong answers for necessary statistical analysis.

Pretested Students in the Beginning Clothing Construction Course

Of the 80 students taking the pretest, 34 enrolled in the Clothing Construction course during the winter quarter of the 1960-61 academic year while 27 enrolled in the course during the spring quarter. The remaining 19 students did not enroll in the course that year. The writer instructed the students both quarters. The 34 students enrolled during the winter quarter were scheduled in two sections of 14 and 20 each, and the 27 enrolled during the spring quarter were scheduled in two sections of 13 and 14 each.

Retesting the Pretest

During the last week of the term, the women again were given the pretest which they took prior to instruction. They were not told previously that the pretest would be given again. All the women completed the test in 45 minutes and about one half of the students completed the test in 35 minutes.

Administering the Final Questionnaire

Toward the end of the quarter a short anonymous questionnaire was given to all 64 women who took the Beginning Clothing Construction course. This number included three women who were not pretested. The women were asked to express how they felt about the course which they were now completing. (See Appendix D)

They were asked if they thought the course in Beginning Construction was "too easy", "about right" (college level), or "too difficult." Opinions were sought as to whether they liked sewing "very much", "quite

well", or "not at all." The women were asked to indicate whether they felt they had learned a "great deal," a "fair amount," or "a little."

Thirty-five women completed the questionnaire at the end of the winter quarter and 29 women at the end of the spring quarter.

Grading Students' Work

All grades earned on garments and tests were evaluated by the writer. Score sheets were used for grading the garments to provide for objectivity. Students used the same score sheets as self-evaluation learning devices while constructing their garments.

Scores made on written tests were totaled and percentage of correct answers computed. All tests, test papers, and answer sheets were returned to the instructor after the tests were discussed in class.

Since letter grades were assigned to garments constructed and also to the final grade, these were converted to a numerical value for purposes of present analysis. The following conversion formula was used:

A = 11	B-=7.5	D+=4.5
A-= 10	C+=6.5	D =4
B+= 9	C =6	D-=3
B = 8	C-=5.5	F =1

The scores made on the pretest-retest were not included in the evaluation for the final grade. Factors such as work habits, time management, use of sewing equipment, assignments completed, use of resource materials, co-operation and initiative all were considered.

The raw scores for the SCAT TEST were obtained from the Office of Student Personnel of South Dakota State College. Some scores were

missing as not all students took the tests. The SCAT scores refer to the Cooperative School and College Aptitude Tests taken by incoming freshman students. The total raw scores on the verbal and quantitative parts of the test were used for analysis.

Analysis of Pretest

The pretest was analyzed for item difficulty, item discrimination, reliability and validity. Item difficulty and item discrimination were analyzed by the U-L method suggested by Stecklein.¹ The method consisted of ranking test papers from highest to lowest total scores and separating the top 27 per cent and bottom 27 per cent from the middle 46 per cent. Responses made to each test item by the upper 27 per cent group (U group) were tallied. The same was done for the lower 27 per cent group (L group). The percentage of the upper group responding correctly to each item was computed. The same was done for the lower group. The average of the upper and lower per cent values for an item was its Difficulty Index. The difference between the two values was its Discrimination Index.

Reliability and validity estimates were derived from comparisons with other variables, using arithmetic means, standard deviations from the means, t-test for significant differences between means, and correlation coefficients. The following standard expressions represent machine

¹John L. Stecklein, "How to Make an Item Analysis of an Objective Test," Bulletin on Classroom Testing, No. 8, Bureau of Institutional Research, University of Minnesota, 1957, pp. 1-8.

calculation of these statistics¹:

$$\text{Mean} = \frac{\sum X}{N} \quad ; \quad \text{Standard deviation} = \sqrt{\frac{\sum X^2 - (\sum X)^2/N}{N - 1}}$$

$$t = \frac{M_1 - M_2}{\sqrt{\left(\frac{[\sum X_1^2 - (\sum X_1)^2/N_1] + [\sum X_2^2 - (\sum X_2)^2/N_2]}{N_1 + N_2 - 2} \right) \left(\frac{N_1 + N_2}{N_1 N_2} \right)}}$$

Correlation coefficient = r

$$r = \frac{\sum XY - (\sum X \sum Y)/N}{\sqrt{[\sum X^2 - (\sum X)^2/N] [\sum Y^2 - (\sum Y)^2/N]}}$$

¹George W. Snedecor, "Statistical Methods", 4th ed., Iowa State College Press, Ames, Iowa, 1946.

RESULTS

Response to Questionnaire

The kind and amount of clothing construction experience and attitudes of 80 women are shown in the Clothing Construction Experience Questionnaire in Appendix A.

Eighteen women had no high school homemaking experience, eight had one year and the remaining 54 had two to four years of such experience. Thirty-four women had no 4-H clothing experience, 13 had from one to three years, while 33 had four or more years of it. Seven women participated in neither high school homemaking nor 4-H work. The average number of years of high school homemaking was 1.9 and of 4-H work was 2.9.

Seventy-six women made some to all of their clothes and four made none of their clothes. Seventy-seven indicated they liked sewing "quite well" to "very well" and three women "did not like" sewing. Thirty-one thought high school homemaking was most helpful in their clothing experience, 25 thought 4-H work most helpful, while 22 thought home sewing with help was most helpful. Only two women scored other experiences as most helpful.

Thirty-four women made 0 to 29 garments, twenty-six made 30 to 59 garments, ten made 60 to 89 garments. All women had made garments from cotton, 72 had made garments from wool, 40 from blends, 38 from synthetics (Dacron, nylon), 28 from linen, 24 from rayon, and 17 from unknown fabrics. The average number of garments made from cotton was 28.2, from wool 10.4, from blends 6.4, from synthetics 3.6, from linen,

2.7, from rayon 2.1, and from unknown fabrics 2.1.

When the 80 women were ranked according to their pretest scores and divided into groups of Upper 27 per cent, Middle 46 per cent and Lower 27 per cent, as per the U-L method of Stecklein, the following contrasts were apparent, as may be seen in Table 2:

1. A higher percentage of women in the Middle and Upper groups liked sewing more than did those in the Lower group.
2. A higher percentage of women in the Upper group made most of their clothes than did those in the Middle and Lower groups.
3. About an equal percentage of women in all three groups thought high school homemaking was most helpful.
4. A higher percentage of women in the Upper group than in the Middle and Lower groups thought 4-H experience was most helpful.
5. A slightly higher percentage of those in the Lower group than in the Middle and Upper groups thought home sewing was most helpful.

Scores Made on Pretest

The individual scores made on the pretest ranged normally from a low of 47 to a high of 84 from a possible 116 points. The mean score was 65.0 and the median score was 64.5. The mean scores, standard deviations, and total possible scores for the five areas of clothing construction and the whole test are shown in Table 3. About one-half of the items were answered correctly in each of the five areas, except in area IV where slightly more than one-half of the items were answered correctly.

Table 2. Questionnaire Responses of Women Classified in
Upper, Middle and Lower Groups According to Scores
Made on Pretest

	Upper Group*	Middle Group	Lower Group	
Number and Per Cent of Women Liking Sewing				
Like Very Well	16 (73%)	25 (69%)	8 (36%)	
Like Quite Well	6 (27%)	10 (28%)	12 (55%)	
Do Not Like	0 (0%)	1 (3%)	2 (9%)	
Number and Per Cent of Women Making Own Clothes				
	Upper	Middle	Lower	
Make Most	13 (59%)	13 (36%)	4 (18%)	
Make Some	9 (41%)	23 (64%)	14 (64%)	
Make None	0 (0%)	0 (0%)	4 (18%)	
Number and Per Cent of Women Expressing Most Valuable Sewing Experience				
	Upper	Middle	Lower	Total Women
H.S. Homemaking	7 (32%)	15 (42%)	9 (41%)	31 (38.8%)
4-H Work	9 (41%)	12 (33%)	4 (18%)	25 (31.3%)
Home Sewing	5 (23%)	9 (25%)	8 (36%)	22 (27.5%)
Other	1 (4%)	0 (0%)	1 (5%)	2 (2.5%)

*Upper Group and Lower groups each consisted of 22 women and the Middle group of 36 women.

Table 3. Possible Scores with Mean Scores and Standard Deviations Obtained in Five Areas of the Pretest

	Areas of Clothing					Whole Pretest
	I	II	III	IV	V	
Possible Score	14.0	14.0	14.0	56.0	18.0	116.0
Mean	7.3	9.8	7.3	31.0	9.6	65.0
S. D.	1.5	1.7	2.0	4.5	2.1	8.2

Item Difficulty of Pretest

The Difficulty Index derived by the U-L method of Stecklein¹ for each of the 116 items in the pretest is shown in Appendix E. The average item difficulty or difficulty index for the pretest was 56.7 per cent. This was well within the range for an acceptable test. Items with a difficulty index of 80 per cent or over are considered easy whereas those below 20 per cent index difficulty are considered difficult. Test makers like to have a wide range of difficulty so as to test all levels of ability. Easy items are often placed at the beginning of a test to produce a favorable "mind set" whereas the extremely difficult ones are placed toward the end. Of the 116 items, 29 had indices above the 80 per cent value and 12 had indices below the 20 per cent value.

The average difficulty index for the test items classified according to test objectives is shown below in Table 4.

¹John L. Stecklein, op. cit., pp. 1-8.

Table 4. Average Difficulty Index of Test-Objective Items
in Five Areas of Clothing Construction

	Areas of Clothing Construction					Mean
	I	II	III	IV	V	
Factual	56.2	71.6	78.0	61.9	45.2	63.1
Principles	79.5	50.0	53.0	53.2	55.5	55.9
Application	27.0	50.0	46.2	52.7	48.0	45.4
Mean	52.4	68.5	54.6	56.5	52.8	56.7

The average difficulty indices ranged from a low of 27 per cent to a high of 79.5 per cent with most items being within the range of about 50 to 60 per cent difficulty. Individual items within each of the five areas of subject matter classification and within each of the categories of facts, principles and application of principles ranged well within the generally accepted range for the entire test. The average item difficulty within each of the five areas of subject matter classification ranged from 52.4 to 68.5 per cent and within each of the areas of facts, principles and application of principles from 45.4 to 63.1 per cent. The average difficulty index not shown in the table for multiple-choice items was calculated to be 46.3 per cent and for true-false items to be 66.0 per cent.

