

THE RELATIONSHIP OF SOME MEASURES OF CRITICAL
THINKING TO SCHOOL MARKS IN SOCIAL SCIENCE
AND CERTAIN INTELLIGENCE QUOTIENTS

by

JOHN CARL YOUNG

B. A., Southwestern College, 1949

A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Education and Psychology

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

1951

Docu-
ments

LD 572.73

2668

T4

1951

Y69

c.2

04-16-52 F

TABLE OF CONTENTS

INTRODUCTION	. . . . .	1
MATERIALS AND METHODS	. . . . .	6
RESULTS	. . . . .	14
CONCLUSIONS	. . . . .	25
SUGGESTIONS FOR FURTHER STUDIES	. . . . .	26
ACKNOWLEDGMENTS	. . . . .	27
REFERENCES	. . . . .	28
APPENDIX	. . . . .	29
Appendix A - Formulas Used in Statistical Calculations	. . . . .	30
Appendix B - Intelligence Quotients, School Marks in Social Science and Raw Scores Made on the Various Tests of Criti- cal Thinking	. . . . .	32

INTRODUCTION

In a democracy, where people to a certain extent are expected to choose their political attitudes by weighing the value of conflicting arguments, it is of the utmost importance that critical thinking be encouraged.

Cold and scientific thinking is imperative in this age. Most of the practical problems of life are of this order. We cannot afford to let our emotions rule over logical reasoning. We must learn to think straight in national and international affairs as our very existence as a nation might depend on the decisions we make and in the future on the ability of our children to reason clearly and objectively.

Thouless (1) says that one must look forward to and try to help on the day when the thinking about political and international affairs will be as unemotional and as scientific as that about the properties of numbers or the atomic weights of elements. Impartial investigation of facts unswayed by emotions has given us great advances in the sciences. The results will be even greater when it is applied to the most important affairs of life.

There is little reason to assume that skill in critical thinking will result when there is no clearcut recognition of goals to be reached nor provision for practice opportunities.

It was pointed out by Thouless (1) that it should be one of the aims of education to produce a quality that we may describe as "flexibility of mind", an ability to try out new ways of

thinking and to make unfamiliar assumptions.

Too often educators think that the factual material presented is the all-important problem and assume that all the abilities of thought such as critical thinking will be a natural by-product of that learning.

It was noted by Burt (2) that the famous Harvard philosopher, Josiah Royce, is reported to have remarked in argument with his equally famous colleague, William James, "The trouble with you, James, is that you don't know how to think." Burt (2) goes on to say:

What a devastating criticism! —that is, were it meant without humorous exaggeration, and with no presupposition of genial friendship. Not only are philosophers supposed to know how to think —man in general has been considered different from and superior to the lower creatures precisely in virtue of this capacity. He is "homo sapiens", man the thinker. Not to know how to think, then is to fail at a crucial point; it is not quite to be a man at all.

Burt (2) also believes that knowing how to think is not such a universal or fully developed capacity as might be desired.

There is a wealth of material of philosophical content which could be cited, similar to that presented in the foregoing paragraphs, concerning reasoning and reflective thinking but experimental work that is actually being done in the schools to develop ability to think and so pertaining directly to this study is not so readily available.

Lisager (3) administered tests concerning expressions of superstition, and expressions of prejudice and misconceptions to a group of 27 Danish unemployed. The range of the intelligence quotients of the 18 of the subjects on whom scores were available

was 85 to 115. The rest did not wish to be tested. After three lectures with demonstrations lasting fifty minutes the tests were administered again.

His conclusions were that the improvement was greatest in the more intelligent subjects. A lasting effect was shown only in a few cases and the evidence points to a longer and more thorough course if it is to have a lasting effect.

Bonser (4) made an attempt to secure a concrete basis for some insight into the capacity of children of the fourth, fifth, and sixth school grades for various forms of purposive thinking called reasoning.

