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A Comparative Study of the Scholastic Ability of South Dakota High School Seniors in Their Self-selected Occupational Groups as Evidenced by the State-wide ACE Test Results in 1952

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A COMPARATIVE STUDY OF THE SCHOLASTIC ABILITY OF SOUTH DAKOTA HIGH SCHOOL SENIORS IN THEIR SELF-SELECTED OCCUPATIONAL GROUPS AS EVIDENCED BY THE STATE-WIDE ACE TEST RESULTS IN 1952

by

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INTRODUCTION

Justification of the Study

The American Council on Education Psychological Examination (ACE) has been administered on a voluntary state-wide basis each fall since 1948. As a part of the supplementary information each student is asked to indicate his "tentative occupational choice," and as to whether or not he expects to go to college.

Considerable interest and some speculation concerning the scholastic aptitude of several of these vocational groups has been evidenced. Further and more extensive study of these and additional vocational groups would yield worthwhile information to South Dakota educators, particularly from the guidance viewpoint.

ACE in South Dakota

South Dakota State College used the ACE tests in some departments before 1942. During 1942-1943 an extensive testing program was inaugurated on the campus under the direction of Shailer Peterson, Director of Educational Research and Measurement. This work was continued by Dean Frank Schultz of the Division of Science and Applied Arts. This testing program is now a part of the State College testing program under the immediate direction of Associate Professor Gerald Fort, of the Student Personnel Department. Through the efforts of Dean Schultz of State College and other educators in South Dakota, a plan was worked out in 1947 with the State Department of Education to

put the ACE testing on a state-wide voluntary basis for all South Dakota high schools.

During the five-year period the ACE tests have been used in the State-Wide Testing Program, the percentage of participation of high schools has been as follows:

Fall of 1952 - 96.3%
Fall of 1951 - 92.7%
Fall of 1950 - 91.7%
Fall of 1949 - 78.9%
Fall of 1948 - 74.2%

Out of a total of 298 four-year high schools 287 participated. In 1951, a total of 6289 seniors or 92.8 per cent of the seniors of South Dakota took the test. In 1952, the total was 6,737, or 93.5 per cent of the senior population.

According to an analysis made by Professor Gerald Fort, there were 3,613 girls and 3,124 boys tested. Of this group, 3,558 seniors indicated their intentions of attending college; 2,784 did not plan to go to college; and 395 were undecided.

Plan and Scope of the Study

The major study was to discover the general character of fourteen selected groups from the high-school seniors of South Dakota who took the ACE tests and filled in the personal data in the Fall of 1952. Eleven of these groups were occupations; one group was those who indicated college academic majors; one group was made up of those boys and girls who put in some form of military service as their "tentative occupational choice," and the final one was composed of those boys and girls who gave no vocational choice. The median was used as the measure of

central tendency and semi-interquartile range as a measure of variability.

The first minor study was a break-down of the teaching group into two groups of boys and one of girls. The one group of men indicating coaching and the other, teaching as their profession. This information also made it possible to compare the total group of men with the group of women teaching.

The second minor study was made to compare those with professional or vocational choices with the group indicating no vocational choice made. This sub-study included comparisons of the two sub groups of the "no vocational choice" category. One part was made up of those who indicated they were going to college. The other part failed to indicate any post-high-school training intended.

Delimitations

Only the T-scores (total scores) of the American Council on Education Psychological Examination were used in this study because they are assumed to measure general scholastic aptitude. The "Q" and "L" sub-scores were not intended to measure primary mental abilities; consequently, they were not used in this study. More specifically ACE T-scores are thought to measure the type of ability which is required for most college curricula.

The median as the measure of central tendency and the semi-interquartile range, or "Q", as the measure of variability were used to compare the groups and sub groups included in problem.

The major portion of the data was from the 1952 ACE test roster

but a limited portion of the 1951 data was also used. The information used in this study from the roster for each senior considered was his T-score, his designation (if any) of intent to go to college, and his designation (if any) of a choice of a profession or vocation.

SECTION II

REVIEW OF LITERATURE

The purpose of this section is to examine some of the literature in three of the areas which have a definite bearing on this study. Inasmuch as a tentative vocational choice may be in part or in whole a self-estimated interest, review of some of the studies on self-estimated interest should be helpful. Closely related to this area is the consideration of those factors which contribute to the vocational choices of youth. A third area, not too closely related to these two areas but of vital interest, is the prediction of success in post-high-school education on a basis of ACE test scores. Certainly a review of some of the studies made in South Dakota on ACE test scores should be of value to this study and are included.

Validity of Self-Estimated Interests

When the high-school senior is confronted with the question, "What is your tentative occupational choice?", he may be fully prepared to give his choice. On the other hand it is perfectly conceivable that he has given little serious thought to the matter. Thus, it is probable in many instances that the senior's answer to the question is based on a self-estimated interest.

While it is perfectly possible that some answers are not even self-estimated interests, it must be assumed here that those, which are not, are at a minimum, but some basis for such are worthy of brief mention. Some may report a vocation mentioned by a member of the family

or by a friend. For example, some may report "law" or "medicine" as a matter of wishful thinking. Perhaps he may report "army" because it has been decided in family council that he should not go to college. There is no measure to discover or weigh these answers in the personal data on the ACE Rosters.

Assuming that a tentative vocational choice is at least the student's best choice of his self-estimated interests, one adequate approach to this problem is to determine the relationship between self-estimated interests and interest as measured by an acceptable interest test.

In a study made by D. J. Moffie[1] of North Carolina State College, the specific relationship between self-estimated interests and those interests measured by Strong's Interest Blank was determined. The coefficients of correlation were not particularly encouraging, varying from $r = -.05$ for author-journalist to $r = .54$ for musician. For one group composed of accountant, purchasing agent, banker, and office man the $r = .47$, which is reasonably significant with a predictive value of 11%. The reader is reminded of the fact that a correlation coefficient of 1.0 would permit 100 per cent prediction. However, as the value of r decreases the percentage of forecasting accuracy decreases very rapidly. Thus, if r has a value of .47, the percentage of prediction is only 11 per cent better than pure chance. It is interesting to note that the coefficient of correlation for lawyer was .09; physician, .06; farmer. .13. The group studied consisted of eighty NYA students taken

(1) D. J. Moffie, "The Validity of Self-Estimated Interests", Journal of Applied Psychology, XXVI, 1942, pp. 606-615.

at random but studying radio, wood shop, or machine shop. From this study it would appear that definite precautions should be exercised in determining values of self-estimated interests.

A somewhat more encouraging study was reported by R. C. Crosby and A. L. Winsor[1] at Cornell University. Here the self-estimated interests were correlated with Kuder's Preference Record as the measure of interests. Seven types of interest were used rather than specific vocations. The groups used for this study were 111 General Psychology students and 111 Educational Psychology students from the Colleges of Agriculture and Home Economics at Cornell University. Correlations between estimated and measured interests as found by Crosby and Winsor[2] are as follows:

	Group I (Gen. Psychology) N = 111	Group II (Ed. Psychology) N = 111
Scientific	.48	.53
Computational	.56	.66
Musical	.58	.49
Artistic	.41	.51
Literary	.57	.58
Social Service	.59	.50
Persuasive	.62	.66
Average	.52	.56

Note-Average r for all interests (222 cases) = .54

These correlations indicated to the authors that interest

(1) R. C. Crosby and A. L. Winsor, "The Validity of Students' Estimates of Their Interest", Journal of Applied Psychology, XXV, 1941, pp. 408-414.

(2) Ibid., p. 410.

inventories may probably be used quite profitably to supplement the student's own opinion of his interests.

Two rather interesting additional conclusions from this study from data (not in the above table) were that the more intelligent students made fewer errors in estimating their own interests than did the less intelligent in estimating theirs. Also there was a statistically significant difference favoring the girls over the boys in ability to estimate interests in social service.

Factors Which Contribute to Youths' Vocational Choice

The selection of a vocation is a very real and a very serious problem for every youth. A study of the ACE scores prompted several questions. What was the basis for the choice? To just what extent did youth really make vocational choices? How many are free and able to enter the vocations they have indicated as choices? Certainly it is impossible to answer any of these questions with the available data. The question of freedom of choice should not be dismissed without considering some of the factors. In 1939, Williamson[1] reported that about 37 per cent of college men and 46 per cent of college women did not give the same occupation as both their chosen and their preferred vocations.

Strong[2] suggests the following as factors which may cause choice to differ from preference:

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(1) E. G. Williamson, How to Council Students, New York, McGraw-Hill Company, 1939, p. 428.

(2) Edward K. Strong, Jr., Vocational Interests of Men and Women, Stanford University Press, Stanford University, California, 1943, p. 30.

1. Pressure of family or friends of family to enter a given vocation, to live near mother, etc.
2. Desire to marry, which handicaps further preparation for preferred occupations.
3. An opportunity to become immediately established.
4. Lack of necessary finances to finish.
5. Lack of necessary ability.
6. Lack of necessary personality.
7. Lack of requisite health.
8. Lack of information about preferred and competing occupations so that adequate plans cannot be formulated.

In a questionnaire given to a group of central Missouri high-school seniors in 1940, they were asked which factor was most influential in the vocational choice and which factor was second in importance. Peters[1], reporting on the results of this questionnaire, stated that parents were definitely the most influential factor; friends of the family were second; professional acquaintances were third; and relatives were fourth. Educators should note teachers were fifth, and "Influence of the results of vocational guidance tests" was eighth. The first four of the second most influential factors were reported in this order: (1) parent; (2) opportunity for advancement; (3) relatives other than parents; (4) opportunity for quick employment.

Inasmuch as parental influence appears to be the major factor, it is worthwhile to report some of the findings of a study by Robert Kroger and C. M. Touttit[2]. They found that only a small percentage of the boys

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(1) Edwin F. Peters, "Factors Which Contribute to Youths' Vocational Choice", Journal of Applied Psychology, XXV, 1941, pp. 426-430.

(2) Robert Kroger and C. M. Touttit, "Influence of Father's Occupation on Vocational Choices of High-School Boys", Journal of Applied Psychology, XIX, 1935, p. 212.

in high school desire to follow their father's occupation. Most high-school boys tend to choose an occupation at a higher level than that of their fathers. The same authors pointed out the fact that the expressed choices could not be carried out in certain fields because of lack of opportunity. They found "... that nearly 70 per cent of the boys want to engage in work that is represented by only 35 per cent of the gainfully employed population." On the other hand they found that only one per cent want to engage in laboring occupations which are represented by 30 per cent of the population and 11 per cent of their own fathers.

Another factor which should not be overlooked is the influence of the community upon the high-school senior in regard to post-high-school training. Rather indirect evidence of this influence is suggested by a study made by R. W. Monfore[1]. In his study of post-high-school status of South Dakota high-school graduates, he found definite evidence that graduates from small-town high schools attend junior colleges and teacher colleges in higher proportions than do graduates of large-town high schools. This tendency he found to be particularly true among girls. The combination of Mr. Monfore's findings and the fact that the post-high-school education would be in schools of specialized or limited offerings would appear to be an influence on vocational choice. For example, a girl in a small community might be more inclined to attend

(1) R. W. Monfore, Post-High-School Educational Status of South Dakota High School Graduates, Thesis, South Dakota State College, August, 1950, pp. 50-52.

a teacher college and become a teacher than a girl from a larger community where there is less tendency among the girls to go to teacher colleges.