Item Discrimination of Pretest

The discrimination index for each item appears in Appendix E. The index was derived by the U-L method of Stecklein as outlined under

Procedure. The indices ranged from -18 to 55, with a fairly even frequency distribution over most index classes shown in Table 5.

Table 5. Frequency Distribution of 116 Discrimination Indices Derived from the Pretest

Non-discriminating Indices		Discriminating Indices	
Range	No. of Items	Range	No. of Items
-20 to -16	2	15 to 19	10
-15 to -11	3	20 to 24	8
-10 to -6	5	25 to 29	11
-5 to -1	9	30 to 34	8
0 to 4	9	35 to 39	9
5 to 9	17	40 to 44	7
10 to 14	<u>12</u>	45 to 49	3
Total =	57	50 to 54	2
		55 to 59	<u>1</u>
		Total =	59

Since Army¹ stated that a discrimination index of 15 or more could be accepted as discriminating, then 59 items of the pretest were discriminating and 57 were not discriminating. Thirty-four of the discriminating items were of the multiple-choice type and 25 were of the true-false type. The nondiscriminating items were distributed as shown in Table 6 between multiple-choice and true-false types for the five

¹Clara Brown Army, Evaluation in Home Economics, Appleton-Century-Crofts, Inc., New York, 1953, p. 329.

subject matter areas of clothing construction and for the areas testing for facts, principles and application of principles.

As may be seen from the table, approximately one-half of the items in each of the subject matter areas of clothing construction and in the areas testing for facts, principles, and application of facts or principles were non-discriminating. Thirty-six of these were of the true-false type and 21 were of the multiple-choice type.

Table 6. Frequency Distribution of 57 Non-Discriminating Items

Item Types	Areas of Clothing Construction						No. of
	I	II	III	IV	V	Total	Item Types
<u>Factual</u>							
Multiple Choice	1	1	0	1	1	4	12
True-False	2	5	2	11	1	21	33
<u>Principles</u>							
Multiple Choice	1	0	1	5	4	11	22
True-False	2	0	3	8	2	15	27
<u>Application of Facts or Principles</u>							
Multiple-Choice	2	1	1	2	0	6	21
True-False	0	0	0	0	0	0	1
Total	8	7	7	27	8	57	
No. of Test Items in Areas	14	14	14	56	18		116

Reliability of Pretest

Three tests for reliability were applied to the pretest scores. The first was the correlation between the odd and even numbered items of the test. The second was the combination of difficulty and inter-correlation of test items, which is the "rational equivalence" test of Kuder and Richardson¹, and the third was the correlation between the pretest scores and those of a retest of the pretest.

The correlation coefficient between the errors made on the odd and even numbered items of the test (split-half method) was 0.53, and for the whole test, as estimated by the Spearman-Brown formula², was 0.69. The reliability coefficient derived from the rational equivalence test of Kuder and Richardson was 0.70. In this test the formula used was

$$r = \frac{N}{N-1} \quad 1 - \frac{pq}{s_t^2}$$

where r = reliability coefficient of the whole test.

N = number of items in the test.

p = proportion of the group answering a test item correctly.

$q = 1 - p$.

s_t^2 = standard deviation squared or variance of the total test scores.

The correlation between the pretest scores and those of the retest

¹N. M. Downie, Fundamentals of Measurement, Oxford University Press, New York, 1958, pp. 78-79.

²Clara Brown, Evaluation and Investigation in Home Economics, F. S. Crofts and Co., New York, 1941, pp. 365-367, 435.

of the pretest described under Procedure may be seen from the scattergram of Figure I representing the scores made on both tests. In this scattergram the scores made by students may be seen to fall into two groups represented by two lines designated A and B. A third line C was drawn to represent the position students would fall if they made the same score on the retest as on the pretest. As may be seen from the figure one student made the same score in both tests while another made a lower score on the retest than on the pretest. The remaining 59 students scored higher on the retest than they did on the pretest, and of these, 27 (represented by line A) scored higher on the retest than the remaining 32 students (represented by line B). About one-half of the students in each of the groups took the course during the winter quarter while the other one-half took it during the spring quarter. The difference between the two groups thus could not be attributed to the quarter in which the students took the course. The individual scores made by students of the two groups are listed in Tables 7 and 8, respectively.

The group represented by line A averaged a score of 61.4 on the pretest and 92.2 on the retest, while the group represented by line B averaged a higher score of 66.0 on the pretest but a lower score of 85.0 on the retest. The difference in the average scores attained by the two groups on the pretest was significant ($t = 2.34$, d.f. = 57) and on the retest was highly significant ($t = 4.23$, d.f. = 57).

In light of the significant difference in attainment of the two groups of students, the writer felt justified in treating the groups separately in arriving at a correlation coefficient between the pretest

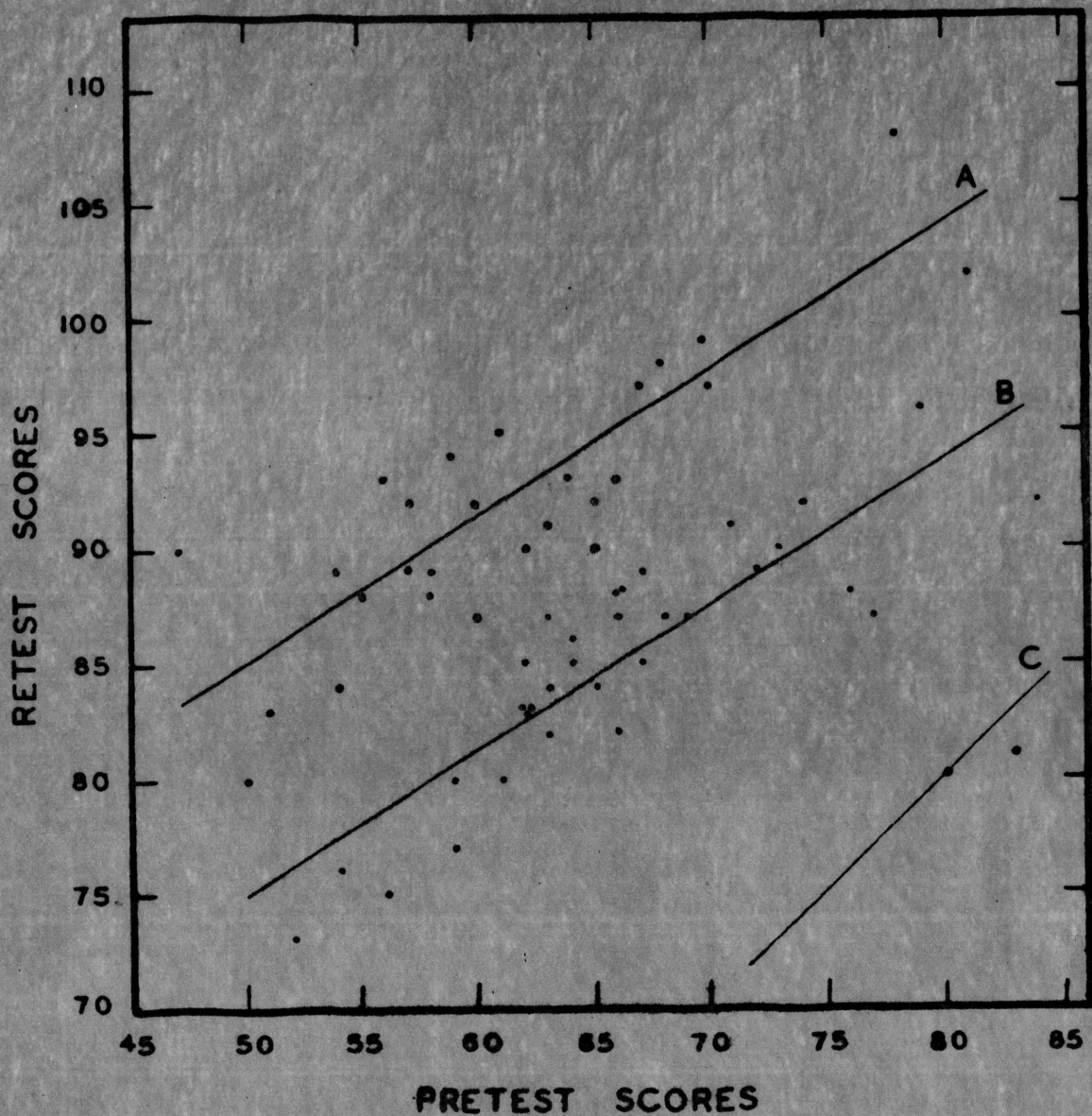


Figure I. Scattergram of retest scores on pretest scores of sixty-one students from which three groups were evident: groups A and B, represented by calculated significant linear regressions, and group C, by a line representing equal scores on the retest and the pretest

Table 7. Group A Scores of Pretest, Retest of Pretest, Raw SCAT Score, Years of High School and 4-H Clothing Experience, Garment Grade, Per Cent Correct on Written Tests and Final Grade