The tests employed were made up of a series of problems and questions designed to exercise the most fundamental four phases of reasoning activity, namely; The mathematical judgement; controlled association; selective judgement; and that complex of analytic and synthetic thinking used in the intellectual interpretation of literature.

Some of the general conclusions Bonser found were that: the tests he used were valid measures of several phases of reasoning ability, native capacity was measured to a high degree by the tests, and a small but real measurable sex difference existed for the tests he used. These conclusions were for group abilities.

Anderson, Marcham, and Dunn (5) conducted a study which involved an evaluation of curriculum materials and teaching procedures in the field of social studies. They first identified certain skills of critical thinking and then experimental materials and other procedures for the evaluation of the skills were developed. The cooperation of schools in Iowa and New York in the experimental use of the "critical thinking" materials was

enlisted. The results obtained through this experiment were used in preparing improved materials for teaching certain skills of critical thinking.

The emphasis was placed on teaching the following skills; (1) identifying specific facts, (2) selecting relevant facts, (3) organizing facts in terms of meaningful sub-topics, (4) arranging sub-topics in logical order, (5) making inferences from specific facts and from trends, (6) distinguishing between fact and opinion, and (7) recognizing situations in which insufficient evidence makes it difficult or impossible to draw a clearcut conclusion.

Five problems were developed for use in seventh grade classes and five others for tenth grade classes. Each of the problems was developed in two forms doing and telling.

The tests were administered in September of 1940. The administration of all tests was supervised by a research assistant. The five experimental problems were then used in each school during five three-day periods scattered at approximately equal intervals between October and April. The tests were then administered again.

The writers found that the differences were negligible between the "doing" and "telling" methods. Classes which did not use the experimental materials when re-tested did about as well on abstracting and organizing information as those which used them. The gains made by these pupils was decidedly lower on the drawing of conclusions and making of inferences.

Pupils and teachers seemed rather generally agreed that the

skills stressed in the experimental materials were used extensively in social studies classes when regular work was going on.

Several groups of pupils said that although they had used these skills before, the problems made them more aware of them and gave an opportunity for practice.

The purpose of the present study was to investigate actual school situations in order to:

1. See to what degree those abilities measured by selected tests of critical thinking are related to school marks in social science as an indication of the extent to which critical thinking is considered when teachers assign marks.

2. See whether or not the abilities measured by these tests of critical thinking increase progressively in the grades selected, that is whether pupils improve.

3. Find the relation between some measures of critical thinking and intelligence as measured by these tests.

4. See if there is any significant difference between the sexes in these measures of critical thinking.

5. Find the extent of the correlation of the various forms of ability with one another in order to determine whether or not they are separate abilities and must be taught separately or are varieties of one general ability.

The tests used in this study were selected because they had been carefully constructed and validated, were readily available and are perhaps the most frequently used. Any conclusions drawn from this study will be limited to the abilities as measured by the various tests and measures used.

School marks in social science were used because they were available and most closely related to the material used.

In general the purpose of this study was to find out in actual situations what teachers in Kansas high schools were doing to teach critical thinking as measured by these tests.

MATERIALS AND METHODS

In order to have results from tests given in a typical school situation, that is tests administered by teachers or counselors, the test data and other information for this study were obtained from THE INSTITUTE OF CITIZENSHIP, Kansas State College, Manhattan. These tests along with others were used in an extensive study to evaluate the citizenship education in Kansas high schools. The two tests selected are listed below.

Problems of Democracy — High School Level

The Problems of Democracy test was prepared by the Examination Staff for the United States Armed Forces Institute. This test consists of a number of short passages which represent different points of view on social problems. The questions based on these passages test:

1. Ability to read passages correctly and critically.
2. Knowledge and understanding of the subject with which the passages deal.
3. Judgment of whether any passage is correct in whole or in part.

The time limit on this test is two hours.