Prediction of Success in College

While it is not the purpose of this study to attempt prediction of success in post-high-school education on a basis of ACE test scores, the examination of some of the reported research should prove worthwhile.

A. W. Hurd[1] in his report on prediction studies at Virginia Medical College stated that a multiple correlation of .90 was obtained between student rank in college and three selected tests. Rank in college was based on a comprehensive achievement test in basic science for nurses. This comprehensive achievement test was correlated with the ACE, Otis Test of Mental Ability (Higher Examination), and a local test in exercises in reading medical literature. This unusually high correlation, according to Mr. Hurd, had never before been reported.

In most studies, however, the most common criterion is first-year achievement, usually expressed as grade-point average. In the single correlations reported in the American Council on Education Studies[2] the coefficient of correlation for ACE scores and grade-point average in law was high with a value of $r = .56$. The value of r was .48 in engineering; .34 in both agriculture and nursing and in teaching varied from .42 to

(1) A. W. Hurd, "Implications of a Brief Study of Predictions of Success in the Medical School, Medical College of Virginia," Educational and Psychological Measurement, Vol. VII, No. 1, pp. 127-130.

(2) Dewey B. Struit, Gwendolen Dickinson, Thomas Jordon, and Lester Schloerb, "Predicting Success in Professional Schools", American Council on Education, 1949, pp. 24-187.

.51 in studies reported. The dental-school correlation coefficient was .21, the lowest given in the report. Obviously none of these correlations coefficients were sufficiently high to warrant extensive use in prediction. However the ACE test scores as one of three or more predictive indexes gave multiple correlation coefficients which averaged much higher. Four studies with freshman engineering groups gave the values of r as .57, .72, .72, and .76. In music, r had the highest value reported of .84, but in farming r = .41 and in teaching r = .62. These data, used with proper discretion, would be valuable in counseling in groups where such information had been obtained from carefully selected tests.

Local studies, which deal with South Dakota students and their scores on the ACE tests are of particular interest to South Dakota educators. Peterson[1] reported the coefficients of correlation between ACE test scores and freshman grade-point average in the several departments of South Dakota State College. The highest coefficient he reported was for the Unclassified group with a value of .493, and the lowest was in Agriculture with a value of .303. Berg[2], as part of a later study, found the average coefficient of correlation between ACE test scores and freshman grade-point average at South Dakota State College to be .58.

(1) South Dakota State College, Department of Educational Research and Measurement, Annual Report, 1943, pp. 19-93.

(2) Norman Berg, "A Study of Relative Values of Marks in Various Amounts of High-School Subjects and Scholastic Aptitude Test Scores for the Prediction of Success in College", Thesis, South Dakota State College, 1947, p. 74.

These studies and others of a similar nature invite caution in attempting prediction. More often the real need is adequate information concerning the scholastic ability of a given vocational group of high-school seniors.

Reporting on a study of the vocational choices and ACE scores of South Dakota high-school seniors, Dr. C. R. Wiseman[1] compared the women-teacher group with the men-teacher group. He also compared the Teacher groups with the groups in Medicine and Nursing. While there was no attempt made in predicting the success of individuals in college the finding did reveal the general caliber of the groups. For example, he found the group in Medicine to be very capable scholastically but the Nursing group was only about average of the South Dakota seniors.

Information from State College

The writer wishes to add to this section certain information obtained in interviews with Associate Professor Gerald Fort of the Student Personnel Department, and Dr. Frank Schultz, Dean of the Science and Applied Arts Division of South Dakota State College.

The first extensive use of the ACE tests at State College was in 1942 under the direction of Professor Shailer Peterson, Director of Educational Research and Measurement. This department, successively under the direction of Dean Schultz and then Professor Fort, has continued to use the ACE tests as part of the regular testing program. In addition, Professor Fort has done three studies on ACE test data

(1) C. R. Wiseman, "Who Will Be Our Teachers?", South Dakota Education Association Journal, XXVII, May, 1952, p. 354.

for the State Department of Public Instruction at Pierre. Professor Fort reported that the ACE scores serve as a valuable factor in counseling, but high-school rank was the best single predictor of college success. However, local predictive data, which have become very valuable in counseling, have been set up from twelve years of research at State College. The National College Freshman ACE norms with the State College ACE test norms are important factors in these data.

These observations may be made in summary:

1. Precaution should be exercised in weighing the value of self-estimated interests of high-school seniors. However, the information on these choices is of positive value to educators.

2. The home is the most influential single factor of the many which contribute to youths' vocational choices.

3. ACE test scores can better be used as a counseling aid rather than as a predictive device.

4. ACE test scores and other test data gathered from a sufficiently large group and correlated with college performances make possible the establishing of college norms for local use, as has been done at State College.

SECTION III

SOURCES, NATURE OF INFORMATION, AND TREATMENT OF DATA

Access to the 1951 and 1952 Rosters of the ACE Tests for South Dakota Seniors was made possible by the Education Department of South Dakota State College and permission from Mr. W. Marvin Kemp, Supervisor of Guidance and Counseling, Department of Public Instruction of South Dakota. It was agreed that all information would be handled on a highly ethical basis. Schools were not to be compared and pupils' names were not to be listed.

The State Roster gave each senior's name, his "L" and "Q" partial scores, and his total or "T" score. The Roster also showed for each individual his indicated professional or vocational choice, and whether or not he intended to attend college. The "Q" score was his partial score on the quantitative portion of the examination and the "L" score was the partial score on the linguistic sections. The "T" score was the sum of the "Q" and "L" scores. In this study only the T-scores were used along with the information on occupational choice and whether or not the student intended to go to college. While most of the students had marked their sheets indicating whether or not they intended to go to college and what occupational choice they had, yet a sizeable group failed to mark one or the other.

The T-scores of all individuals in each category or occupational group were set up in grouped-frequency tables. From these tables the median, Q_1 and Q_3 were determined by the formula employed for grouped-frequency distribution. The semi-interquartile range, or "Q", was

determined by the formula $Q = \frac{1}{2}(Q_3 - Q_1)$. The master Table (see appendix) contains these data with the number in each group and the percentile rank for those individuals whose scores were at either Q_1, Q_3, or the median. The shortened form of this table to be found in Section IV, does not give percentile rank but does give equivalent data for the National College Freshmen and South Dakota Seniors. All values of Q_1, Q_3, and the median are expressed in whole numbers to conform to the South Dakota norm sheets which have been compiled in the South Dakota State Department of Public Instruction.

SECTION IV

RELATIONSHIP OF OCCUPATIONAL CHOICES AND SCORES ON THE ACE TEST

Each high-school senior who took the ACE test gave his name and the name of his school in addition to completing the items in the test. In South Dakota each senior was asked to fill out an additional mimeographed form giving personal data. This personal data included a question on tentative occupational choice and whether or not the senior expected to attend college. Most of the seniors filled in the personal data. Some did not indicate whether they intended to attend college, and some gave no occupational choice. Some indicated a college academic major instead of a vocation.

Approximately 115 different occupational choices were listed. However, in making this study it was decided to limit the list to fourteen areas or groups. Eleven of these areas were professional or vocational categories; one category included all those who had indicated choices of college academic majors; one category comprised the various forms of military service listed in place of a vocation; and the last category included all who had not listed any vocation. The design was to include groups where both men and women were interested. The criteria for selecting the groups were diversification, character, general scholastic ability, and general requirements for entering the occupation.

The fourteen categories included in this study were divided into five groups to facilitate comparison. The three professions, Engineering, Medicine, and Law, composed the first group. This was a very high-ability group, composed very largely of men. The second group were all

those who had indicated an Academic Major instead of an occupational choice. The third group, including Medical Technician, Art-Music, Home Economics, Teaching, and Nursing, was composed very largely of women. Religious-Social Work, Office, and Farming comprised the fourth group. The fifth group was made up of those who had indicated Military and those who Had Not Indicated Any Vocation. The professional nature of the first group demands a rigorous college preparation over a period of five or more years. The College Academic Majors would have four, five, or more years of college training. The semi-professions and vocations of the third and fourth groups varied within wide extremes as to the amount and quality of the post-high-school training necessary for preparation to satisfactorily enter and advance in the profession or vocation. Even within a given vocation there would be great latitude between the meager post-high-school training for minimum entrance requirements and the adequate preparation for successful advancement in the field. The last group by indicating Military or No Vocational Choice gave no evidence of what their educational needs might be.

The purpose of the remainder of this section is to compare and contrast the professional and vocational categories with each other and with the South Dakota High School Seniors and the National College Freshmen. Before considering each of the five groups named above, the attention of the reader is directed to Table I and Figure I.

TABLE I. COMPARISON OF THE FOURTEEN CATEGORIES WITH THE NATIONAL COLLEGE FRESHMEN AND THE SOUTH DAKOTA HIGH SCHOOL SENIORS. (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Engineering	244	91	105	118	13.5
Medicine	50	94	105	114	10.0
College Academic Majors	54	90	103	119	14.5
Law	41	88	101	115	13.5
Medical Technician	54	85	100	110	16.0
Art-Music	100	81	92	109	14.0
Religion-Social Work	78	77	92	106	14.5
Home Economics	48	78	91	106	14.0
Teaching	654	74	87	103	14.5
Nursing	470	70	84	99	14.5
Office	918	71	84	98	13.5
Military Service	159	69	83	98	14.5
Farming	786	66	81	94	14.0
No Vocational Choice Indicated	1,690	65	79	93	14.0

Note: In the above table and the following figure the reader will interpret the interquartile range as being statistically twice the value of Q as given.