Student's Code Number	Pretest	Retest	SCAT	Yrs. H.Sch.	Yrs. 4-H	Skirt Grade	Dress Grade	Av. for Garments	% Correct on Written Tests	Final Grade
3	81	102	79	3	7	10.0	11	10.5	85.2	11
7	78	108	93	1	7+	11.0	11	11.0	83.2	11
19	70	97	99	2	0	6.5	7.5	7.0	83.3	8
20	70	99	91	2	3	10.0	9	9.5	78.5	8
23	67	97	62	3	0	8.0	11	9.5	77.8	11
24	68	98	--	3	0	8.0	9.5	8.8	98.0	11
33	66	93	70	1	7+	8.0	9	8.5	79.9	8
38	65	90	76	2	0	10.0	8	9.0	74.1	8
39	65	92	96	2	7	6.0	6.5	6.2	80.6	6
43	64	93	68	3	7	11.0	11	11.0	77.8	11
48	63	91	56	2	0	6.5	10.5	8.5	79.2	8
50	62	90	68	2	7+	6.5	7.5	7.0	75.9	6
54	61	95	75	2	7	11.0	11	11.0	81.0	11
56	60	92	75	1	6	10.0	7.5	8.8	74.5	6
57	60	87	74	2	0	4.0	6	5.0	76.2	6
60	59	94	54	2	0	6.5	7.5	7.0	73.6	6
64	58	89	--	4	0	9.0	7.5	8.2	79.2	8
65	58	88	90	2	0	7.5	11	9.2	77.2	8
68	57	92	69	2	7	5.5	7.5	6.5	75.9	6
69	57	89	76	2	4	9.0	10	9.5	78.5	8
70	56	93	--	0	7+	7.5	9.5	8.5	75.8	8
72	55	88	--	1	0	7.5	6.8	7.2	75.2	6
74	54	89	73	0	1	1.0	6	3.5	69.1	6
75	54	84	83	0	0	7.5	6	6.8	69.1	6
78	51	83	87	0	0	7.5	10	8.8	76.4	8

Table 7. Continued

Student's Code Number	Pretest	Retest	SCAT	H.S. Yrs.	Yrs. 4-H	Skirt Grade	Dress Grade	AV. for Garments	% Correct on Written Tests	Final Grade
79	50	80	77	0	0	6.5	8	7.2	71.8	6
80	47	90	89	0	0	6.0	8	7.0	75.2	6
Mean	61.4	92.2	77.5	1.6	2.8	7.7	8.7	8.2	77.9	7.8

Table 8. Group B Scores on Pretest, Retest of Pretest, Raw Scat Score, Years High School and 4-H Clothing Experience, Garment Grade, Per Cent Correct on Written Tests and Final Grade

Student's Code Number	Pretest	Retest	SCAT	H.S. Years	Years 4-H	Skirt Grade	Dress Grade	Average on Garments	% Correct on Written Tests	Final Grade
1	84	92	100	2	7	10.0	11.0	10.5	81.2	11
6	79	95	76	3	6	6.0	9.0	7.5	78.5	8
8	77	87	77	3	7 ⁺	10.0	9.0	9.5	74.8	8
9	76	88	66	3	7 ⁺	8.0	9.0	8.5	74.5	8
14	74	92	81	3	0	11.0	11.0	11.0	83.8	11
15	73	90	83	3	2	6.5	6.5	6.5	73.8	6
16	72	89	96	3	6	7.5	8.0	7.8	83.6	8
17	71	91	74	3	0	5.5	8.0	6.8	80.5	6
22	69	87	81	2	3	6.5	7.2	6.8	80.5	8
26	68	87	82	0	5	6.5	6.0	6.2	79.6	6
27	67	89	84	3	7	8.0	9.5	8.8	75.2	8
28	67	85	78	0	5	7.5	10.5	9.0	73.8	8

Table 8. Continued

Student's Code Number	Pretest	Retest	SCAT	Years H.S.	4-H	Skirt Grade	Dress Grade	Average on Garments	% Correct on Written Tests	Final Grade
32	66	88	90	3	7 ⁺	7.5	9.5	8.5	74.5	8
34	66	87	78	3	0	8.0	11.0	9.5	78.7	11
35	66	88	85	1	1	8.0	9.5	8.8	66.4	8
37	66	82	--	3	0	11.0	9.5	10.2	71.8	8
40	65	84	60	2	2	6.5	7.5	7.0	75.8	6
41	64	86	66	3	2	5.5	8.5	7.0	74.5	8
42	64	85	48	4	7 ⁺	6.5	10.0	8.2	70.4	6
44	63	82	65	3	6	7.5	5.8	6.6	69.1	6
45	63	87	84	0	0	6.5	8.0	7.2	71.5	6
46	63	84	76	0	4	5.5	7.2	6.4	72.5	6
49	62	85	51	0	7	8.0	9.0	8.5	76.4	8
51	62	83	82	3	0	7.5	10.5	9.0	75.8	8
52	62	83	55	3	0	7.5	6.0	6.8	69.8	6
53	62	83	93	0	1	5.5	9.0	7.2	72.2	6
55	61	80	95	0	0	5.5	6.0	5.8	76.4	6
58	59	77	66	3	7	7.5	9.0	8.2	69.1	6
61	59	80	61	3	5	6.0	8.0	7.0	73.8	6
71	56	75	70	3	0	8.0	--	--	--	-
73	54	76	77	1	0	6.0	8.0	7.0	67.1	6
77	52	73	94	0	4	5.5	6.0	5.8	75.2	6
Mean	66.0	85.0	76.6	2.1	3.4	7.3	8.5	7.9	74.9	7.3

and retest scores. Together, the two groups yielded an r value of 0.53, while separately, group A yielded an r value of 0.85 and group B yielded an r value of 0.88, all highly significant.

Validity of Pretest

Validity of the pretest may be measured to some extent in two ways, namely, (1) by relating its score to the background of the student and (2) by relating its score to the subsequent performance of the student in the course for which she was pretested. In the first of these, pretest scores were examined for their relationship to:

- (a) the amount of high school homemaking and 4-H work experience.
- (b) the amount of clothing construction experience.
- (c) the scores made on the SCAT test.

In the second, the pretest scores were examined for their relationship to:

- (a) the average grades the students received on two garments constructed in class.
- (b) the average grade they received on two written tests.
- (c) the final grade they received in the course.

The mean pretest scores of the students classified according to the extent and kind of background experience are presented in Tables 9 and 10.

The mean pretest scores of students with none, one, two, three, or four years of high school homemaking were nearly alike regardless of the years of high school homemaking experience they had. The mean score of those with no high school homemaking experience was 59.4 and of those

Table 9. Pretest Means and Standard Deviations of Women Classified According to Years of High School Homemaking, Years of 4-H and Total Years Clothing Experience (High School and 4-H)

	<u>No. of Years of High School Homemaking</u>				
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
No. of Women	19	8	22	27	4
Mean of Pretest	59.4	63.5	65.8	68.4	64.0
Standard Deviation	7.0	8.1	8.5	7.0	7.8

	<u>No. of Years of 4-H Clothing Experience</u>							
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7+</u>
No. of Women	34	4	6	3	4	3	6	20
Mean of Pretest	62.8	61.2	64.0	66.0	63.0	64.7	72.0	67.7
Standard Deviation	7.8	5.3	7.6	6.1	12.2	4.9	9.0	8.1

	<u>Total No. Years Clothing Experience (High School & 4-H)</u>											
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
No. of Women	7	7	11	14	5	6	2	4	4	11	7	2
Mean of Pretest	56.1	59.6	63.9	67.1	58.2	68.5	68.5	59.2	71.5	68.4	70.0	69.5
Standard Deviation	7.5	5.9	6.0	6.7	5.8	3.0	16.3	2.2	11.0	8.3	8.0	7.8

Table 10. Pretest Means and Standard Deviation for Women Classified
According to Number of Garments Made, Extent of Making Own
Clothes and Raw Scores on SCAT Test

	<u>Number of Garments Made</u>							
	0-9	10-19	20-29	30-39	40-49	50-59	60-99	100+
No. of Women	10	13	10	9	7	10	12	8
Mean of Pretest	54.6	62.1	66.9	62.3	69.4	64.1	70.7	71.9
Standard Deviation	4.4	5.6	8.2	4.5	7.0	7.2	6.3	7.4

	<u>Extent of Making Own Clothes</u>		
	None	Some	Most
No. of Women	4	46	30
Mean of Pretest	52.5	63.0	69.6
Standard Deviation	2.4	6.7	7.8

	<u>Raw Scores on SCAT Test</u>					
	41-50	51-60	61-70	71-80	81-90	91-100
No. of Women	1	7	14	25	14	12
Mean of Pretest	64	62.3	63.9	65.1	64.0	69.6
Standard Deviation	--	2.7	6.1	8.9	7.2	8.6

with 3 years experience was 68.4. The mean score of students with 4 years of homemaking was 64.0, but this value must be discounted as an unfair sample of the category as only 4 women comprised the group. Students with no high school homemaking scored significantly less than those with 2 years ($t = 2.56$, d.f. = 38) or 3 years ($t = 4.24$, d.f. = 44) of such experience. Similar comparisons for differences between means for the other years of experience were non-significant.

The mean pretest scores of students with none to more than 7 years of 4-H clothing experience were nearly alike over the range covered by the years of such experience. Differences between means for the various years could not be evaluated because the frequency pattern of student distribution was of the U type. Thirty-four students had no 4-H experience, twenty had 7 or more years, while the remaining twenty-six had 1 to 6 years. The difference between the mean scores of students with no 4-H experience and those with 7 or more years was significant at the 5 percent level ($t = 2.36$, d.f. = 52). The differences between other means in the table were non-significant. On regrouping the students, the difference between means for students with no 4-H experience and those with 6 or more years was highly significant ($t = 3.68$, d.f. = 58) as also was highly significant ($t = 3.66$, d.f. = 78) the difference between means for students with 0 to 5 years of such experience and those with 6 or more years.

Differences between mean scores for students grouped in the table according to the total number of years of high school homemaking and 4-H experience were not significant for the reasons that the mean values

were nearly alike and the number of students in each group was small. When the students were regrouped into 0 to 2, 3 to 7 and 8 to 11 total years of experience, the mean scores were 60.5, 65.0 and 69.5 respectively, and the difference between 60.5 and 65.0 was significant ($t = 2.34$, $d.f. = 54$), between 60.5 and 69.5 was highly significant ($t = 4.12$, $d.f. = 47$) and between 65.0 and 69.5 was significant ($t = 2.14$, $d.f. = 53$).

Students making 0 to 9 garments (Table 10) scored 54.6 and this was significantly lower ($P < .01$) than for those making larger numbers of garments. Students making 10 to 59 garments made similar scores and these were significantly lower ($P < .01$) than for those making 60 or more garments.