The procedure used in constructing the test was as follows:

In constructing a subject test the Examination Staff of the Armed Forces Institute follows the commonly recommended steps in test construction. The examiners, specialists experienced both in teaching and in testing in subject matter fields, meet with teachers of those subjects to identify the educational objectives which students are expected to attain. These objectives are defined as clearly as possible in terms of behavior; that is, a student should be able to do definite things which are indicative of his attainment of each objective. On the basis of this definition the kinds of exercises which test the student's attainment of a given objective are specified. These exercises are then tried out with groups of students in school or college and, whenever possible, with special adult groups. On the basis of this preliminary tryouts some exercises are eliminated because they are not discriminating, are ambiguous, or are of inappropriate difficulty.

The resulting revised examination forms are then submitted to one or more critics nominated by a professional organization in that subject. These critics are asked to check the tests for comprehensiveness of coverage in both content and objectives, for accuracy of material, and for validity of exercises, that is, whether each exercise is a valid measure of the objective it is supposed to test. On the basis of these criticisms the forms of the examination are revised once more, and whenever possible are given another tryout with school or college groups. One form is then ready for use by the Armed Forces Institute and another form is made available to high schools or colleges. (6)

Since the Problems of Democracy test showed such careful construction along with the fact that students in these high schools are required to take at least two courses in social science, one the first year and one the third or fourth year, it was selected for this study.

Watson-Glaser Tests of Critical Thinking

The Watson-Glaser Tests of Critical Thinking were chosen

because they are designed to measure a number of other abilities involved in critical thinking. The tests are arranged in two batteries, each consisting of a booklet of four tests. Battery I, "Discrimination in Reasoning" contains tests designed to measure ability to make:

1. Generalizations
2. Inferences
3. Discrimination of Arguments
4. Recognition of Assumptions

Battery II, "Logical Reasoning" contains these tests:

5. General Logical Reasoning
6. What Do You Think?
7. Survey of Opinions
8. Applied Logical Reasoning

For the purposes of this study only six of the eight tests were used. These being all four tests of Battery I and tests five and eight of Battery II. Test six and test seven were deleted because they involved answers of personal opinion which would be colored by the subjects' personality and prejudices.

The following quotation from the manual indicates that this test was also carefully constructed and validated.

The validity of tests such as the Watson-Glaser Tests of Critical Thinking may be established in terms of the opinions of competent judges. For the general purpose of validating these tests, therefore, a jury of fifteen persons was selected on the basis of their training in logic and the scientific method, their fair-mindedness, and superior intelligence.

In Test 1 there was perfect agreement on the part of the fifteen persons as to the correct responses to

most of the items, and when there was differences of opinion two answers were given equal credit.

In the Test 2 all conclusions were unanimously agreed upon by the judges with respect to whether they were definitely true inferences from the data, probably true, false, or probably false, or whether it was impossible to determine their truth or falsity from the data given. Test 2 has significantly distinguished between two groups of students previously identified by science teachers as appearing markedly good and markedly poor in ability to reason accurately and to think logically. The correlation between teachers' judgment and scores on the test was .69.

In Test 3 the items were revised until the judges were unanimous in agreeing upon which were strong and which were weak arguments.

In Tests 4, 5, and 8 the judges were unanimous in their choice of the right answer to each item. (7)

The intelligence quotients and school marks in social science that were not available at the Institute of Citizenship were obtained by personal visits of the author to the schools involved. It was possible at three of the schools to obtain intelligence quotients from the Otis Quick Scoring Test Gamma Form AM but at school D the only intelligence quotients available were those from the Henmon-Nelson intelligence test. The school marks in social science were confined to those made the same year the tests were administered. These marks by grade and subject were mainly grade nine — Social Studies, grade ten — World History, and grade twelve — U. S. or American History.

Originally five schools had been considered for the purposes of this study. However, upon examination of the tests to be used it was found that in one of the schools the tests had been administered in a different manner and under a different situation than at the other schools and were, thus, in no way comparable.