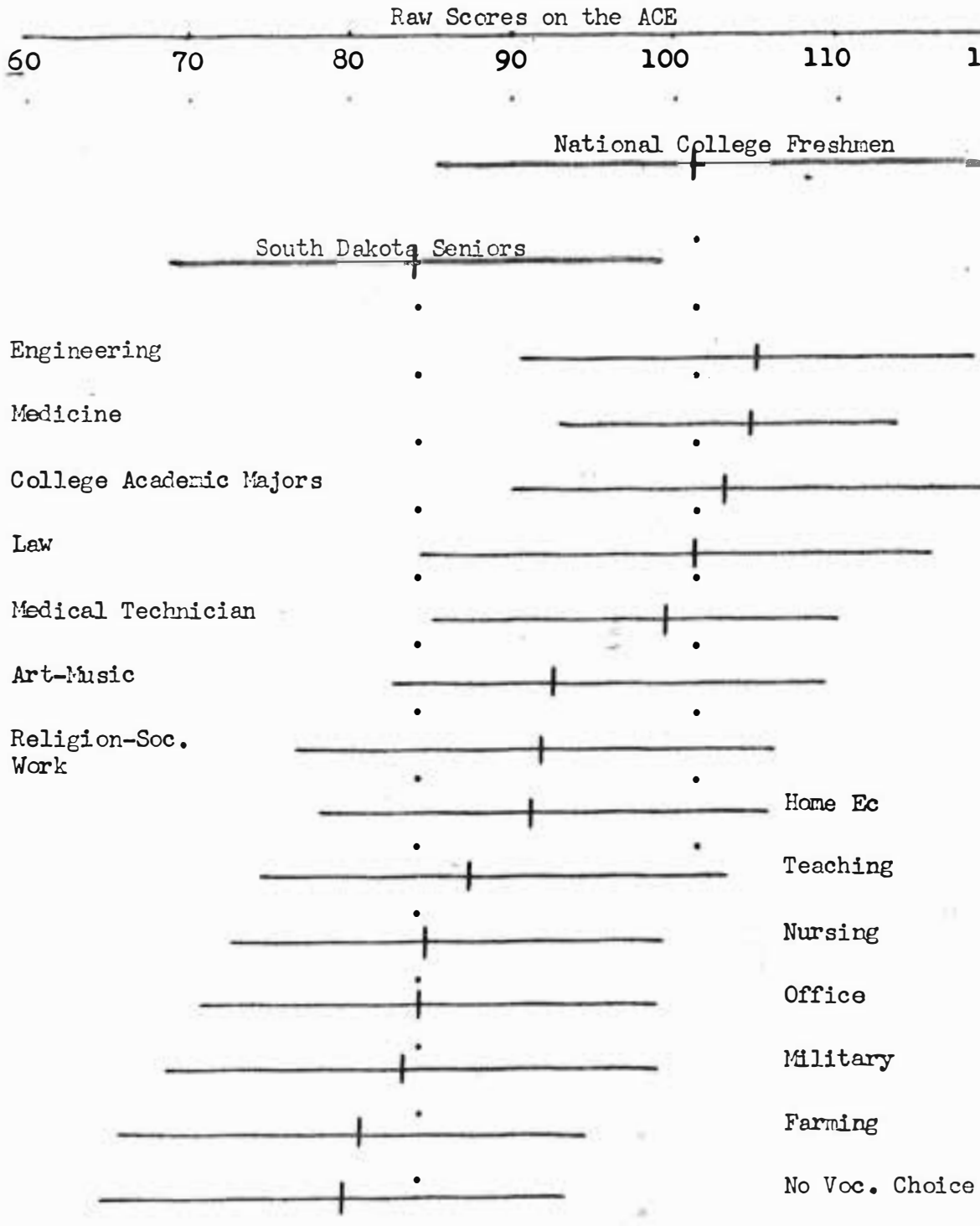

FIG. 1. COMPARISON OF THE FOURTEEN CATEGORIES WITH THE NATIONAL COLLEGE FRESHMEN AND THE SOUTH DAKOTA HIGH SCHOOL SENIORS. (1952)

Note: Length of bar is the interquartile range. The median is shown by the short cross-line near the middle of each bar.

In both Table I. and Figure I. the norms for the National College Freshmen group and for the South Dakota Seniors are listed at the top. Below the National College Freshmen and South Dakota Senior norms are listed the tabulations for the fourteen categories in the descending order of the medians. The position of the medians on Figure I. is indicated by the short cross-line near the middle of each bar.

The values for the semi-interquartile range of each group is given in the last column in Table I. The reader will note that the length of each bar in Figure I. is the interquartile range for that group and is twice the numerical value of Q as reported in the table. The end positions of the bars in Figure I. are the scores given under Q_1 and Q_3 in Table I.

Professional Group for Men

The three professions for men in this study were Engineering, Medicine, and Law. Figure I. shows Engineering as the highest-ability group, Medicine as second, and Law as fourth in the fourteen categories arranged in the descending order of the median. Data on the professions for men, the National College Freshmen, and the South Dakota Seniors are presented in Table II.

TABLE II. COMPARISON OF THE PROFESSIONAL GROUP FOR MEN WITH THE NATIONAL COLLEGE FRESHMEN AND SOUTH DAKOTA HIGH SCHOOL SENIORS. (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Engineering	244	91	105	118	13.5
Medicine	50	94	105	114	10.0
Law	41	88	101	115	13.5

The median scores of those choosing Engineering and Medicine were two points above the median of the National College Freshmen norms, and the median of the Law group was two points below the National College Freshmen median. The interquartile range for both the Engineering and Law groups was twenty-seven points and for the Medicine group was twenty points. The chief significance of the interquartile range is the ability to show variability but more specifically in this study to show how representative the median is of the group as a whole. Therefore, the median of the Medicine group is more representative of the Medicine group than the median of the Engineering group is representative of the Engineering group because the interquartile spread of the Medicine group is somewhat less than the interquartile spread of the Engineering group.

The comparison of the three professional groups with the South

Dakota Seniors is worthy of attention. The median for the Law group was seventeen points above the median of the South Dakota Seniors, and the medians in Engineering and Medicine groups were twenty-one points above the median of the South Dakota Seniors. In Law, which was the lowest of these three groups, the student at Q_1 placed above 58 per cent of the South Dakota high-school seniors.

It was decided earlier in this study that no serious attempt in the prediction of college success on the basis of ACE test scores would be made. However, it should be called to the attention of the reader that in the study made by Shailer Peterson[1] in 1942, at South Dakota State College, a coefficient of correlation of .453 was obtained between ACE test scores and freshmen grade points. If better than 50 per cent of the Engineering group were above the median of the National College Freshmen, it seems reasonable that the majority of the upper 75 per cent of the Engineering group should have adequate scholastic ability to attempt Engineering.

A comparison of the 1951 and 1952 groups in Engineering, Medicine, and Law in terms of ACE test scores is shown in Table III.

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(1) South Dakota State College, Department of Educational Research and Measurement, Annual Report, 1943, pp. 19-93.

TABLE III. COMPARISON OF THE 1951 ACE TEST DATA WITH THE 1952 DATA FOR THE PROFESSIONAL GROUPS FOR MEN.

Profession	Year	N	Q_1	Md.	Q_3	Q
Engineering	1951	155	87	102	116	14.5
Engineering	1952	244	91	105	118	13.5
Medicine	1951	66	98	112	123	12.5
Medicine	1952	50	94	105	114	10.0
Law	1951	37	86	102	116	15.0
Law	1952	41	88	101	115	13.5

Recent emphasis on the need for engineers in South Dakota may in part explain the increase in the group indicating Engineering as their choice of profession. In 1951 only 151 high school seniors in South Dakota indicated Engineering, whereas in 1952, a total of 244 seniors listed Engineering: an increase of over 57 per cent. As seen in Table III., the 1952 group was also slightly superior to the 1951 group in quality, which was hardly to be expected with an increase in numbers. The senior who plans pre-medicine should recognize the limitations in enrollment in the medical schools and the competition both for entrance into and survival in the medical schools. From the data alone, however, it appears that the upper 75 per cent of the groups in Medicine and Law should have the mental ability to enter, as well as survive, pre-medical and pre-legal studies.

The reader should note that there was a decrease of approximately 25 per cent in the number choosing medicine as a profession in 1952 compared to the number choosing Medicine in 1951. Reference to Table III

shows the reader that the 1951 group in Medicine was a superior group with a median of 112, the highest median value found for any group in this study in either 1951 or 1952. The median in the Medical group in 1952 was 105, which was seven points less than the median in Medicine in 1951. However, neither the decrease in number nor the decrease in indicated scholastic ability in Medicine in 1952 over 1951 was large enough to indicate a trend. A study over a period of years would be required to determine the existence of any possible trends in professional fields.

Another important observation is that the group in Medicine had less spread than either engineering or law in both 1951 and 1952.

College Academic Majors

The college Academic Majors were those fifty-four seniors who had indicated a college academic major rather than a tentative occupational choice. This category is unique in that it can not be grouped with professions nor with the non-professional group. By giving a major subject field of interest for college study, the senior suggests or infers the occupational areas he may be considering. If a man had listed chemistry as his college major, he may have in mind professional chemistry as his vocation; or he may be considering the teaching of chemistry in high school or college. If the choice were mathematics, his vocational choice may be teaching of mathematics, or it may be in statistics. For this study, however, a college Academic Major must be just that with no attempt to connect it with an occupation.

The middle 50 per cent of the college Academic Majors ranged from

the sixty-first percentile rank to the ninety-third percentile rank of the South Dakota High-School Seniors. The median score of the college Academic Majors was 103, which was the same as that of the National College Freshmen. Engineering and Medicine groups were the only ones to rank above the college Academic Majors in this study, or in any group in the whole South Dakota high-school senior population considered, as far as this writer was able to ascertain.

From the standpoint of guidance it would appear that these seniors who had indicated a college major were perhaps influenced more by their teachers and classroom activity than were those seniors who indicated a professional or vocational field. The reader is reminded that certain studies indicate that parents, relatives, and acquaintances influence the student to a greater degree in the selection of an occupation than do his teachers.

Professional Group for Girls

Medical technician, Art-Music, Home Economics, Teaching, and Nursing were placed in this professional group of women because these occupations are selected predominantly by women and are among the common professions for women. If a senior listed Art or Music as the tentative occupational choice, the inference is that the individual considered Art or Music as a profession, and not as a hobby or avocation.

The term, Medical Technician, is used in this study in a general sense to include laboratory technician, x-ray technician, and dental technician. Dietetics was included in the Home Economics category. Coaching was considered to be part of the Teaching category.

The amount of post-high-school training required to enter these professions varies between wide limits. For example, short courses are offered for training in some of the vocations included in the medical-technician category, but far more adequate training is provided in a four-year college preparation. The degree and amount of training would also vary within wide limits for the other professions in this group, particularly in Art-Music and Teaching. This phase of the teaching problem is discussed in a later section of this report. Home Economics requires at least two years of college training. A registered nurse receives four to five years of post-high-school training in college and hospital.

For the convenience of the reader in comparing the categories of the third group with National College Freshmen and South Dakota High-School Seniors, the data are presented in Table IV.

TABLE IV. COMPARISON OF THE PROFESSIONAL GROUP OF WOMEN WITH THE NATIONAL COLLEGE FRESHMEN AND THE SOUTH DAKOTA HIGH SCHOOL SENIORS. (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Medical Technician	54	85	100	110	16.0
Art-Music	100	81	92	109	14.0
Home Economics	48	78	91	106	14.0
Teaching	654	74	87	103	14.5
Nursing	470	70	84	99	14.5

The Medical Technician category was definitely superior in this group with a median score of only three points below the median of the National College Freshmen. However, the median of the Art-Music category was eight points above the median of South Dakota Seniors. Scores in the Home Economics category compared favorably with Art-Music. The median of Nursing was 84 which was the median of the South Dakota Seniors and the median of Teaching was only 87. The Teaching and Nursing categories were thus more or less typical of the South Dakota Seniors. It would appear that better guidance is needed to improve these two professional categories in South Dakota.

The reader will note that the semi-interquartile range is greater for the Medical Technician than for any of the other groups in the professional group of women.

Semi-Professional and Vocational Group

These three of the fourteen categories, Religious-Social Work, Office, and Farming, did not lend themselves to any specific classification either as to type or predominant sex. Religious-Social Work comprised a number of choices including minister, missionary, social worker, religious education, and social service. The men chose the ministry, but the rest of the category was predominantly women. It should be noted that part of the Religious-Social work category would be definitely professional in nature. The Office category included such choices as typist, secretary, stenographer, bookkeeper, receptionist, business machine operator, and accountant. This category was also predominantly women. Men chose Farming, indicating their

choice as agriculture, ranching, dairying, as well as farming.

Comparisons of the central tendency and dispersions of these categories of this group may be observed in Table V.

TABLE V. COMPARISON OF THE SEMI-PROFESSIONAL AND CERTAIN VOCATIONAL GROUPS WITH NATIONAL COLLEGE FRESHMEN AND SOUTH DAKOTA HIGH SCHOOL SENIORS. (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Religion-Social Work	78	77	92	106	14.5
Office	918	71	84	98	13.5
Farming	786	66	81	94	14.0

The Religion-Social work category with a median score of 92 was definitely superior to Office and Farming categories. This median was eleven points below the National College Freshmen median but still eight points above the South Dakota High-School median. Most of the upper 50 per cent of those who indicated Religion-Social work would appear to be able to take the required post-high-school training required for the vocation. The upper quarter of this category was above the median of the National College Freshmen, but the lower quarter was below the thirty-seventh percentile of the South Dakota High-School Seniors.