The differences between mean scores for students making none, some or most of their clothes as shown in Table 10 were all highly significant.

Women scoring 91 to 100 raw score points on the SCAT tests averaged 69.6 on the pretest and this value was just barely higher ($P = 0.05$) than the 62.3 and 63.9 mean scores for women making 51 to 70 raw score points on the SCAT test.

The relation of the pretest scores to performance of students in the clothing construction course was explored through correlation coefficients. Pretest scores, retest scores, raw SCAT scores, years of high school homemaking and 4-H experience, garment grades, percent correct on written tests and final grade received are found in Appendix E. For this study, the pretests scores for the two groups of students described in a previous section in connection with Figure I were examined

separately and together. As may be seen from Table 11, the correlation coefficients between pretest scores and garment grade, written test scores and final grade, which also are listed in Tables 7 and 8, were all highly significant with coefficients being higher within each group than when the two groups were combined. Stated another way, there was less scatter of points along the average regression line when the groups were separated than when they were combined, as may be expected.

Table 11. Correlation Coefficients (r) Between Pretest Scores and Course Grades

	Group A (N = 27)	Group B (N = 31)	Group A + B (N = 58)
Garments	.49	.54	.42
Written Tests	.63	.56	.47
Final Grade	.64	.58	.52

Response to Final Questionnaire

At the end of the term, 64 women were asked to complete an anonymous questionnaire expressing how they felt about the course, about sewing, and about their own achievement. (See Appendix D for Questionnaire)

Ninety-five per cent of the women (61 of them) stated the course was on college level or "about right" in difficulty. Two students thought the course was "too easy" and one thought it was "too hard."

Ninety-eight per cent of the women who took the course stated they liked sewing from "quite well" to "very well," 22 women liked it

"quite well" and 41 liked it "very well." One student "did not like" it.

When asked how they felt about their own achievement, 77 per cent (49 women) stated they thought they learned "a great deal", 23 per cent (15 women) thought they learned "a fair amount" and no one indicated having learned "a little."

DISCUSSION

As stated in the introductory part of this thesis, the purposes of the pretest and questionnaire essentially were: (1) To help the instructor discover individual and class weaknesses and strengths of freshmen women entering the Beginning Clothing Construction course, as an aid in determining necessary course revision; (2) to give students a preview of the course; and (3) for possible sectioning students according to their achievements, thus promoting greater student motivation. The degree to which the first objectives were accomplished may be judged best perhaps by the responses students made to the final questionnaire. In their responses nearly all 64 students taking the course thought the course was college level, and felt the course offered them a great deal of new knowledge. The writer felt the pretest made students aware of some of the gaps in their learnings and a more favorable attitude toward the course was apparent in the classes. Nearly all the students liked sewing regardless of the amount of experience they had before. The course content was unchanged in any major way over that of the previous year, but the instructor identified those students with little previous clothing experience and gave them more individualized attention than was done the previous year when no questionnaire was used. Those students with more experience were encouraged to select more difficult problems.

As to the possibility of using the pretest for sectioning of students, the test seems to be of average difficulty, discrimination, reliability and validity, and the value of the latter characteristic

seemed to be too low to make the pretest the sole basis for classifying students. The test might, however, be used for classifying purposes if combined with other tests or criteria, such as practical tests and past clothing experience.

Analysis of the pretest showed that the items testing knowledge and understanding of principles and their application were more difficult than the factual items. The writer feels that greater emphasis should be placed on developing an understanding and knowledge of principles of clothing construction so that an application can be made to problems presented. The multiple-choice type items proved to be more difficult. However, they generally elicit more thought and decision-making than do the true-false items. A greater number of them were discriminating than were the true-false type.

Although the reliability coefficient of the pretest was not especially high, the test did have value since it adequately covered the course content. The questionnaire proved to be very helpful to the instructor in understanding individual problems of students. The number of test items in all except Area IV was too limited to make a fair judgment of area strengths and weaknesses but it gave some idea as to levels of achievement in certain subject matter.

Classifying the test items gave a more uniform distribution of test-objective items than if no attempt had been made to classify them.

Of special interest in the present study were the two groups of students designated A and B, represented in Figure I and in Tables 7 and 8. Those in group A made significantly higher scores on the retest than

did those in group B and they made just significantly lower scores on the pretest than those in group B. Also those in group A made just significantly higher scores ($t = 2.27$, d.f. = 56) on the written tests in the course than those in group B. The difference between the two groups in average garment grade, final grade and SCAT score were non-significant. On background analysis, the students in group A proportionally had fewer years of high school homemaking and 4-H work than those in group B and therein may be the reason for the difference. The writer is inclined to believe that group B students were more confident of their knowledge and experience than group A students and consequently may have been less attentive to new knowledge.

SUMMARY AND CONCLUSIONS

An objective type pretest for freshmen women was developed on subject matter content and objectives of the Beginning Clothing Construction course at South Dakota State College. A questionnaire also was devised to gain information about the kind and amount of sewing experience the women had and about their attitude toward sewing. The purpose was to pretest the women for information to be gained on individual and group achievement prior to instruction for possible classification in the course.

The pretest contained 116 true-false and multiple-choice items in clothing construction, testing for facts, principles or generalizations and application of facts, principles or generalizations in five subject matter areas. Eighty women took the test at the beginning of the winter quarter of the 1960-1961 academic year and of this number 34 took the course during the winter quarter while 27 took the course during the spring quarter. Individual scores ranged in a normal curve fashion from a low of 47 to a high of 84, corresponding to the number of items marked correctly. The average score was 65.0, and the median score was 64.5.

The mean difficulty index of the 116 items was 56.7 per cent. Seventy-five items had an acceptable difficulty index of between 20 and 80 per cent. The mean difficulty index for items covering the five areas of the course was 52.4, 68.5, 54.6 and 52.8 per cent, respectively, for items dealing with facts, principles and application of principles was 67.1, 55.9, and 45.4, respectively, and for true-false or multiple-choice type items was 66.0 and 46.3 per cent, respectively.

Fifty-seven or nearly one-half of the items of the pretest were non-discriminating, having index values of less than 15 per cent. The non-discriminating items were fairly uniformly distributed over the various areas of the test.

The reliability coefficient of the whole pretest was 0.69, derived from the Spearman-Brown conversion formula ($r = 0.53$ between halves of the test). The coefficient from the rational equivalence test of Kuder-Richardson was 0.70. The correlation coefficient between the scores on the pretest and the scores on a retest of the pretest given toward the end of the course was 0.53. When a scattergram of the pretest scores against the retest scores was plotted, two distinct groups of students were apparent, one group showing higher gains on the retest than the other. When the correlation for each of these groups was determined separately, correlation coefficients of 0.85 and 0.88 were obtained and these were much higher than that for the entire group.

The pretest was valid to some degree in reflecting the students' past clothing experience and subsequent performance in the course. Students with no high school homemaking experience, those with none to little 4-H experience, those making none to a few garments, and those making none or a few of their own clothes scored lower on the pretest than did those having considerably greater amounts of like experiences. Students who scored higher on the pretest generally made fewer mistakes in the written tests, scored higher on garments made and made higher final grades. The correlation coefficient between pretest scores of 58 women and the percentage of correct answers made in written tests

was 0.47, between pretest scores and garment grade was 0.42, and between pretest scores and final grade was 0.52. The coefficients were only slightly improved when the two groups of students referred to above were considered separately.

The pretest was considered helpful to students in giving them a preview of the course, in revealing their strengths and weaknesses, and was helpful to the instructor in meeting the needs of the students through more personalized attention. In response to a final questionnaire at the end of the course, nearly all of the students expressed a favorable attitude toward sewing, considered the course sufficiently challenging (of college level caliber) and felt they learned a great deal.

The author recommends that the pretest and questionnaire be given in the original form to incoming freshman Home Economics students for the purpose of determining individual and group levels of achievement and for gathering additional data. Test items eventually could be scrutinized and the poorer ones revised, thus increasing their discriminating value. The test items also should be arranged in order of difficulty, the easier items to be placed at the beginning and the more difficult at the end of the test. Should sectioning of students be feasible, the author suggests that a practical test be given in combination with the pretest to gain a more accurate profile of student levels of achievement in clothing construction.

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APPENDIX A

APPENDIX

Clothing Construction Experience Questionnaire

(Please print)Name _____
(Last name) (First name) (Middle name)

Date _____

High School from which you graduated _____

Year Graduated _____

1. Have you had any previous sewing experience? Yes 80 No 1
(If your answer is "No," do not answer the remaining questions on the questionnaire.)
2. Circle the number of years of high school homemaking experience (9th grade and above) you have had. 0 1 2 3 4 years.
3. Circle the number of years of 4-H clothing experience you have had in the clothing area only. 0 1 2 3 4 5 6 7 or more years.
4. Check the most nearly correct amount of home sewing you do.
4 Make none of my clothes
46 Make some of my clothes
30 Make most of my clothes
5. Under the types of fabric, indicate the approximate number of garments you have made.

Types of Fabric

	<u>Cotton</u>	<u>Linen</u>	<u>Wool</u>	<u>Rayon</u>	<u>Synthetic</u> (nylon, Dacron, etc.)	<u>Blend</u>	<u>Fabric</u> <u>Unknown</u>
<u>Skirt</u>							
<u>Blouse</u>							
<u>Slip</u>							
<u>Dress</u>							
<u>Pajamas</u>							
<u>Shorts</u>							
<u>Slacks</u>							
<u>Suit</u>							
<u>Coat</u>							

6. Check the statement which best describes how well you like sewing.

- 3 Do not like it
28 Like it quite well
49 Like it very well

7. Check the type of experience which you feel has helped you most in your sewing.

- 22 Home Sewing (with mother's or sister's help)
25 4-H clothing projects
31 High School Homemaking classes (9th grade and above)
2 Other

APPENDIX B

TEST FOR BEGINNING CLOTHING CONSTRUCTION

Purpose:

To measure your knowledge and understanding of clothing construction.