Information was obtained on 376 ninth and twelfth grade students who had taken the Problems of Democracy test and 366 tenth and twelfth grade students who had taken various parts of the Watson-Glaser Test of Critical Thinking. Some of these results had to be eliminated because the schools did not have all of the necessary information or because the student did not complete all of the tests. Data from all students with complete information were used in this study. Due to the fact that only intelligence quotients and neither mental ages nor raw scores were available at part of the schools the students in grade nine were limited to those aged fourteen or fifteen, grade ten to those fifteen or sixteen and grade twelve to those seventeen to nineteen. This made it possible to include nearly all of the pupils on whom complete data were available. At the same time on the particular intelligence tests involved the difference in raw scores used in computing a given intelligence quotient for the ages comprising any one grade group was not over four points and often as low as two points. In other words using the intelligence quotients rather than mental ages had about the same effect as tabulating the data into intervals two or four scores in length.

The above procedure reduced the Problems of Democracy subjects to 205 and the Watson-Glaser subjects to 279.

The next task was to find out whether the different schools, the two sexes and the different grade levels could all be considered samples of the same population so that they could be combined in determining relationships.

An analysis of variance (Appendix A) was computed for the school marks in social science, Table 1, and for the intelligence quotients, Table 2, of pupils who had Problems of Democracy scores. Both analyses showed the differences between schools to be significant at the one per cent level of confidence. In the analysis of variance for school marks the interaction between school and grade was also significant at the one per cent level of confidence thus making it necessary for each grade to be considered separately as well. This was not unexpected in the analysis of intelligence quotients since the intelligence tests used were not the same throughout the schools. However, the school with the greatest difference was one of the three from which intelligence quotients had been obtained from the Otis Quick Scoring test. It next had to be determined whether or not the Problems of Democracy scores of the two sexes could be combined so a short analysis giving this information was computed. This analysis Table 3 showed that the difference was not significant at the five per cent level of confidence. Since the difference between sexes was not significant in any of these measures the results for both sexes were combined.

Table 1. Analysis of variance for school marks in social science for those students having Problems of Democracy scores.

Source of Variation	Sum of Sq.	df	Mean Sq.	F
Between schools	18.38	3	6.13	9.30*
Between sexes	2.48	1	2.48	3.87
Between grades	1.24	1	1.24	.187
Interaction				
Between school & sex	1.96	3	.65	.98
Between school & grade	10.69	3	3.56	5.31*
Between sex & grade	.86	1	.86	1.30
Between school, sex, & grade	2.98	3	.99	1.50
Within groups	125.49	189	.66	
Total	164.08	204		

* Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

Table 2. Analysis of variance for intelligence quotients for those students having Problems of Democracy scores.

Source of Variation	Sum of Sq.	df	Mean Sq.	F
Between schools	6,040	3	2,013.4	15.20*
Between sexes	5.9	1	5.9	.04
Between grades	21.7	1	21.7	.16
Interaction				
Between school & sex	282.7	3	94.23	.71
Between school & grade	168.9	3	56.3	.42
Between sex & grade	316.9	1	316.9	2.40
Between school, sex, & grade	645.4	3	215.1	1.63
Within groups	24,940.4	189	131.9	
Total	32,422	204		

* Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

Table 3. Analysis of variance for the raw scores of the Problems of Democracy test.

Source of Variation	Sum of Sq.	df	Mean Sq.	F
Between sexes	293.3	1	293.3	1.16
Within groups	51,154.7	203	251.9	
Total	51,458	204		

* Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

Since the same schools were involved in the Watson-Glaser results and it was desired to make comparisons of intelligence quotients and school marks in social science it was obviously impossible to combine the schools. Only in school B were there enough students who had taken all parts of the test to make comparisons within a single school profitable. Fortunately this was the school that had the largest number of pupils. An analysis of variance of the raw scores of this test showed differences significant at the one per cent level of confidence for both variation between grades and variation between the tests. All other variations and interactions were not significant even at the five per cent level of confidence. Here again it was possible to combine the sexes but not the different parts of the test.