The median score of those who chose the Office work was eighty-four, which was the South Dakota High-School Senior median in 1950,

1951, and 1952. Thus, the median can be regarded as typical of the South Dakota seniors. The majority of those indicating some form of office work did not anticipate post-high-school training. For those who will take such training it is reasonable that the training would in most instances be in a business college and for not more than one or two years. A limited number probably intended to get a degree in some area of business education. Wherever a man indicated business education and college he probably had in mind a four-year course.

Those who indicated Farming as a vocation were the lowest in scholastic ability as exhibited by the ACE test scores in this study. The majority with this vocational choice did not plan to attend college. It should be noted, however, that the median of the Farm group was only three points below the South Dakota high-school median. Since most of the Farm category did not plan to attend college, these data would be of less value than if the majority of the Farm group were going to college. The interquartile range for those in Religious-Social work was highest in this group but not significantly higher than the interquartile ranges for the Office and Farming groups. It should be noted, however, that the Office and Farming categories are much larger in number.

Categories Not Selecting Vocations

The Military category, composed of one hundred thirty-four men and twenty-five women included all those who had written in some form of Military service instead of a vocational choice. It is the opinion of the writer that the seniors who wrote in a form of military service

were thinking of military service as an interlude, which was of immediate concern but not as a vocation. The second category in this group included all those who for one reason or another had not seen fit to state a tentative vocational choice; yet 40 per cent of this group expressed their intention to attend college. This category is discussed in more detail in a later section.

Data on the categories giving no vocational choice are presented in Table VI.

TABLE VI. COMPARISON OF THE CATEGORIES NOT SELECTING A VOCATION. (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Military Service	159	69	83	98	14.5
No Vocational Choice Indicated	1,690	65	79	93	14.0

The reader will note that the median of the Military group was very slightly below the median of the South Dakota Seniors. The upper quarter of this group, about forty seniors, comes out above the seventy-third percentile of South Dakota Seniors. From their ACE test scores this upper half of the Military group would appear to have the scholastic ability to engage in post-high-school education of college caliber.

The median of the category which did not indicate any vocational

choice was six points below the median of all the South Dakota seniors who took the ACE tests in 1952. Over 400 of those who gave no vocational choice were at or below the eighteenth percentile rank of the South Dakota Seniors. Only about 100 seniors out of 1,690 who gave no vocational choice had scores above the median of the National College Freshmen. There was no appreciable difference in amount of Dispersion between the Military group and those who did not indicate a vocation.

SECTION V

COMPARISON OF THE TEACHER SUBGROUPS AND COMPARISON OF THE NO-VOCATION SUBGROUPS

Comparison of the Teacher Subgroups

The purpose of this subsection is to examine and contrast the subgroups of the teaching category. Four subgroups were selected for this study. The first subgroup was those men who gave coaching as their tentative occupational choice. The second subgroup was the remainder of the men in the Teaching category who had given teaching as their professional choice. The third subgroup was the combination of the first and second subgroups while the fourth subgroup was composed of all the women who had listed teaching as their tentative professional choice. The comparative data on the subgroups in teaching are given in Table VII.

TABLE VII. COMPARISON OF THE SUBGROUPS IN TEACHING (1952)

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
Teaching (men)	89	80	92	106	13.0
Coaching (men)	43	79	90	99	10.0
Total (men)	132	80	91	105	12.5
Teaching (women)	522	74	86	102	14.0
Total (men and women)	654	74	87	103	14.5

Approximately twenty per cent of the total teacher group was men in 1952. About one-third of the men indicated coaching rather than teaching as a vocation. The median of the subgroup of men who indicated teaching was the highest of the teaching subgroups but still nine points below the National College Freshmen median. The coaching subgroup had a median one point less than the median of the subgroup of men who had indicated teaching. This would indicate no real difference in scholastic ability between these two subgroups. The reader may also note from Table VII that the semi-interquartile range was smallest for the coaching subgroup.

The median of the women's subgroup was the lowest of the four subgroups but still two points above the median of the South Dakota High School Seniors. The semi-interquartile range was also highest for the women which would mean that the median was appreciably less representative of the women's subgroup than the median of the coaches' subgroup is of the coaches. From data not in Table VII no marked differences were to be found in contrasting the subgroups of teaching 1951 and 1952.

Because of recent changes in South Dakota regulations on teacher certification the comparative data may be appreciably changed in subsequent years. The elimination or drastic reduction of teaching permits may have some influence in reducing the number of low ability women who have indicated teaching as their profession.

Comparison of the No-Vocation Subgroups

The purpose of this subsection is to examine and contrast the subgroups of the category which made no vocational choice. The information

on this category made up of those seniors who indicated they were not going to college and the two subgroups--the one subgroup indicating college and the other subgroup not indicating college--is presented in Table VIII.

TABLE VIII. COMPARISON OF THE NO-VOCATION SUBGROUPS

Category	N	Q_1	Md.	Q_3	Q
National College Freshmen	86,212	87	103	119	16.0
South Dakota Seniors	6,737	69	84	99	15.0
No Vocational Choice Made	1,690	65	79	93	14.0
Planned to Attend College	662	74	88	105	15.5
Did Not Plan to Attend College	1,028	60	74	89	14.5

In the 1952 returns, 1,690 South Dakota seniors did not indicate any vocational choice in their personal data on the ACE Test. However, of this number, 662 seniors indicated that they intended to go to college. The reader will note that the two subgroups of the no-vocation category were in decided contrast. The 662 seniors who did not indicate a vocational choice, but did express the intention of going to college, were superior to the other subgroups in scholastic ability. In fact, the median score of those indicating college was four points above the median of the South Dakota High School Seniors and one point above the median of the teacher group. The upper twenty-five per cent of the group which failed to indicate a vocation but did indicate college

attendance, were all above the median of the National College Freshmen.

Over fifteen per cent of the South Dakota seniors who took the ACE Test in 1952 failed to indicate any vocation or college attendance. The median of this subgroup was ten points below the South Dakota High School Senior median. However, about seventy-five of the 1,028 seniors in this subgroup had ACE test scores above the median of the National College Freshmen.

It would appear that if about one-fourth of the South Dakota seniors gave no vocational choice, that South Dakota educators should be concerned. Possibly many seniors were not properly instructed in the filling out of the personal data on the ACE score sheet. It would appear that the personal data blank on the ACE answer sheet might be altered. A wisely selected list of vocations might be helpful to the student in indicating his vocational choice. The findings would also seem to indicate that many seniors had not received sufficient aid in making an occupational choice.

SECTION VI

RECAPITULATION AND SUMMARY OF FINDINGS

Recapitulation

In this study an attempt has been made to compare the scholastic ability of South Dakota high-school seniors in certain self-selected occupational categories as evidenced by the State-wide ACE Test Results in 1952. The justification of the study was the interest and concern of South Dakota educators in the problem. The plan of the study was to determine the scholastic ability of fourteen selected categories or groups. Eleven of these were professional and vocational groups. One category included all who indicated the military rather than a vocation, one group had indicated college academic majors, and one group had failed to indicate any choice of vocation.

The T-scores of the ACE test were used as the measure of scholastic ability. The median was used as the measure of central tendency and the semi-interquartile range was used as the measure of variability.

The following suggestions may be summarized from the review of literature: (1) Precaution should be exercised in weighing the value of self-estimated interests of high-school seniors. (2) The home was the most influential single factor contributing to youths' vocational choice. (3) ACE scores can better be used as a counseling aid rather than as a predictive device. (4) College norms, valuable for local use, may be set up from ACE scores and other test data which has been correlated with local performance.

The major study was to compare and contrast the fourteen categories with each other, with the National College Freshmen, and with the South Dakota High-School Seniors. The first minor study was to examine and contrast the subgroups of the group which had indicated teaching as their tentative vocational choice. The second minor study was to examine and contrast the subgroups of the category composed of those seniors who had not seen fit to give a vocational choice.

Summary of Findings

1. The medians of the Engineering and Medicine groups were the only medians in the fourteen groups studied that exceeded the median of the National College Freshmen. The number selecting Engineering showed an increase of 57 per cent in 1952 over 1951.

2. The Medicine group median of 112 in 1951 was the highest found in this study for either 1951 or 1952. Medicine with an interquartile range of twenty points in 1952 had the least dispersion of any of the fourteen groups.

3. The College Academic Major group had a median of 103, as did the National College Freshmen. The College Academic Majors was the only group on a level with the professional groups for men: Engineering, Medicine, and Law.

4. The Law group ranked below Medicine and Engineering groups in both 1951 and 1952 and was one point below the National College Freshmen in median values in 1951.

5. The Medical Technician group with a median of 100 was the superior group of the professional groups for women and also had the greatest spread, with an interquartile range of thirty-two points.

6. The median of the Art-Music group was eleven points below the National College Freshmen but 50 per cent of the Art-Music group was above the sixty-fourth percentile of the South Dakota Seniors.

7. About 30 per cent of the Religious-Social Work group were above the National College Freshmen median. The Art-Music and the Religious-Social Work groups appeared to be of about equal scholastic ability with the Religious-Social Work group having the greatest spread.

8. About one-fourth of the Home Economics group were above the National College Freshmen median but half of the Home Economics group were above the sixty-second percentile rank of the South Dakota Seniors.

9. Three-fourths of the Teacher group had scores below the median of the National College Freshmen. The men who indicated teaching were the superior subgroup with a median of ninety-two. The lowest subgroup in Teaching was the women with a median of eighty-six.

10. The Nursing group with a median of eighty-four was a typical group of South Dakota Seniors. With an interquartile range of twenty-nine, Nursing had greater spread than most of the fourteen categories in this study.

11. The Office group, composed largely of women, had a median of eighty-four, as did the South Dakota Seniors. This was the poorest of the vocational groups for women included in this study.

12. The Military group had a median of eighty-three, or one point below the median of the South Dakota Seniors but the interquartile range was rather high with a value of twenty-nine. About 16 per cent of this group were women.

13. Most of the Farm group were men who did not indicate college attendance. Fifty per cent of the Farm group were below the forty-fourth percentile of the South Dakota Seniors.

14. The No-Vocational Choice group was the lowest of the fourteen groups in this study, with a median of seventy-nine. The median of the subgroup indicating college attendance was four points above the median of the South Dakota Seniors. The median of the subgroup not indicating college attendance was ten points below the median of the South Dakota Seniors and was the lowest median value found in this study.

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APPENDICES

APPENDIX A MASTER TABLE

NAME OF GROUP	N	Q_1	%-ille* Rank	Median	%-ille* Rank	Q_3	%-ille* Rank	Inter-quartile Range
Engineering	244	90.9	62	104.7	82	118.0	93	27.1
Medicine	50	93.7	67	104.5	81	113.9	90	20.2
College Academic Majors	54	90.0	61	103.1	80	119.0	93	29.0
Law	41	88.4	58	101.1	77	115.3	91	26.9
Medical Technician	54	85.1	52	99.5	76	110.2	87	31.9
Art-Music	100	80.8	45	92.1	64	108.7	86	27.9
Religion-Social Work	78	77.0	37	91.8	63	106.0	83	29.0
Home Economics	48	78.3	40	90.8	62	105.8	83	27.5
Teaching	654	74.4	33	87.3	56	102.8	80	28.4
Nursing	470	70.1	26	84.3	50	99.2	75	29.1
Office	918	70.9	27	84.2	50	98.4	74	27.5
Military Service	159	68.8	25	83.1	48	98.1	73	29.3
Farming	786	65.9	20	80.6	44	94.0	68	28.1
No Vocational Choice	1690	64.5	18	79.4	42	93.2	66	28.7
Total	5346							

*Note: The %-ille rank columns are in terms of the norms for South Dakota Seniors in 1952.