You will not receive a grade on the test and it will not in any way influence your grade in Beginning Clothing Construction. The results of this test will serve as a guide to your instructor in planning your course work. It is to your advantage to present a clear picture of what you know, so do the best you can on the test.

Directions for Machine-Scored Tests:

1. Do not write on the test booklet. Record answers on separate answer sheet using only the special IBM pencil provided. Do not fold answer sheet.
2. Start with item No. 1 in the first column and work to the bottom. Begin at top of next column and work down until you have completed the entire test containing 116 items.
3. To mark the answers, find the pair of dotted lines numbered the same as the answer you have chosen to be correct and blacken this space. Be sure that the number of the test item corresponds to the number on the answer sheet. Misplaced answers will be counted as wrong answers.
4. Erase completely any answers you wish to change. Do not cross them out.

Example:

1. "Difficult" is the opposite of
1. soft
 2. easy
 3. fine
 4. hard

1.	1	2	3	4	5
	"		"	"	"
	"		"	"	"
	1	2	3	4	5

The correct answer is 2 so on the answer sheet the number "2" is blackened.

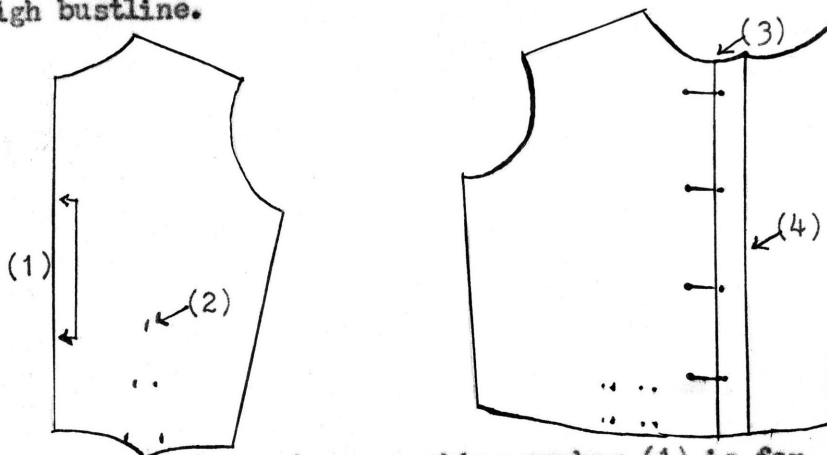
CLOTHING CONSTRUCTION TEST

Part I. Multiple Choice

Directions: Select the one response that best completes the statement and blacken corresponding space. Please answer all questions as best you can.

1. Select the fabric which seems to decrease the apparent size of a heavy person.
 1. large swirling designs.
 2. stiff fabrics.
 3. heavy fabrics.
 4. dull textured fabrics.
2. Needles should be carefully selected to best suit the purpose for which intended. For fine handwork a good choice would be
 1. crewel - size 12.
 2. sharps - size 12.
 3. betweens - size 7
 4. none of these.
3. For good workmanship, speed and convenience choose pins wisely. For a wool jersey dress use
 1. dressmaker pin.
 2. bank pin.
 3. dressmaker and bank pin.
 4. none of these.
4. For marking most woolen nubby fabrics the best choice of marking equipment would be
 1. clay chalk.
 2. wax chalk.
 3. tracing wheel and dressmaker's carbon.
 4. colored blackboard chalk.
5. Someone gave you a piece of resin-finished "wash and wear" fabric. The horizontal pattern is printed "off-grain". Since you cannot return the fabric you should
 1. dampen fabric - tenter it - then cut.
 2. disregard crosswise grain - cut fabric without tenting.
 3. remove resin finish - tenter - then cut.
 4. follow usual procedure for tenting - then cut.
6. For stitching on sheer fabric such as chiffon, select machine needle which is size
 1. 6-8.
 2. 9-11.
 3. 14-16.
 4. 16-18.

7. Choose statement which best describes the Junior figure type
1. undeveloped figure - flat chest - slim hips and protruding abdomen.
 2. small high bustline - short waist - slim hips.
 3. fully developed figure - 5 foot 5 inches or over - rather low bustline.
 4. fully developed figure - 5 foot 5 inches or under - rather high bustline.

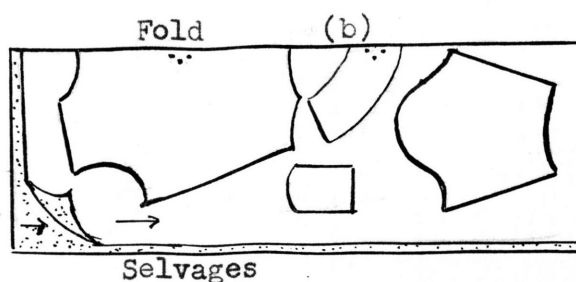
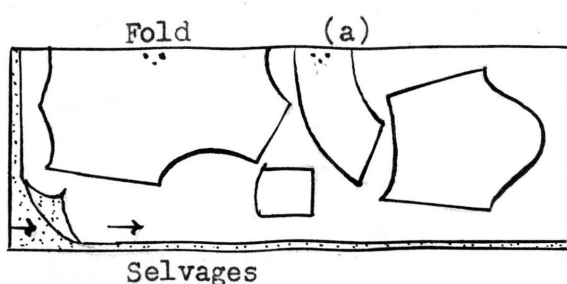


8. On blouse pattern shown above, marking number (1) is for
1. straight of material.
 2. place on fold of material.
 3. dart.
 4. center front.
9. On blouse pattern shown above, marking number (2) is for
1. straight of material.
 2. dart.
 3. tuck.
 4. ease line.
10. On blouse pattern shown above, marking number (3) is for
1. straight of material.
 2. front fold line.
 3. dart.
 4. center front.
11. On blouse pattern shown above, marking number (4) is for
1. straight of material.
 2. front fold line.
 3. dart.
 4. center front.
12. The pieces of a pattern are on the straight of the fabric when
1. grainline markings are on the true bias.
 2. lengthwise grain marking is equidistant from selvage.
 3. crosswise grain marking is parallel to selvage.
 4. none of these.

13. For a napped fabric place pattern pieces so that
1. all pattern pieces are cut so that the nap is running down in the finished garment.
 2. all pattern pieces are cut so that the nap is running up in the finished garment.
 3. place pattern pieces the same as for unnapped fabric.
 4. do none of the above.

14. Choose the layout which is correct for a short pile fabric

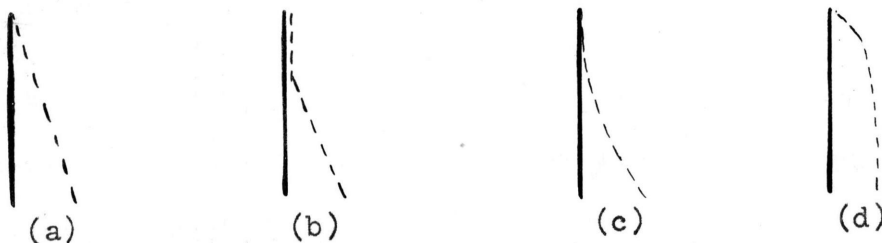
1. a.
2. b.



15. When stitching seams requiring elasticity and strength, the number of stitches to the inch should be
1. 6 stitches to the inch.
 2. 10-12 stitches to the inch.
 3. 15-22 stitches to the inch.
 4. None of these.
16. When stitching seams on heavy fabric the length of stitches should be
1. 10-12 stitches per inch.
 2. 15-22 stitches per inch.
 3. Shorter than those used on fine fabric.
 4. none of these.
17. A gathering stitch on medium weight fabric should be
1. 6 stitches per inch.
 2. 8-10 stitches per inch.
 3. 12-15 stitches per inch.
 4. 15-22 stitches per inch.
18. When changing from a sheer fabric to a heavy wool fabric you should adjust machine by
1. decreasing pressure by turning thumb screw to the right.
 2. increasing pressure by turning thumb screw to the left.
 3. lengthening stitch and decreasing pressure by turning thumb screw to the left.
 4. shortening stitch and increasing pressure by turning thumb screw to the right.

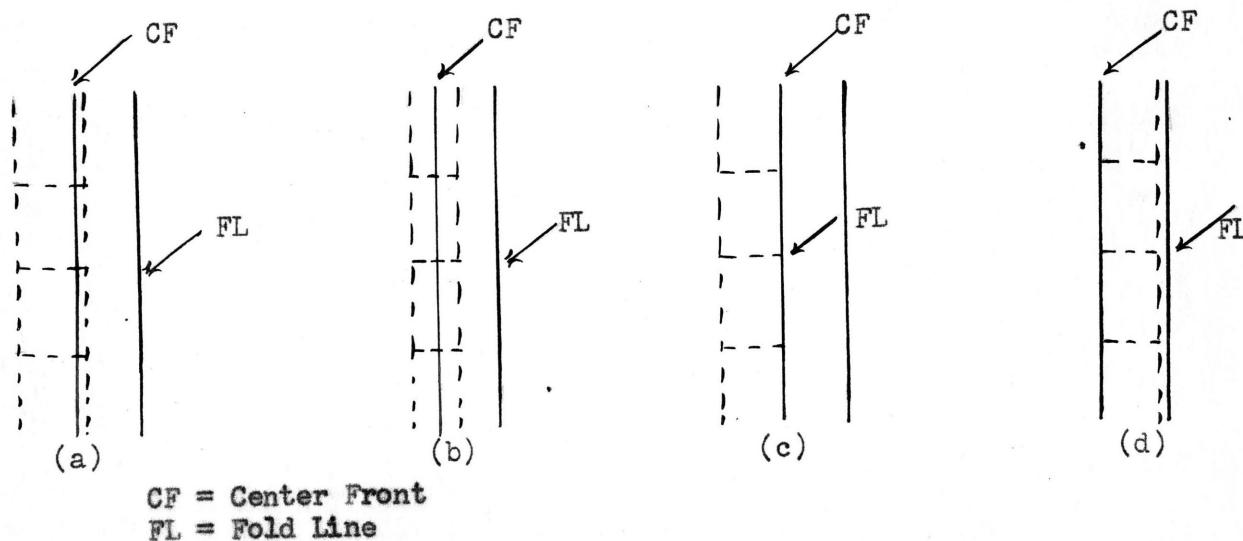
19. One of these types of bastings is helpful when matching plaids
 1. uneven basting.
 2. even basting.
 3. slip basting.
 4. marking basting.
20. Use this type of basting when there is little or no strain during fitting
 1. machine basting.
 2. even basting.
 3. uneven basting.
 4. none of the above.
21. When adjusting machine tension you should
 1. lift presser bar up, then decrease tension by turning tension thumb nut to the right.
 2. put presser bar down, then decrease tension by turning tension thumb nut to the left.
 3. disregard presser bar position and increase tension by turning tension thumb nut to the right.
 4. disregard presser bar position and decrease tension by turning tension thumb nut to the left.
22. The best temperature setting for pressing nylon and acetate is
 1. very high.
 2. high.
 3. medium.
 4. low.
23. The best temperature setting for pressing a blend of Arnel and cotton is
 1. high.
 2. medium.
 3. low.
 4. very low.
24. Pressing differs from ironing. Select the statement which does not apply to pressing
 1. generally done on washable fabrics.
 2. generally done on garments during construction process.
 3. generally done on garments that are non-washable.
 4. generally done on woolen garments.
25. Select the statement which least applies to "overpressing"
 1. fabric pressed too many times until shiny.
 2. fabric pressed on wrong side using too hot an iron.
 3. fabric pressed on wrong side using too much pressure.
 4. fabric pressed on right side with a press cloth over the garment.