Table 4. Analysis of variance for the raw scores for the six Watson-Glaser tests.

Sources of Variation	Sum of Sq.	df	Mean Sq.	F
Between tests	18,756.5	5	3,751.3	161.00*
Between sexes	14.4	1	14.4	.61
Between grades	568.1	1	568.1	24.30*
Interaction				
Between sex & test	235.9	5	47.2	2.02
Between grade & test	221.3	5	44.3	1.90
Between sex & grade	5.4	1	5.4	.23
Between test, sex, & grade	122.5	5	24.5	1.05
Within groups	12,203.6	522	23.3	
Total	32,127.7	545		

* Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

RESULTS

In order to have some understanding of the basis for assigning school marks in social science a comparison was made between intelligence quotients and the school marks in social science. The coefficients of correlation between these two factors, for each level in each of the four schools, are given in Table 5.

Table 5. Coefficients of correlation between certain intelligence quotients and school marks in social science.

School	Grade ten			Grade twelve		
	N	r	SE	N	r	SE
A	15	.72	.12	32	.69	.09
B	28	.67	.10	40	.57	.10
C	16	.31	.22	16	.26	.23
D	28	.63	.11	30	.61	.11

In schools A, B, and D the coefficients of correlation are fairly high, the range being from .72 to .63 in grade ten and .69 to .57 in grade twelve. Both grades considered, the range is .72 to .57. School C is apparently different from the other schools, its coefficients of correlation being less than one-half that of the smallest of the other schools but the difference between it and the largest coefficient of correlation is not statistically significant at the five per cent level of confidence. Apparently the intelligence quotient in three of the schools was a significant factor in the earning of marks. In school C the standard error is so large that it cannot be said whether the relationship is important or not.

Another purpose of the study was to determine to what extent measures of critical thinking are related to intelligence. The coefficient of correlation between the aspects of critical thinking in Problems of Democracy and intelligence quotients are given in Table 6.

Table 6. Coefficients of correlation between certain intelligence quotients and raw scores made on Problems of Democracy test.

School	Grade ten			Grade twelve		
	N	r	SE	N	r	SE
A	15	.58	.17	32	.58	.11
B	28	.49	.14	40	.89	.03
C	16	.16	.24	16	.50	.18
D	28	.67	.10	30	.67	.10

In schools A, B, and D the coefficients of correlation are quite similar, the range being .49 to .67 in grade ten and .58

to .89 in grade twelve. In school C, grade ten, the coefficient of correlation is less than one-third that of the smallest of those in the other schools. For schools B and C grade twelve which is the largest difference in that grade between coefficients of correlation in Table 6 the t was 2.71 which is significant at the one per cent level of confidence. This is the only difference that is statistically significant.

Numerically the coefficients are somewhat smaller than those between intelligence quotients and school marks in social science as shown in Table 5 but, the difference between most of them being only about 1 x their SE, the differences are obviously not statistically significant. For grade twelve school B the difference between the correlations for school marks in social science and Problems of Democracy scores has a t of 2.38 which is significant at the five per cent level of confidence. This is the only difference that is statistically significant. Apparently the intelligence as measured by the tests used was about as important a factor in Problems of Democracy scores as in the assignment of school marks.

Another question had to do with the extent that abilities measured by the measures of critical thinking enter into the assignment of social science marks. The coefficients of correlation are given in Table 7.

Table 7. Coefficients of correlation between school marks in social science and raw scores made on Problems of Democracy test.

School	Grade ten			Grade twelve		
	N	r	SE	N	r	SE
A	15	.71	.12	32	.52	.12
B	28	.56	.12	40	.80	.05
C	16	.14	.24	.6	.43	.20
D	28	.44	.15	30	.72	.08

Grade ten of school C as in Table 6 has a numerically smaller coefficient of correlation than the others. In grade twelve there is less difference. However, the differences between the twelfth grades of schools B and C has a t of 2.00 which is barely significant at the five per cent level of confidence. No other difference is statistically significant.