APPENDIX A
COMPARISON OF 1952 DATA WITH 1951 DATA

VOCATION	Year	N	Q_1	%-ille* Rank	Median	%-ille* Rank	Q_3	%-ille* Rank	Inter-quartile Range
Engineering	1951	155	86.7	54	102.4	79	115.9	92	29.2
Engineering	1952	244	90.9	62	104.7	82	118.0	93	27.1
Medicine	1951	66	98.1	73	112.3	89	123.1	95	25.0
Medicine	1952	50	93.7	67	104.5	81	113.9	90	20.2
Law	1951	37	85.8	53	102.0	79	116.3	92	30.5
Law	1952	41	88.4	58	101.1	77	115.3	91	26.9
Teaching	1951	682	72.1	29	87.4	56	101.2	77	29.1
Teaching	1952	654	74.4	33	87.3	56	102.8	80	28.4
Nursing	1951	486	73.4	31	86.2	53	97.8	73	24.4
Nursing	1952	470	70.1	26	84.3	50	99.2	75	29.1

* Note: The %-ille rank columns are in terms of the norms for South Dakota Seniors in 1952.

TABLE VII. COMPARISON OF THE SUBGROUPS IN TEACHING
(1951 and 1952)

Subgroup	Year	N	Q_1	Median	Q_3	Q
Teaching, Total	1951	682	72	87	101	14.5
Teaching, Total	1952	654	74	87	103	14.5
Coaching	1951	41	76	91	99	11.5
Coaching	1952	43	79	90	99	10.0
Teaching (Boys)	1951	65	83	97	107	12.0
Teaching (Boys)	1952	89	80	92	106	13.0
Teaching (Boys) and Coaching	1951	106	81	94	107	13.0
Teaching (Boys) and Coaching	1952	132	80	91	105	12.5
Teaching (Girls)	1951	576	71	86	100	14.0
Teaching (Girls)	1952	522	74	86	102	14.0

STATISTICAL SUMMARY - 1952

State-Wide Testing Program

South Dakota Seniors (Fall 1952)	Number Students	Median Score
Q-Score	6737	34
L-Score	6737	49
Gross Score	6737	84
South Dakota Seniors (Fall 1951)		
Gross Score	6289	84
South Dakota Seniors (Fall 1950)		
Gross Score	6068	84
South Dakota Seniors (Fall 1949)		
Gross Score	5462	87
South Dakota Seniors (Fall 1948)		
Gross Score	5120	88

National College Freshmen Norms

All Colleges		
*Q-Score	18,555	38
*L-Score	18,555	61
*Gross Score	86,212	103
194 Four-Year Colleges		
Gross Score	59,769	105
45 Teacher Colleges		
Gross Score	12,278	96
66 Junior Colleges		
Gross Score	12,086	97

*Q and L-Scores based on 92 colleges; Gross Scores upon 317 colleges.

NORM SHEET 1952 - 1953

TEST American Council Psychological Examination FORM 1946

6737 South Dakota Seniors - 3613 Females, 3124 Males

%ile Rank	Raw Score "Q" Score	"L" Score	Total Score	%ile Rank	Raw Score "Q" Score	"L" Score	Total Score
100	61+	92+	144+	50		49	84
99	57-60	85-91	135-143	49	34		
98	55-56	81-84	131-134	48			83
97	53-54	79-81	127-130	47			
96	52	77-78	125-126	46	33	48	82
95	51	75-76	122-124	45			81
94	50	74	120-121	44		47	
93	49	73	118-119	43	32		80
92	48	72	116-117	42			
91		71	115	41		46	79
90	47	70	114	40			
89		69	112-113	39	31		78
88	46	68	111	38		45	
87		67	110	37			77
86	45	66	109	36	30		76
85		65	108	35		44	
84			107	34			75
83	44	64	106	33			
82		63	105	32	29	43	74
81	43		104	31			
80		62	103	30	28	42	73
79			102	29			72
78	42	61		28			
77			101	27		41	71
76		60	100	26	27		70
75	41		99	25		40	69
74		59		24			
73			98	23	26		68
72	40	58	97	22		39	67
71			96	21	25		
70		57		20		38	66
69			95	19			65
68	39	56	94	18	24	37	64
67				17			63
66			93	16	23	36	62
65	38	55		15			61
64			92	14	22	35	60
63		54		13	21		59
62			91	12		34	58
61	37		90	11	20	33	57
60		53		10			56
59			89	9	19	32	54-55
58				8	18	31	53
57	36	52	88	7		30	51-52
56			87	6	17	29	49-50
55		51		5	16	28	48
54			86	4	15	27	46-47
53	35			3	14	25-26	43-45
52		50	85	2	12-13	23-24	40-42
51				1	0-11	0-22	0-39

TEST American Council Psychological Examination FORM 1946

National College Freshmen Norms

%ile	92 Colleges 18,555 Students Q	92 Colleges 18,555 Students L	317 Colleges 86,212 Students Gross	%ile	92 Colleges 18,555 Students Q	92 Colleges 18,555 Students L	317 Colleges 86,212 Students Gross
100	65-80	104-120	164	50			103
99	62-64	99-103	155-163	49			102
98	59-61	94-98	150-154	48	37	60	
97	57-58	92-93	147-149	47			101
96	56	89-91	144-146	46		59	
95	55	87-88	142-143	45			100
94	54	86	139-141	44	36	58	99
93	53	85	138	43			
92		84	137	42			98
91	52	83	135-136	41	35	57	97
90		82	134	40			
89	51	81	132-133	39			96
88		80	131	38		56	95
87	50	79	130	37	34		
86		78	129	36		55	94
85	49	77	128	35			93
84			127	34	33		
83	48	76	126	33		54	92
82			125	32			91
81		75	124	31	32	53	
80	47	74	123	30			90
79			122	29		52	89
78	46	73	121	28	31		88
77				27		51	87
76	45	72	120	26			86
75			119	25	30	50	
74		71		24			85
73	44		118	23	29	49	84
72		70	117	22			83
71			116	21	28	48	82
70	43	69		20			81
69			115	19		47	80
68		68	114	18	27		79
67				17		46	78
66	42	67	113	16	26	45	77
65			112	15			76
64				14	25	44	74-75
63		66	111	13	24		73
62	41		110	12	23	43	72
61		65		11		42	71
60			109	10	22	41	69-70
59	40	64	108	9		40	67-68
58				8	21	39	65-66
57		63	107	7	19-20	38	63-64
56	39			6	18	37	60-62
55			106	5	17	35-36	57-59
54		62	105	4	16	33-34	53-56
53				3	14-15	31-32	49-52
52	38		104	2	11-13	27-30	41-48
51		61		1	0-10	0-26	0-40

AMERICAN COUNCIL ON EDUCATION

PSYCHOLOGICAL EXAMINATION

1946 College Edition

NAME _____ (LAST NAME) (FIRST NAME) (MIDDLE NAME)

TOTAL _____

PERCENTILES

Q-SCORE _____

L-SCORE _____

TOTAL _____

SPACE IS FOR SCRIBBLING.

ARITHMETIC PRACTICE PROBLEMS PAGE 3

	a	b	c	d	e
1					
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ARITHMETIC PAGE 4

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FIGURE ANALOGIES PRACTICE PROBLEMS PAGE 7

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FIGURE ANALOGIES PAGE 8

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NUMBER SERIES PRACTICE PROBLEMS PAGE 11

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NUMBER SERIES PAGE 12

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COMPLETION PRACTICE PROBLEMS PAGE 5

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COMPLETION PAGE 6

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SAME-OPPOSITE PRACTICE PROBLEMS PAGE 9

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SAME-OPPOSITE PAGE 10

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VERBAL ANALOGIES PRACTICE PROBLEMS PAGE 13

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VERBAL ANALOGIES PAGE 14

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1946 Edition

AMERICAN COUNCIL ON EDUCATION

Psychological Examination

For College Freshmen

Prepared by L. L. Thurstone and Thelma Gwinn Thurstone

744 Jackson Place, Washington 6, D. C.

General Instructions

This examination is different from the ordinary school examinations to which you have been accustomed. The plan for each of these tests is as follows. First, you are given detailed *instructions* about the test, so that you know just what you are expected to do. Then you have some *practice problems*. Then you go to the *test proper*. This is the procedure for each of the six tests in this examination. The total examination requires an hour.

The six tests in this examination represent a variety of tasks. Three of them involve thinking of a quantitative sort, while the other three require more linguistic ability. If you find one test hard, do not be discouraged. You may find the next test easier. But you should do your best on all the tests.

People differ markedly in the speed with which they can do these different tests. The tests are long enough to keep everyone busy for the whole time, and you are not expected to complete the tests in the time allowed. By noting how many questions you can answer in a certain length of time, we can determine your speed on each kind of test. You must begin to work on a test promptly when the examiner calls the starting time and stop immediately when he says: "Stop." Do not begin a test until the examiner gives the starting signal for that particular test. Do not turn back to a test after the time for it has expired. You are to work on each test during, and only during, the specified time as announced by the examiner in charge.

You are to record your answers on a separate answer sheet rather than on the pages of the test booklet. Instead of writing down your answers in the usual manner, you will record each answer by blackening the space between a pair of lines. *Do not make any marks or record any answers on the pages of this test booklet.*

Your answer sheet will be scored accurately if you observe carefully the following directions:

1. On the answer sheet, find the *section* which corresponds to the practice problems or test proper on which you are working.
2. Then find the *row of answer spaces* which is numbered the same as the question you are answering.
3. Then find the *pair of dotted lines* which corresponds to the answer you choose and blacken the space. MISPLACED ANSWERS ARE COUNTED AS WRONG ANSWERS.
4. Indicate each answer with SOLID BLACK PENCIL MARKS drawn vertically between the two dotted lines. Solid black marks are made by going over each mark two or three times and by pressing firmly on the pencil.
5. Make your marks as long as the dotted lines.
6. If you change your answer, erase your first mark completely.
7. Make no unnecessary marks in or around the dotted lines.
8. Keep your answer sheet on a hard surface while marking your answers.
9. Make no folds or creases in the answer sheets.
10. No *scratch paper* is allowed in any of these tests. The answer sheet contains a special section which may be used for scribbling.
11. Fold the pages of your test booklet back so that *only one page is visible*. Place the test booklet to the left. Keep the answer sheet under the test booklet so that the answer spaces being marked are as close as possible to the questions being answered.

(Omit the next paragraph unless the tests are to be machine-scored.)

The examination will be scored by an electric test-scoring machine, which makes use of the fact that a solid black pencil mark will carry a current of electricity in the same way that a copper wire does. LIGHT PENCIL MARKS MADE WITH A HARD PENCIL WILL NOT CARRY A CURRENT OF ELECTRICITY! The machine will not give you a correct score unless you indicate your answers with solid black pencil marks made with the *special* pencil which is provided. Do not use any pencil other than the special one provided. The machine cannot distinguish between intended answers and stray pencil marks. If you are careless in erasing, or if you leave unnecessary marks on or near the pairs of lines, such marks may be counted by the machine as wrong answers so that your score will be lower than it should be.