26.



26. Select the above illustration which shows the best way of stitching a dart
1. a.
 2. b.
 3. c.
 4. d.
27. To prevent the facing from rolling and showing from the outside of the garment you should
1. stayline.
 2. baste.
 3. staystitch.
 4. understitch.
28. When applying bias facing around an outward (convex) curve you should
1. stretch facing slightly.
 2. ease facing.
 3. stretch and ease alternately about every inch.
 4. do none of the above.
29. A shaped facing for a collarless dress should be
1. attached loosely but inconspicuously along the outer edge of facing.
 2. cut about one inch in width.
 3. understitched first, then enclosed seams trimmed to one half inch.
 4. tacked to shoulder seams of the dress at the outer edge of facing.
30. Staylining is used on edges of garments to
1. mark the seamline.
 2. aid in fitting.
 3. keep edge from stretching.
 4. serve as a stitching guide.
31. When joining the shoulder seam of a blouse without a shoulder seam dart you should
1. ease front of bodice on the back shoulder seam.
 2. ease back shoulder seam on to the front of bodice.
 3. hold back and front of bodice with equal tension.
 4. do none of these.

32. Before turning a round collar of a cotton blouse right side out, the edges of the seams need to
1. be slashed at intervals.
 2. have wedges cut out.
 3. be trimmed to 1/8 inch width.
 4. have none of these done.
33. When joining bias you should
1. join pieces at right angles to bias edges making a 45° angle across the lengthwise and crosswise grain.
 2. match seamlines on lengthwise yarns.
 3. match cut edges on lengthwise yarns.
 4. do none of these.
34. On a bound buttonhole the binding strip should be placed
1. with wrong sides together.
 2. with right sides together.
 3. with right side of buttonhole strip to the wrong side of garment.
 4. with wrong side of buttonhole strip to the right side of garment.



35. One of the above illustrations shows the correct placement of buttonholes in a bodice front.
1. a.
 2. b.
 3. c.
 4. d.

36. For a sheer fabric such as chiffon, the best type of seam and finish for the side seams would be
1. plain seam-standard width - pinked edge.
 2. French seam.
 3. flat-fell seam.
 4. standard width - plain seam - turned and stitched seam finish.
37. For a French seam you should first
1. place wrong sides of fabric together.
 2. place right sides of fabric together.
 3. lap over one edge and place on seamline of other piece.
 4. do none of these.
38. For a flat-fell seam you should first
1. place right sides of fabric together.
 2. place wrong sides of fabric together.
 3. turn and lap one seam over the other.
 4. trim one seam allowance to $\frac{1}{4}$ inch width.
39. The best seam finish for a ravelly heavy woolen fabric is
1. pinked.
 2. turned-under and stitched.
 3. zig-zagged machine stitch.
 4. bound with tape.
40. The best kind of seam for side seams of infant's sheer organdy dress is
1. flat fell.
 2. French.
 3. lapped.
 4. plain.
41. A seam or seam finish that is not satisfactory for transparent fabrics is
1. double-stitched seam.
 2. French seam.
 3. bound with tape.
 4. rolled edge seam.
42. When "grading" seams to reduce bulk you should
1. keep layer next to the garment the wider one.
 2. keep layer furthest from the garment the wider one.
 3. grade the narrowest enclosed seam to $\frac{1}{8}$ inch width.
 4. grade the widest enclosed seam to $\frac{1}{2}$ inch width.
43. "Clean finishing" means
1. cutting and tying all loose threads on inside of garment.
 2. pressing the garment on the wrong side to improve appearance.
 3. turn under and stitch all raw edges on inside of garment.
 4. finishing the raw edge of a facing by turning under the fabric on stay-stitching line, then stitching close to folded edge.

44. For a waistline stay in a dress
1. place staytape on skirt seam, press up if skirt seam is bulkier than bodice seam.
 2. place staytape on skirt seam, press up if skirt seam is less bulky than bodice seam.
 3. place staytape on bodice seam and press up if bodice seam is bulkier than skirt seam.
 4. place staytape on bodice seam and press down if bodice seam is less bulky than skirt seam.
45. For a gingham dress the best type of hem would be to
1. apply seam tape over raw edge and slip-stitch in place.
 2. turn under raw edge and put in hem by machine.
 3. turn under raw edge, edge stitch, then hem using slip stitch.
 4. use inconspicuous tailor's hem.
46. For a full flared corduroy skirt the best type of hem would be to
1. use bias tape on raw edge - then hem by hand.
 2. use bias tape on raw edge - then hem by machine.
 3. use straight skirt tape on raw edge - slipstitch the hem.
 4. pink and stitch close to edge - turn under - hem by hand.
47. In fitting garments the "set" refers to
1. appearance of back of garment.
 2. the ease of drapability of fabric.
 3. freedom from undesirable wrinkles.
 4. none of these.
48. Select the unsatisfactory method of fitting a garment
1. fit right side out using lapped seam method with pins placed at right angles to the overlap.
 2. fit garment inside out with pins placed on seamline and parallel to edges.
 3. when letting out seam, rip out small amount and re-pin as you work.
 4. pin or baste before fitting.
49. Mary's bodice pattern is 2 inches short from bustline to waistline but fits otherwise. She should
1. add 2 inches to bottom edge of bodice front and back pieces.
 2. slash bodice pattern at right angles to center front and back pieces and insert a 2 inch strip of paper midway between bust and waistline.
 3. lengthen bodice at shoulder line by adding 2 inches.
 4. buy a new pattern since this one cannot be altered successfully.

50. When altering sleeve of synthetic or resin-finished fabric it is sometimes necessary to
1. decrease depth of armseye by taking in deep side seams in the bodice.
 2. increase the depth of armseye by increasing seam width by one half inch in the underarm area.
 3. increase the width of sleeve cap because of special problem presented by the fabric.
 4. decrease the width of sleeve cap to reduce the amount of fabric to be "eased in."
51. Pattern measurements are greater than body measurements to provide wearing comfort sometimes known as "ease of livability". An in-active person requires
1. no ease at waistline.
 2. same amount of waistline ease at waistline as for active person.
 3. less ease at waistline than that required by an active person.
 4. at least $1\frac{1}{2}$ inches.
52. The average amount of ease a commercial pattern provides at the bustline with measurement taken over fullest part of bust is
1. no ease.
 2. 1-2 inches.
 3. 3-4 inches.
 4. 5-6 inches.
53. The average amount of ease necessary at the lower hipline (9-10 inches below waist) is
1. none.
 2. $1/2$ -1 inch.
 3. 2-3 inches.
 4. 3-4 inches.
54. The bodice length should be
1. $1/2$ -1 inch shorter than body measurement.
 2. $1/2$ -1 inch longer than body measurement.
 3. identical to body measurement.
 4. none of these.
55. Sleeve length (with elbow bent at a right angle) should be
1. identical to body measurement.
 2. $1/2$ inch longer than body measurement.
 3. $1/2$ inch shorter than body measurement.
 4. none of these.

Part II. True-False

Directions: Darken space No. 1 if statement is true.
Darken space No. 2 if statement is false.

Continue with No. 56 in same row.

56. Round necklines and puff sleeves are very becoming to plump persons.
57. Wax chalk can be used safely on most resin-finished cottons, synthetics and rayons.
58. Use tracing wheel and dressmakers' carbon on sheer light-colored fabrics.
59. Select matching thread by laying single strand on fabric and choosing thread that is just a shade darker than fabric.
60. Use pinking shears for cutting out the garment.
61. Buy a straight fitted skirt by the waist measurement.
62. According to the latest body measurement standards adopted by most pattern companies, a 38 inch bust is a size 18.
63. Cotton net is satisfactory for interfacings in a washable cotton dress.
64. Crosswise fold is used for pattern pieces that are too wide for lengthwise fold.
65. Warp threads are stronger than filling threads.
66. Garment bias gives the maximum amount of stretch.
67. Washable fabrics labeled "Sanforized" do not need pre-shrinking.
68. Fabric spread open, then re-folded on a line at right angles to the selvages is called the crosswise fold.
69. The straight of material line is placed on the crosswise threads of the fabric.
70. If the upper tension is too loose, the interlocking of threads is visible on the underside of the fabric.
71. If the bobbin tension is too loose the interlocking of threads is visible on the underside of the fabric.
72. If the interlocking of the threads is visible on the top side of the fabric, the upper tension is too tight.
73. The flat side of the needle should face the same direction as the last thread guide.