Wait until the examiner gives the starting signal for the first set of practice problems.

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Arithmetic

PRACTICE PROBLEMS

In this test you will be given some problems in arithmetic. After each problem there are five answers, but only one of them is the correct answer. You are to solve each problem and blacken the space on the answer sheet which corresponds to the answer you think is correct. The following problem is an example.

1. How many pencils can you buy for 50 cents at the rate of 2 for 5 cents?
(a) 10 (b) 20 (c) 25 (d) 100 (e) 125

Find on the answer sheet the space labeled "ARITHMETIC, Practice Problems, Page 3." The correct answer to the problem is 20, which is answer (b).

In the row numbered 1, space (b) has been blackened.

In the *second* row, blacken the space which corresponds to the answer to the second practice problem.

2. If James had 4 times as much money as George, he would have $16. How much money has George?
(a) $4 (b) $8 (c) $12 (d) $16 (e) $64

You should have blackened space (a), which corresponds to $4, the correct answer.

Blacken the spaces corresponding to the answers to the following problems:

3. In 5 days Harry has saved a dollar. What has his average daily saving been?
(a) 20¢ (b) 22½¢ (c) 25¢ (d) 30¢ (e) 40¢

4. John sold 4 magazines at 5 cents each. He kept ½ the money and with the other ½ he bought papers at 2 cents each. How many did he buy?
(a) 3 (b) 4 (c) 5 (d) 6 (e) 10

When the signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly and accurately. Your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

1946 Edition

Find the correct answer to each problem below. Then blacken the corresponding space on the answer sheet.

ARITHMETIC

1. Mr. Smith had 12 rowboats to rent. He bought 3 new boats and then sold 6 of his old ones. How many boats did he have left?
   (a) 3 (b) 6 (c) 9 (d) 12 (e) 15

2. A man bought stocks for $100. He sold them for $120, gaining $4 per share. How many shares were there?
   (a) 1 (b) 2 (c) 4 (d) 5 (e) 10

3. A file case has 21 drawers numbered from 1 to 21. The even-numbered drawers average 80 cards to the drawer. What is the total number of cards in the even-numbered drawers?
   (a) 800 (b) 880 (c) 960 (d) 1,000 (e) 1,680

4. Nora wishes to save enough money to buy a hat for $6 and an umbrella for $4. How many days must she work at $2 a day to have enough, if she has to spend $3 of her total earnings for carfares and lunches?
   (a) 1½ (b) 5 (c) 6½ (d) 10 (e) 13

5. William is 6 years old, and his sister is twice as old. When William is 9, what will be the age of his sister?
   (a) 6 (b) 9 (c) 12 (d) 15 (e) 18

6. How many one-inch cubes can be placed in a box 4 inches wide, 6 inches long, and 2 inches deep?
   (a) 12 (b) 24 (c) 48 (d) 72 (e) 96

7. A merchant bought chairs at $24 a dozen; in selling them he received as much for 2 chairs as he had paid for 3 chairs. What was the selling price per dozen?
   (a) $25 (b) $30 (c) $33 (d) $36 (e) $48

8. What will it cost Mr. Brown to borrow $3,500 at 6% interest for 2 years and 8 months?
   (a) $540 (b) $560 (c) $600 (d) $620 (e) $640

9. If a strip of cloth 24 inches long will shrink to 22 inches when washed, how many inches long will a 36-inch strip be after shrinking?
   (a) 30 (b) 32 (c) 33 (d) 34 (e) 35

10. If the fire insurance rate is $.20 per $100, what will the premium be for insuring a house valued at $20,000 for 80% of its value?
    (a) $30 (b) $32 (c) $33 (d) $34 (e) $36

11. For every 3 marbles Tom has, Jack has 5. If they have 96 marbles between them, how many has Jack?
    (a) 24 (b) 36 (c) 48 (d) 60 (e) 72

12. A recipe for ice cream calls for 1 part cream to 1½ parts whole milk. If 1½ pints of cream are used, how many pints of whole milk should be used?
    (a) 1 (b) 1½ (c) 2¼ (d) 2½ (e) 3

13. Mrs. Brown found that from 6 pints of fruit juice and 4 pints of sugar she got 8 pints of jelly. How many pints of sugar will she need to make 2 dozen half-pint glasses of jelly?
    (a) 6 (b) 8 (c) 10 (d) 12 (e) 24

14. Carl and Richard receive $2.00 for delivering magazines. Carl delivers 42, Richard 28. How much should Carl receive?
    (a) $.40 (b) $.60 (c) $.80 (d) $1.20 (e) $1.40

15. At a meeting of 30 people a motion was carried by a majority of 6. How many voted against the measure?
    (a) 6 (b) 9 (c) 12 (d) 18 (e) 21

16. If a wire 20 inches long is to be cut so that one piece is ⅔ as long as the other piece, how many inches long must the shorter piece be?
    (a) 4 (b) 5 (c) 6 (d) 7 (e) 8

17. When a coal bin is ⅚ full, the coal is worth $120. What is the value of the coal when the bin is ¼ full?
    (a) $24 (b) $25 (c) $30 (d) $36 (e) $40

18. A boy, by mistake, multiplied a fraction by 3 instead of dividing it by 3. He gave the answer as ⅔. What was the correct answer?
    (a) 2/27 (b) ⅓ (c) 1⅓ (d) 2 (e) 6

19. A man spent ⅓ of his monthly salary for meals and ¼ of the remainder for incidental expenses. What per cent of his salary did he have left?
    (a) 20 (b) 35 (c) 41⅔ (d) 50 (e) 83⅓

20. A family uses ⅘ of a barrel of flour in a month. What fraction of a month will ⅔ of a barrel last them?
    (a) 7/15 (b) 8/15 (c) ¾ (d) ⅚ (e) 6/5

Completion

PRACTICE PROBLEMS

Look at the following definition. You are to think of the word that fits the definition.

1. A contest of speed.
B F M P R

The word is *race*. The letter *R* is the first letter in the word *race*. In the section of the answer sheet labeled "COMPLETION, Practice Problems, Page 5," the space indicated by *R* in the first row has been blackened.

Blacken the space corresponding to the first letter of the word which fits the following definition.

2. A place or building for athletic exercises.
C D G H T

The word is *gymnasium*. You should have marked the space indicated by *G* because it is the first letter in the word *gymnasium*.

Do the following examples in the same way:

3. The thin cutting part of an instrument, as of a knife or sword.
A B D H W

4. The wife of a king.
F N P Q V

5. A small or portable bed, as of canvas stretched on a frame.
C G N P T

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

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Think of the word that fits the definition. Then mark the first letter of that word on the answer sheet.

COMPLETION

1. The residential districts on the outskirts of a city.
F K N S V

2. The chief magistrate of a city.
A C K M W

3. The withdrawal, especially when forced, of troops from the presence of an enemy.
B C L R T

4. A strip of material used in dressing wounds.
B C E F H

5. One skilled in treating diseases and injuries of animals.
R S T U V

6. The company of seamen who man a ship.
B C D M W

7. The hard creamy-white dentine composing elephants' tusks.
A E I O U

8. A leather case for a pistol.
B E H P S

9. The part of a military force that serves on horseback.
C D F G I

10. A pendant mass of ice formed from dripping water.
A E I O U

11. The glass over a watch dial.
B C D E F

12. A stony or metallic body fallen to earth from outer space.
I J K L M

13. A meeting of spiritualists to receive communications.
C F G P S

14. A young deer.
A E F O T

15. A present given to pervert judgment.
A B C D E

16. The right or act of voting in political matters.
J N S T W

17. Repetition of the same sound at the beginning of consecutive words.
A B C D E

18. The act of fabricating or falsely producing a writing or instrument.
B D F H J

19. A representation of the outlines of an object filled in with some uniform color.
G L N S W

20. A small pie, often open-faced.
R T U V W

21. A receiver of stolen goods.
F I M O R

22. The base or support of a statue.
G H N O P

23. One-fourth of a pint.
A B E F G

24. A state of balance between opposing forces.
A C E F G

25. A large basket, usually with a cover.
F G H K L

26. A car attached to a locomotive to carry fuel and water.
S T U V W

27. That point of the heavens which is vertically above one.
N U W Y Z

28. The science of sound.
A B C D E

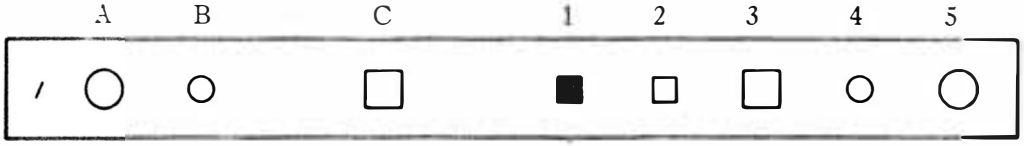
29. A trough with a handle for carrying mortar.
D H K N R

30. A turkey cock.
G H I J K

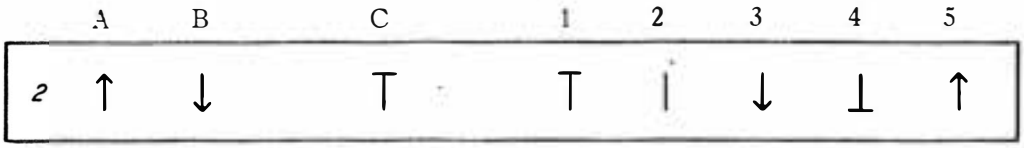
Figure Analogies

PRACTICE PROBLEMS

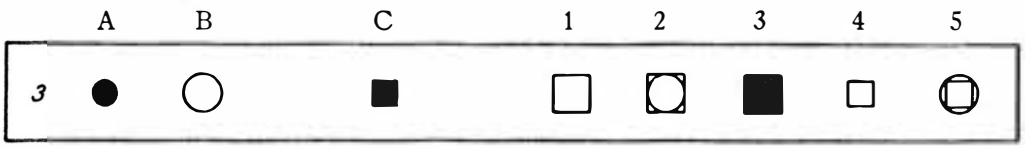
Look at the figures A, B, and C in Sample 1 below. Figure A is a large circle. Figure B is a small circle. By what rule is Figure A changed to make Figure B? The rule is "making it smaller." Now look at Figure C. It is a large square. What will it be if you change it by the same rule? It will be a small square of the same color as the large square. Figure 2 is a small white square. In the section of the answer sheet labeled "FIGURE ANALOGIES, Practice Problems, Page 7," the space numbered 2 in the first row has been blackened to indicate the correct answer.



In Sample 2 below, the rule is: "Turn Figure A upside down to make Figure B." Now look at Figure C and think how it would look when turned upside down. It would look like Figure 4. The space numbered 4 has already been blackened on the answer sheet.



In Sample 3 below, the rule has two parts: "Make Figure B of the opposite color and larger than Figure A." Apply the rule to Figure C and blacken the space which corresponds to the correct answer.

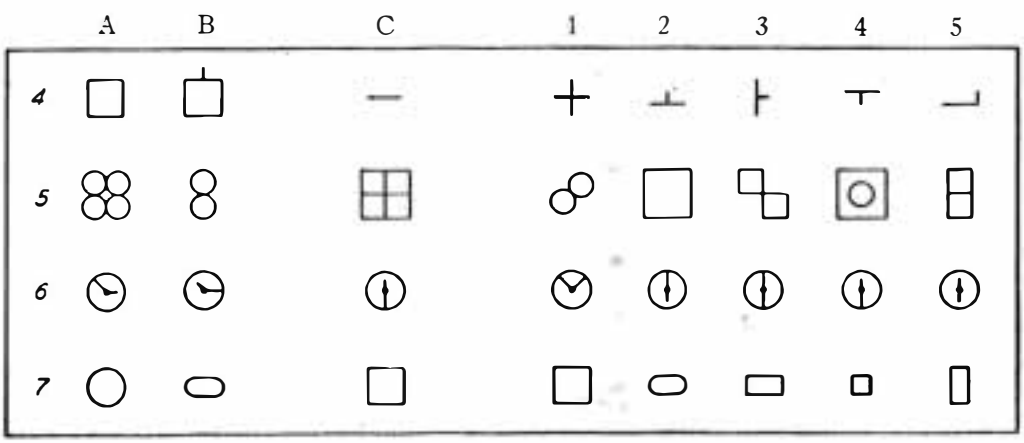


You should have blackened the space numbered 1, which corresponds to the large white square.

Notice that the rule changes from one example to another. You are to do four things to each exercise on this page and the next.

a. Decide what rule is used to change Figure A to Figure B.
b. Apply this rule to Figure C.
c. Select the resulting figure from the five figures at the right.
d. Blacken the space on the answer sheet which is numbered the same as the figure you have selected.

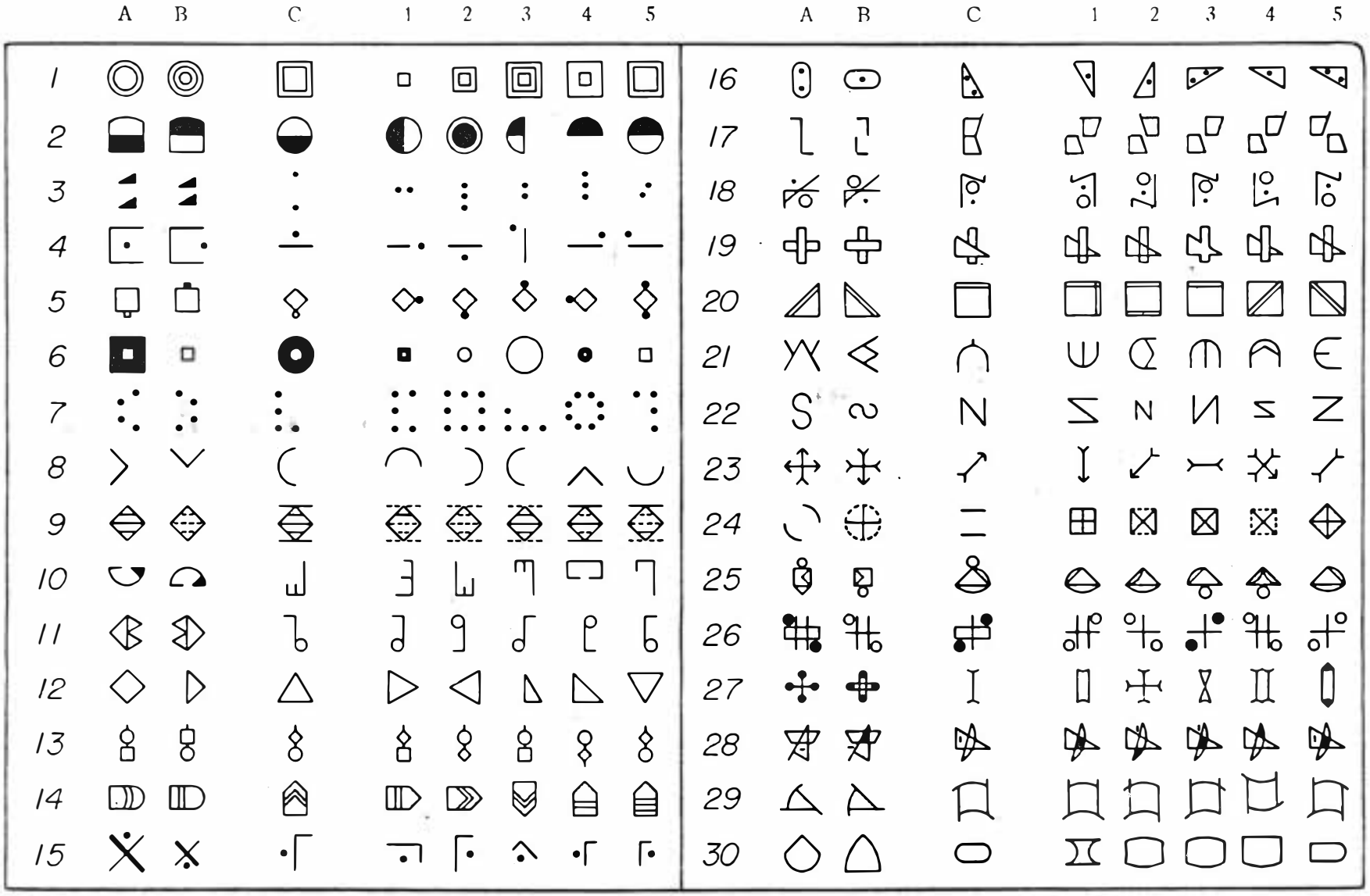
Proceed to the four exercises below, marking your answers on the answer sheet. Go ahead.



Stop here. Wait for the signal.

In each line below, find the rule by which Figure A is changed to make Figure B. Apply the rule to Figure C. Select the resulting figure at the right and blacken the corresponding answer space.

FIGURE ANALOGIES



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Stop here.

Same-Opposite

PRACTICE PROBLEMS

The word at the left in the following line is "many."

1. many	(1) ill	(2) few	(3) down	(4) sour

One of the four words at the right means either the *same* as or the *opposite* of "many." The word "few," which is numbered 2, is the opposite of "many." In the section of the answer sheet labeled "SAME-OPPOSITE, Practice Problems, Page 9," space number 2 in the first row has been blackened.

The word at the left in the second example is "ancient." Select one of the four words at the right that means the *same* as or the *opposite* of "ancient." In the second row on the answer sheet, blacken the space which corresponds to the answer you have selected.

2. ancient	(1) dry	(2) long	(3) happy	(4) old

You should have blackened the space numbered 4, because 4 corresponds to "old," which means the same as "ancient."

In each of the following lines select the word that means the *same* as or the *opposite* of the word at the left. On the answer sheet, blacken the space which correspo..ds to the answer you have selected.

3. deep	(1) blue	(2) shallow	(3) tense	(4) watery
4. awkward	(1) clumsy	(2) loyal	(3) passive	(4) young
5. hot	(1) dry	(2) cooked	(3) red	(4) cold

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

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In each row select the word at the right which means the *same* as or the *opposite* of the first word in the row. Blacken the space which corresponds to the word you have selected.

SAME–OPPOSITE

1. exclusive	(1) fanatical	(2) unrestricted	(3) exultant	(4) urban
2. firm	(1) fervid	(2) cold	(3) loose	(4) feudal
3. submissive	(1) stretched	(2) untidy	(3) frank	(4) defiant
4. felonious	(1) prime	(2) wicked	(3) brainy	(4) placid
5. beneficial	(1) artificial	(2) tamable	(3) detrimental	(4) piquant
6. admissible	(1) indelible	(2) lateral	(3) morbid	(4) unacceptable
7. intact	(1) broken	(2) destructive	(3) tactful	(4) agile
8. premature	(1) late	(2) primitive	(3) material	(4) decisive
9. orderly	(1) liberal	(2) methodical	(3) elective	(4) unfair
10. gallant	(1) boorish	(2) bright	(3) costly	(4) main
11. rapturous	(1) athwart	(2) perennial	(3) rampant	(4) ecstatic
12. pliable	(1) dominant	(2) inflexible	(3) metallic	(4) ignorant
13. maximal	(1) fashionable	(2) mean	(3) medium	(4) minimal
14. clamorous	(1) glamorous	(2) random	(3) prompt	(4) vociferous
15. dolorous	(1) sonorous	(2) sorrowful	(3) delirious	(4) pretty
16. wily	(1) fresh	(2) sullen	(3) crafty	(4) deep
17. lacerated	(1) disgruntled	(2) mangled	(3) fringed	(4) stricken
18. opaque	(1) academic	(2) transparent	(3) obsolete	(4) earnest
19. rigid	(1) endurable	(2) sterile	(3) limp	(4) floral
20. reciprocal	(1) mutual	(2) residual	(3) defective	(4) conditioned
21. steadfast	(1) irresolute	(2) hungry	(3) consequential	(4) buoyant
22. capricious	(1) frugal	(2) callous	(3) medicinal	(4) whimsical
23. exuberant	(1) effusive	(2) factorial	(3) gory	(4) toxic
24. arrogant	(1) powerful	(2) good	(3) elegant	(4) humble
25. ostentatious	(1) surgical	(2) bony	(3) mythical	(4) pretentious
26. abject	(1) acrid	(2) forlorn	(3) ancient	(4) young
27. meticulous	(1) unwieldy	(2) tense	(3) nervous	(4) slovenly
28. copious	(1) scant	(2) original	(3) scathed	(4) injurious
29. turbid	(1) faithful	(2) dire	(3) partial	(4) muddy
30. diurnal	(1) notable	(2) daily	(3) pompous	(4) spotless
31. impervious	(1) impolite	(2) peevish	(3) impossible	(4) penetrable
32. corpulent	(1) obscene	(2) frivolous	(3) obese	(4) dead
33. conventional	(1) convenient	(2) unusual	(3) religious	(4) intrinsic
34. demented	(1) grievous	(2) sorry	(3) delinquent	(4) mad
35. resilient	(1) rested	(2) silent	(3) inelastic	(4) nominal
36. tawdry	(1) yellow	(2) short	(3) macabre	(4) garish
37. gregarious	(1) gruesome	(2) healthful	(3) solitary	(4) instinctive
38. dulcet	(1) right	(2) first	(3) slavish	(4) melodious
39. recumbent	(1) upright	(2) glorious	(3) social	(4) repetitive
40. propitious	(1) unfavorable	(2) temporary	(3) shrewd	(4) paltry
41. facetious	(1) factitious	(2) jocular	(3) terse	(4) liquid
42. remiss	(1) docile	(2) negligent	(3) incurable	(4) mistaken
43. assiduous	(1) drastic	(2) conciliatory	(3) easy	(4) diligent
44. spurious	(1) especial	(2) false	(3) neat	(4) trivial
45. apocryphal	(1) authentic	(2) jubilant	(3) innocent	(4) curved
46. unctuous	(1) stingy	(2) lively	(3) gruff	(4) prior
47. captious	(1) important	(2) stout	(3) hypercritical	(4) boyish
48. fulgent	(1) rancid	(2) tolerant	(3) amiable	(4) shining
49. fortuitous	(1) hardy	(2) cowardly	(3) casual	(4) calamitous
50. quizzical	(1) comical	(2) slow	(3) questionable	(4) cautious

Stop here

Number Series

PRACTICE PROBLEMS

The numbers in each series proceed according to some rule. For each series you are to find the *next number*.