74. Insert thread through eye of the needle from the side on which the last thread guide is located.
75. When sewing a synthetic or resin finished fabric, run the machine faster than usual to prevent puckering of seams.
76. To prevent puckering use low tension on both top and bottom when sewing on wash and wear fabrics.
77. It is unnecessary to press seams and darts before crossing them with another line of stitching.
78. Press seam after understitching rather than before.
79. Directional pressing is not as important as directional stitching.
80. Wool should be pressed until dry.
81. Press a lapped or topstitched seam before and after stitching to the fabric which it overlaps.
82. To avoid press marks use newspaper print under the fold of a pleat before pressing.
83. A darker-colored woolen fabric will show the shine more readily than a lighter-colored one.
84. Press darts on a well-padded flat surface.
85. Front darts or tucks are generally pressed toward the center front.
86. Elbow and bust darts are pressed down toward the waistline seam.
87. Length of buttonhole should be *to determine by* equal to the diameter of the button.
88. Place buttonholes on right front for men's and boys' garments.
89. Interfacing should be used under bound buttonholes.
90. Re-spacing the buttonhole markings on a bodice requires re-spacing them in the skirt.
91. The ball part of a snap fastener should be placed on the underlap.
92. Hooks are sewed on the underside of an opening and the eyes on the upper side.
93. The length of a skirt zipper opening should be the same as that of the metal part of the zipper with the tab up.

94. For fasteners use a round eye for edges which will meet each other and a straight eye for edges that will overlap.
95. To make a Peter Pan collar lie smooth and flat cut out wedges from the trimmed seam allowance.
96. The normal shoulder line of a garment should be about $1/2$ inch in front of the high part of the shoulder.
97. Before turning a facing to the inside of the garment, the raw edge of a curved neckline seam should be slashed at intervals.
98. Fitted or bias facings are preferable to use for finishing sleeves with curved edges.
99. For a staytape to be used in a cotton dress a good choice is $1/2$ inch cotton bias tape.
100. Pellon is a good choice of interfacing to use in a wool suit since it can be easily shaped and eased and requires no pre-shrinking.
101. Whenever two edges with different curves must be joined, staystitch and clip the edge with the sharper curve before joining.
102. The more circular the skirt becomes the narrower the hem should be.
103. The underarm dart is on a level with or points to the fullest part of the bust.
104. A short dart is wider at the seam end than a longer dart.
105. Trim enclosed seam edges of a shaped or fitted facing to approximately $1/4$ inch.
106. When stitching in the sleeve by machine, the sleeve side should be uppermost and the bodice underneath.
107. When basting in the sleeve place pins on seamline parallel to cut edges, then baste with firm stitches.
108. Slash-lines for a gusset begin at the underarm seam and follow the normal armhole position.
109. A waistline belt should be cut from the crosswise grain of the material.
110. To increase a size 14 pattern to a size 16, add one inch to all of the outside edges of the pattern.

111. To increase total hip measurement, add necessary amount of increase to the back of skirt only.
112. A half inch tuck shortens a pattern one inch.
113. A six-gore skirt requires four pattern pieces.
114. Neckline alterations require corresponding collar and facing alterations.
115. When changing darts and gores to fit the waistline do not change more than $1/4$ inch at any one place.
116. Alterations are more satisfactory when made after the garment is cut.

APPENDIX C

SCORES

NAME	LAST	FIRST	MIDDLE	DATE	1	2	3	4	5	6	7	8	DATE OF BIRTH	AGE	SEX
SCHOOL			CITY										GRADE OR CLASS	INSTRUCTOR	
1-1 a country 1-2 a mountain 1-3 an island 1-4 a city 1-5 a state															
DIRECTIONS: Read each question and its numbered answers. When you have decided which answer is correct, blacken the corresponding space on this sheet with the special pencil. Make your mark as long as the pair of lines, and move the pencil point up and down firmly to make a heavy black line. If you change your mind, erase your first mark completely. Make no stray marks; they may count against you.															

30	1	2	3	4	5	31	1	2	3	4	5	61	1	2	3	4	5	91	1	2	3	4	5	121	1	2	3	4	5
1	1	2	3	4	5	2	1	2	3	4	5	32	1	2	3	4	5	62	1	2	3	4	5	92	1	2	3	4	5
2	1	2	3	4	5	3	1	2	3	4	5	33	1	2	3	4	5	63	1	2	3	4	5	93	1	2	3	4	5
3	1	2	3	4	5	4	1	2	3	4	5	34	1	2	3	4	5	64	1	2	3	4	5	94	1	2	3	4	5
4	1	2	3	4	5	5	1	2	3	4	5	35	1	2	3	4	5	65	1	2	3	4	5	95	1	2	3	4	5
5	1	2	3	4	5	6	1	2	3	4	5	36	1	2	3	4	5	66	1	2	3	4	5	96	1	2	3	4	5
6	1	2	3	4	5	7	1	2	3	4	5	37	1	2	3	4	5	67	1	2	3	4	5	97	1	2	3	4	5
7	1	2	3	4	5	8	1	2	3	4	5	38	1	2	3	4	5	68	1	2	3	4	5	98	1	2	3	4	5
8	1	2	3	4	5	9	1	2	3	4	5	39	1	2	3	4	5	69	1	2	3	4	5	99	1	2	3	4	5
9	1	2	3	4	5	10	1	2	3	4	5	40	1	2	3	4	5	70	1	2	3	4	5	100	1	2	3	4	5
10	1	2	3	4	5	11	1	2	3	4	5	41	1	2	3	4	5	71	1	2	3	4	5	101	1	2	3	4	5
11	1	2	3	4	5	12	1	2	3	4	5	42	1	2	3	4	5	72	1	2	3	4	5	102	1	2	3	4	5
12	1	2	3	4	5	13	1	2	3	4	5	43	1	2	3	4	5	73	1	2	3	4	5	103	1	2	3	4	5
13	1	2	3	4	5	14	1	2	3	4	5	44	1	2	3	4	5	74	1	2	3	4	5	104	1	2	3	4	5
14	1	2	3	4	5	15	1	2	3	4	5	45	1	2	3	4	5	75	1	2	3	4	5	105	1	2	3	4	5
15	1	2	3	4	5	16	1	2	3	4	5	46	1	2	3	4	5	76	1	2	3	4	5	106	1	2	3	4	5
16	1	2	3	4	5	17	1	2	3	4	5	47	1	2	3	4	5	77	1	2	3	4	5	107	1	2	3	4	5
17	1	2	3	4	5	18	1	2	3	4	5	48	1	2	3	4	5	78	1	2	3	4	5	108	1	2	3	4	5
18	1	2	3	4	5	19	1	2	3	4	5	49	1	2	3	4	5	79	1	2	3	4	5	109	1	2	3	4	5
19	1	2	3	4	5	20	1	2	3	4	5	50	1	2	3	4	5	80	1	2	3	4	5	110	1	2	3	4	5
20	1	2	3	4	5	21	1	2	3	4	5	51	1	2	3	4	5	81	1	2	3	4	5	111	1	2	3	4	5
21	1	2	3	4	5	22	1	2	3	4	5	52	1	2	3	4	5	82	1	2	3	4	5	112	1	2	3	4	5
22	1	2	3	4	5	23	1	2	3	4	5	53	1	2	3	4	5	83	1	2	3	4	5	113	1	2	3	4	5
23	1	2	3	4	5	24	1	2	3	4	5	54	1	2	3	4	5	84	1	2	3	4	5	114	1	2	3	4	5
24	1	2	3	4	5	25	1	2	3	4	5	55	1	2	3	4	5	85	1	2	3	4	5	115	1	2	3	4	5
25	1	2	3	4	5	26	1	2	3	4	5	56	1	2	3	4	5	86	1	2	3	4	5	116	1	2	3	4	5
26	1	2	3	4	5	27	1	2	3	4	5	57	1	2	3	4	5	87	1	2	3	4	5	117	1	2	3	4	5
27	1	2	3	4	5	28	1	2	3	4	5	58	1	2	3	4	5	88	1	2	3	4	5	118	1	2	3	4	5
28	1	2	3	4	5	29	1	2	3	4	5	59	1	2	3	4	5	89	1	2	3	4	5	119	1	2	3	4	5
29	1	2	3	4	5	30	1	2	3	4	5	60	1	2	3	4	5	90	1	2	3	4	5	120	1	2	3	4	5
30	1	2	3	4	5																								

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

APPENDIX D

QUESTIONNAIRE FOR T.C. 12

Please circle the number of the statement which best describes how you feel about the Beginning Construction course (T.C. 12).

- I. I think that T.C. 12 as now set up is
 1. Too easy.
 2. About right. (College level)
 3. Too difficult.

- II. Please indicate how you feel about sewing since you have taken this course.
 1. Do not like it.
 2. Like it quite well.
 3. Like it very much.

- III. Check the statement which you feel best describes your own achievement and progress made in beginning clothing construction.
 1. Learned a little.
 2. Learned a fair amount.
 3. Learned a great deal.

APPENDIX E

APPENDIX E

Difficulty Index, Discrimination Index and
Types of Test Items

Item No.	Type*	Number of Right Responses		Per cent Right		Difficulty Index	Discrim. Index
		U#	L#	U	L		
1	P	22	21	100	95	98	5
2	A	3	1	14	5	10	9
3	A	20	16	91	76	83	15
4	A	5	1	23	5	14	18
5	A	5	0	23	0	12	23
6	A	3	4	14	18	16	-4
7	F	2	6	9	27	18	-18
8	F	21	15	95	68	82	27
9	F	22	21	100	95	98	5
10	F	22	17	100	77	88	23
11	F	21	17	95	77	86	18
12	F	18	10	82	45	64	37
13	P	15	7	68	32	50	36
14	A	12	10	55	45	50	10
15	P	7	5	32	23	28	9
16	P	20	11	91	50	70	41
17	P	5	1	23	5	14	18
18	A	18	12	82	55	68	27
19	A	7	4	32	18	25	14
20	A	16	9	73	41	57	32
21	A	13	5	59	23	41	36
22	A	22	21	100	95	98	5
23	A	0	2	0	9	4	-9
24	P	21	18	95	82	88	13
25	F	18	14	82	64	73	18
26	P	1	4	5	18	12	-13
27	P	16	5	73	23	48	50
28	P	11	7	50	14	32	36
29	P	18	9	82	41	62	41
30	P	15	16	68	73	70	-5
31	P	6	7	27	32	30	-5

*Items classified according to test-objectives.

F = Testing for facts.

P = Testing for understanding of principles.

A = Testing for application of facts, principles or generalizations.

#U = The upper 27% Group consisting of 22 women.

L = The lower 27% Group consisting of 22 women.

Table (Continued)

Item No.	Type	Number of Right Responses		Per cent Right		Difficulty Index	Discrim. Index
		U	L	U	L		
32	P	15	6	68	27	48	41
33	P	4	4	18	18	18	0
34	F	11	4	50	18	34	32
35	P	8	1	36	5	20	31
36	A	14	6	64	27	46	37
37	F	12	5	55	23	39	32
38	F	14	5	64	23	48	41
39	A	9	3	41	14	28	27
40	A	14	7	64	32	48	32
41	A	22	13	100	59	80	41
42	A	11	5	50	23	36	27
43	F	5	6	23	25	24	-2
44	A	11	3	50	14	32	36
45	A	18	11	82	50	66	32
46	A	19	13	86	59	72	27
47	F	6	3	27	14	20	13
48	P	11	4	50	18	34	32
49	P	22	12	100	55	78	45
50	A	15	6	68	27	48	41
51	P	11	9	50	41	46	9
52	P	0	1	0	5	2	-5
53	P	17	7	77	32	54	45
54	P	9	8	41	36	38	5
55	P	2	0	9	0	4	9
56	P	21	22	95	100	98	-5
57	P	10	12	45	55	50	-5
58	P	21	11	95	50	72	45
59	F	18	14	82	64	73	18
60	F	17	14	77	64	70	13
61	F	22	17	100	77	88	23
62	F	7	7	32	32	32	0
63	F	14	13	64	59	62	5
64	F	16	13	73	59	66	14
65	F	17	18	77	82	80	-5
66	F	1	2	5	9	7	-4
67	F	17	19	77	86	82	-9
68	F	17	11	77	50	64	27
69	F	20	15	91	68	80	23
70	P	19	13	86	59	72	27
71	P	17	6	77	27	52	50
72	P	17	14	77	64	70	13
73	P	7	5	32	23	28	9

Table (Continued)

Item No.	Type	Number of Right Responses		Per cent Right		Difficulty Index	Discrim. Index
		U	L	U	L		
74	P	21	19	95	86	90	9
75	F	20	19	91	86	88	5
76	F	14	16	64	73	68	-9
77	F	21	15	95	68	82	27
78	F	8	5	36	23	30	13
79	P	18	17	82	77	80	5
80	P	16	19	73	86	80	-13
81	F	21	19	95	86	90	9
82	F	9	13	41	59	50	-18
83	F	22	18	100	82	91	18
84	P	9	4	41	18	30	23
85	F	19	14	86	64	75	22
86	F	20	19	91	86	88	5
87	P	11	8	50	36	43	14
88	F	19	15	86	68	77	18
89	P	17	20	77	91	84	-14
90	F	15	13	68	59	64	9
91	F	10	7	45	32	38	13
92	F	18	12	82	55	68	27
93	F	7	4	32	18	25	14
94	F	7	9	32	41	36	-9
95	F	20	19	91	86	88	5
96	F	10	12	45	55	50	-10
97	P	21	20	95	91	93	4
98	F	22	18	100	82	91	18
99	P	7	7	32	32	32	0
100	P	8	6	36	27	32	9
101	P	14	14	64	64	64	0
102	P	21	15	95	68	82	27
103	F	22	22	100	100	100	0
104	P	13	5	59	23	41	36
105	P	21	15	95	68	82	27
106	A	18	13	82	59	70	23
107	P	18	6	82	27	54	55
108	F	12	10	55	45	50	10
109	P	13	9	59	41	50	18
110	P	20	11	91	50	70	41
111	P	20	12	91	55	73	36
112	F	22	15	100	68	84	32
113	F	10	2	45	9	27	36
114	P	22	22	100	100	100	0
115	P	20	15	91	68	80	23
116	P	21	20	95	91	93	4

APPENDIX F

APPENDIX F

Scores Made on Pretest, Retest of Pretest, Written Course Tests,
Garments Made, Final Grade and SCAT Raw Scores

Women's Code No.	Pretest	Retest	Written Tests Per cent	Practical Perform. Skirt Dress Average	Final Grade	Years High School	Yrs 4-H	SCAT Raw Scores
1	84	92	81.2	10.0	11.0	10.5	11	100
2	83	81	78.7	9.0	10.0	9.5	11	79
3	81	102	85.2	10.0	11.0	10.5	11	79
4	81	---	---	---	---	---	---	---
5	80	80	82.6	5.5	6.2	5.8	6	77
6	79	95	78.5	6.0	9.0	7.5	8	76
7	78	108	83.2	11.0	11.0	11.0	11	93
8	77	87	74.8	10.0	9.0	9.5	8	77
9	76	88	74.5	8.0	9.0	8.5	8	66
10	75	---	---	---	---	---	---	93
11	75	---	---	---	---	---	---	91
12	75	---	---	---	---	---	---	---
13	75	---	---	---	---	---	---	63
14	74	92	83.8	11.0	11.0	11.0	11	81
15	73	90	73.8	6.5	6.5	6.5	6	83
16	72	89	83.6	7.5	8.0	7.8	8	96
17	71	91	80.5	5.5	8.0	6.8	6	74
18	71	---	---	---	---	---	---	100
19	70	97	83.3	6.5	7.5	7.0	8	99
20	70	99	78.5	10.0	9.0	9.5	8	91
21	70	---	---	---	---	---	---	79
22	69	87	80.5	6.5	7.2	6.8	8	81
23	67	97	77.8	8.0	11.0	9.5	11	62
24	68	98	98.0	8.0	9.5	8.8	11	---
25	68	---	---	---	---	---	---	48

Table (Continued)

Women's Code No.	Pretest	Retest	Written Tests Per cent	Practical Perform. Skirt Dress	Average	Final Grade	Years High School	Yrs 4-H	SCAT Raw Scores
26	68	87	79.6	6.5	6.0	6.2	0	5	82
27	67	89	75.2	8.0	9.5	8.8	3	7	84
28	67	85	73.8	7.5	10.5	9.0	0	5	78
29	67	--	---	---	---	---	0	0	49
30	66	--	---	---	---	---	3	0	50
31	66	--	---	---	---	---	2	7+	50
32	66	88	74.5	7.5	9.5	8.5	3	7+	90
33	66	93	79.9	8.0	9.0	8.5	1	7+	70
34	66	87	78.7	8.0	11.0	9.5	3	0	78
35	66	88	66.4	8.0	9.5	8.8	1	1	85
36	66	--	---	---	---	---	3	0	50
37	66	82	71.8	11.0	9.5	10.2	3	0	50
38	65	90	74.1	10.0	8.0	9.0	2	0	76
39	65	92	80.6	6.0	6.5	6.2	2	7	96
40	65	84	75.8	6.5	7.5	7.0	2	2	60
41	64	86	74.5	5.5	8.5	7.0	3	2	66
42	64	85	70.4	6.5	10.0	8.2	4	7+	48
43	64	93	77.8	11.0	11.0	11.0	3	7	68
44	63	82	69.1	7.5	5.8	6.6	3	6	65
45	63	87	71.5	6.5	8.0	7.2	0	0	84
46	63	84	72.5	5.5	7.2	6.4	0	4	76
47	63	--	---	---	---	---	0	1	--
48	63	91	79.2	6.5	10.5	8.5	2	0	56
49	62	85	76.4	8.0	9.0	8.5	0	7	51
50	62	90	75.9	6.5	7.5	7.0	2	7+	68
51	62	83	75.8	7.5	10.5	9.0	3	0	82
52	62	83	69.8	7.5	6.0	6.8	3	0	55
53	62	83	72.2	5.5	9.0	7.2	0	1	93
54	61	95	81.0	11.0	11.0	11.0	2	7	75
55	61	80	76.4	5.5	6.0	5.8	0	0	95

Table (Continued)

Women's Code No.	Pretest	Retest	Written Tests Per cent	Practical Perform. Skirt Dress Average	Final Grade	Years High School	Yrs 4-H	SCAT Raw Scores
56	60	92	74.5	10.0	7.5	8.8	6	75
57	60	87	76.2	4.0	6.0	5.0	0	74
58	59	77	69.1	7.5	9.0	8.2	7	66
59	59	---	---	---	---	---	0	55
60	59	94	73.6	6.5	7.5	7.0	0	54
61	59	80	73.8	6.0	8.0	7.0	5	61
62	59	---	---	---	---	---	3	67
63	58	---	---	---	---	---	2	73
64	58	89	79.2	9.0	7.5	8.2	0	---
65	58	88	77.2	7.5	11.0	9.2	0	90
66	58	---	---	---	---	---	0	71
67	58	---	---	---	---	---	0	80
68	57	92	75.9	5.5	7.5	6.5	7	69
69	57	89	78.5	9.0	10.0	9.5	4	76
70	56	93	75.8	7.5	9.5	8.5	7+	---
71	56	75	---	8.0	1.0	4.5	0	70
72	55	88	75.2	7.5	6.8	7.2	0	---
73	54	76	67.1	6.0	8.0	7.0	0	77
74	54	89	69.1	1.0	6.0	3.5	1	73
75	54	84	69.1	7.5	6.0	6.8	0	83
76	53	---	---	---	---	---	2	78
77	52	73	75.2	5.5	6.0	5.8	4	94
78	51	83	76.4	7.5	10.0	8.8	0	87
79	50	80	71.8	6.5	8.0	7.2	0	77
80	47	90	75.2	6.0	8.0	7.0	0	89