In the first series below, each number is 2 larger than the preceding number. The *next number* in the series would be 14. Of the five answers at the right, answer (e) is, therefore, correct. In the section of the answer sheet labeled "NUMBER SERIES, Practice Problems, Page 11," space (e) in the first row has been blackened.

	Series						*Next Number*				
1.	2	4	6	8	10	12	10 (a)	11 (b)	12 (c)	13 (d)	14 (e)

Find the rule in the series below, and blacken one of the answer spaces in the second row on the answer sheet.

2.	20	19	18	17	16	15	10 (a)	12 (b)	14 (c)	15 (d)	16 (e)

Each number in this series is 1 less than the preceding number. You should have blackened space **(c)**, which corresponds to 14, the next number in the series.

Find the rule in the series below, and blacken the space on the answer sheet which corresponds to the next number.

3.	10	8	11	9	12	10	9 (a)	10 (b)	11 (c)	12 (d)	13 (e)

The series above goes by alternate steps of subtracting 2 and adding 3. You should have blackened space (e), which corresponds to 13, the next number.

In each series below, find the rule and blacken the space on the answer sheet which corresponds to the next number. There is a different rule for each series. Go right ahead. Do not wait for any signal.

4.	8	11	14	17	20	23	10 (a)	13 (b)	23 (c)	25 (d)	26 (e)
5.	27	27	23	23	19	19	15 (a)	16 (b)	17 (c)	18 (d)	19 (e)
6.	16	17	19	20	22	23	18 (a)	20 (b)	22 (c)	24 (d)	25 (e)

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

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23. exuberant (1) effusive (2) factorial (3) gory (4) toxic
24. arrogant (1) powerful (2) good (3) elegant (4) humble
25. ostentatious (1) surgical (2) bony (3) mythical (4) pretentious

48. fulgent (1) rancid (2) tolerant (3) amiable (4) shining
49. fortuitous (1) hardy (2) cowardly (3) casual (4) calamitous
50. quizzical (1) comical (2) slow (3) questionable (4) cautious

Stop here.

Find the rule in each problem below and blacken the space which corresponds to the next number.

NUMBER SERIES

1.	9	9	9	8	8	8	7	4 (a)	5 (b)	6 (c)	7 (d)	8 (e)	**16.**	42	45	15	18	6	9	3	1 (a)	3 (b)	6 (c)	9 (d)	12 (e)
2.	7	11	15	19	23	27	31	34 (a)	35 (b)	36 (c)	37 (d)	38 (e)	**17.**	4	7	8	7	10	11	10	6 (a)	9 (b)	11 (c)	13 (d)	14 (e)
3.	25	28	24	27	23	26	22	18 (a)	19 (b)	22 (c)	25 (d)	26 (e)	**18.**	8	5	15	18	6	3	9	3 (a)	6 (b)	7 (c)	9 (d)	12 (e)
4.	11	15	14	18	17	21	20	19 (a)	21 (b)	23 (c)	24 (d)	27 (e)	**19.**	40	42	21	24	8	12	3	4 (a)	6 (b)	7 (c)	8 (d)	9 (e)
5.	31	30	32	30	33	30	34	26 (a)	30 (b)	34 (c)	38 (d)	39 (e)	**20.**	10	12	14	12	14	16	14	12 (a)	14 (b)	16 (c)	18 (d)	20 (e)
6.	68	72	36	40	20	24	12	6 (a)	16 (b)	20 (c)	24 (d)	28 (e)	**21.**	13	16	20	24	29	34	40	41 (a)	42 (b)	44 (c)	45 (d)	46 (e)
7.	19	21	24	17	19	22	15	8 (a)	11 (b)	12 (c)	16 (d)	17 (e)	**22.**	35	28	4	11	77	70	10	4 (a)	17 (b)	63 (c)	70 (d)	77 (e)
8.	17	15	18	14	19	13	20	11 (a)	12 (b)	14 (c)	27 (d)	28 (e)	**23.**	42	35	29	24	20	17	15	12 (a)	13 (b)	14 (c)	15 (d)	16 (e)
9.	86	78	70	62	54	46	38	28 (a)	30 (b)	32 (c)	34 (d)	36 (e)	**24.**	12	10	20	22	11	9	18	2 (a)	9 (b)	14 (c)	20 (d)	36 (e)
10.	12	10	8	16	14	12	20	12 (a)	14 (b)	16 (c)	18 (d)	22 (e)	**25.**	4	5	7	4	8	13	7	0 (a)	13 (b)	14 (c)	15 (d)	16 (e)
11.	12	3	13	4	14	5	15	5 (a)	6 (b)	7 (c)	16 (d)	17 (e)	**26.**	4	5	7	7	14	15	17	17 (a)	18 (b)	19 (c)	24 (d)	34 (e)
12.	4	5	7	10	14	19	25	28 (a)	29 (b)	30 (c)	31 (d)	32 (e)	**27.**	49	51	54	27	9	11	14	7 (a)	16 (b)	17 (c)	18 (d)	28 (e)
13.	94	92	46	44	22	20	10	4 (a)	5 (b)	8 (c)	12 (d)	14 (e)	**28.**	4	8	16	8	16	32	24	12 (a)	16 (b)	24 (c)	32 (d)	48 (e)
14.	17	19	16	20	15	21	14	18 (a)	19 (b)	20 (c)	21 (d)	22 (e)	**29.**	7	5	10	7	21	17	68	61 (a)	62 (b)	63 (c)	64 (d)	65 (e)
15.	25	22	11	33	30	15	45	15 (a)	41 (b)	42 (c)	48 (d)	135 (e)	**30.**	64	32	35	5	22	11	14	1 (a)	2 (b)	9 (c)	17 (d)	31 (e)

Stop here.

Verbal Analogies

PRACTICE PROBLEMS

Read the following words:

1. foot-shoe hand- (1) thumb (2) head (3) glove (4) finger

The first two words, *foot-shoe*, are related. The next word is *hand*. It can be combined with one of the remaining words in the row so as to make a similar pair, *hand-glove*. In the section of the answer sheet labeled "VERBAL ANALOGIES, Practice Problems, Page 13," space number 3 in the first row has been blackened.

Read the following words:

2. father-son mother- (1) aunt (2) sister (3) child (4) daughter

The first pair is *father-son*. The next word is *mother*. It can be combined with the word *daughter* to make the similar pair, *mother-daughter*. In the second row on the answer sheet, blacken space number 4, which corresponds to the word *daughter*.

In each row of words, the first two words form a pair. The third word can be combined with another word to form a similar pair. Select the word which completes the second pair. On the answer sheet, blacken the space which corresponds to the word you select.

3. sky-blue grass- (1) green (2) sod (3) path (4) blue

4. ice-solid water- (1) hard (2) fire (3) iron (4) liquid

In the third row on the answer sheet, you should have blackened space number 1, which corresponds to *green*. In the fourth row, you should have blackened space number 4, which corresponds to *liquid*.

Select the answers to the following problems and blacken the corresponding spaces on the answer sheet. Go right ahead. Do not wait for any signal.

5. ear-music nose- (1) face (2) perfume (3) breath (4) tone

6. cloth-dye house- (1) shade (2) paint (3) brush (4) door

7. green-grass yellow- (1) silver (2) color (3) golden (4) gold

8. cattle-hay man- (1) eat (2) bread (3) water (4) life

When the starting signal is given (not yet), turn the page and work more problems of the same kind. Work rapidly because your rating will be the total number of correct answers. You may not be able to finish in the time allowed.

Stop here. Wait for the signal.

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Page 14

In each row, select the word which completes the second pair. Blacken the space which corresponds to the word you have selected.

VERBAL ANALOGIES

1.	mayor-city	president-	(1) king	(2) ruler	(3) empire	(4) nation
2.	convict-prison	bird-	(1) penitentiary	(2) thief	(3) robin	(4) cage
3.	find-lose	remember-	(1) memory	(2) forget	(3) recall	(4) reflect
4.	introduction-conclusion	birth-	(1) baby	(2) childhood	(3) life	(4) death
5.	war-codes	football-	(1) strategy	(2) coach	(3) signals	(4) quarterback
6.	monument-dedicate	ship-	(1) champagne	(2) transport	(3) convoy	(4) christen
7.	distance-inch	weight-	(1) troy	(2) scales	(3) pound	(4) balance
8.	iron-rust	wood-	(1) paint	(2) steel	(3) decay	(4) crack
9.	wealth-pauper	intelligence-	(1) capitalist	(2) genius	(3) idiot	(4) beggar
10.	peace-war	calm-	(1) quiet	(2) striving	(3) storm	(4) sea
11.	man-automobile	baby-	(1) carriage	(2) bottle	(3) mother	(4) crib
12.	mouse-elephant	minnow-	(1) rhinoceros	(2) perch	(3) whale	(4) ocean
13.	discuss-conclude	ponder-	(1) decide	(2) refuse	(3) hesitate	(4) confer
14.	water-swim	ice-	(1) run	(2) hockey	(3) frozen	(4) skate
15.	doctor-nurse	warden-	(1) patient	(2) criminal	(3) guard	(4) prisoner
16.	walking-crutch	vision-	(1) blindness	(2) oculist	(3) lens	(4) dog
17.	religion-convert	army-	(1) chaplain	(2) general	(3) recruit	(4) deserter
18.	letter-seal	door-	(1) bolt	(2) hinge	(3) knob	(4) panel
19.	man-doctor	car-	(1) garage	(2) designer	(3) manufacturer	(4) mechanic
20.	locomotive-rails	bus-	(1) wheels	(2) tires	(3) road	(4) rubber
21.	visitor-quarantine	driver-	(1) stop light	(2) pedestrian	(3) passenger	(4) mechanic
22.	automobile-brake	boat-	(1) oar	(2) rudder	(3) anchor	(4) motor
23.	wave-crest	mountain-	(1) altitude	(2) snow	(3) slope	(4) peak
24.	almost-entire	probable-	(1) all	(2) certain	(3) likely	(4) possible
25.	siren-warning	beacon-	(1) rotation	(2) warning	(3) airplane	(4) darkness
26.	wool-sheep	fur-	(1) coat	(2) cat	(3) birds	(4) furrier
27.	church-heresy	army-	(1) attack	(2) mutiny	(3) discipline	(4) command
28.	rudder-sail	steering wheel-	(1) crankshaft	(2) piston	(3) gasoline	(4) engine
29.	blindness-color	deafness-	(1) hearing	(2) loud	(3) audition	(4) tone
30.	dress-belt	hat-	(1) band	(2) feather	(3) brim	(4) crown
31.	age-youth	dowager-	(1) matron	(2) bachelor	(3) aristocrat	(4) debutante
32.	goose-pillow	calf-	(1) rug	(2) shoe	(3) curtain	(4) hide
33.	secular-religious	temporal-	(1) holy	(2) eternal	(3) temporary	(4) reverent
34.	alms-charity	beg-	(1) offer	(2) plead	(3) pay	(4) pauper
35.	revision-book	alteration-	(1) garment	(2) style	(3) change	(4) pamphlet
36.	infinite-finite	universe-	(1) essential	(2) planet	(3) final	(4) cosmos
37.	knight-armor	car-	(1) engine	(2) chromium	(3) bumper	(4) wheels
38.	circle-sphere	square-	(1) figure	(2) rectangle	(3) cube	(4) solid
39.	grain-bread	ore-	(1) rail	(2) smelter	(3) copper	(4) mine
40.	sip-gulp	mist-	(1) torrent	(2) cloud	(3) sleet	(4) haze

Stop here.