The difference between correlations in Table 6 and 7 are, except for the tenth grade of school D and the twelfth grade of school B, not larger than $1 \times SE$ of the difference. The difference between the tenth grade of school D, however, has a t of 1.2 and that between the twelfth grade of school B is 1.39. Neither of these is significant. There are thus no significant differences between the coefficients of Tables 6 and 7. This would seem to indicate that critical thinking as it is measured in this test is about as closely related to intelligence quotients as to school marks in social science in the case of these intelligence tests and schools.

The various tests of the Watson-Glaser battery used in this study are designed to test respectively:

1. Ability to formulate generalizations
2. Ability to draw correct inferences from given statements
3. Skill in discriminating between arguments
4. Ability to recognize assumptions in arguments
5. Skill in general logical reasoning
8. Skill in applied logical reasoning

Intercorrelations of the various tests and comparisons with intelligence quotients and school marks in social science are given in Table 8.

Table 8. Intercorrelations between certain intelligence quotients, school marks in social science and Watson-Glaser Tests of Critical Thinking.

	Marks		Watson-Glaser tests											
	r	SE	1	2	3	4	5	8	1	2	3	4	5	8
Grade nine N = 50														
I.Q.	.65	.08	.44	.11	.66	.08	.50	.10	.42	.11	.69	.07	.77	.05
Marks			.22	.13	.57	.09	.49	.10	.36	.12	.38	.12	.39	.11
Test 1					.37	.12	-.02	.14	.32	.12	.40	.11	.37	.12
Test 2							.33	.12	.10	.14	.61	.08	.60	.09
Test 3									.13	.14	.24	.13	.36	.12
Test 4											.39	.11	.53	.10
Test 5													.74	.06
Grade twelve N = 41														
I.Q.	.60	.09	.42	.12	.71	.07	.55	.10	.55	.10	.70	.07	.50	.11
Marks			.36	.13	.58	.10	.51	.11	.16	.15	.50	.11	.16	.15
Test 1					.73	.07	.43	.12	.52	.11	.52	.11	.27	.14
Test 2							.52	.11	.66	.08	.71	.07	.26	.14
Test 3									.37	.13	.55	.10	.42	.12
Test 4											.75	.06	.53	.11
Test 5													.59	.10

The correlations between school marks in social science and intelligence quotients, for students of school B who took the Watson-Glaser, are .60 to .65 compared to the correlations of .57 to .67 for those who took the Problems of Democracy test.

The relationship between school marks in social science and the various tests of the Watson-Glaser had a range of .22 to .57. These are numerically less than the .56 to .80 found between Problems of Democracy scores and school marks in social science. It would seem likely from this that the abilities of critical reading and interpretation of passages measured in Problems of Democracy were a larger factor in determining grades than the critical thinking abilities measured in the Watson-Glaser test.

In each grade for each test the coefficients of correlation between school marks in social science and the various tests is in every instance numerically less than that for intelligence quotients and the various tests, although some of these differences are very small. Two in grade nine are significant, test 5, general logical reasoning, with a t of 2.18 is significant at the five per cent level of confidence and test 8, applied logical reasoning, with a t of 2.91 is significant at the one per cent level of confidence. This indicates a tendency at least in these two tests, for test scores to be related more closely to intelligence quotients than school marks in social science. Apparently the ability to reason logically as measured by these tests is not considered so important a factor as the other abilities when assigning school marks.

Coefficients of .49 to .89 between intelligence quotients

and Problems of Democracy scores are numerically greater than the .42 to .77 found between intelligence quotients and the various tests of the Watson-Glaser.

The coefficients of correlation between the scores on the different tests had a wide range from a $-.02$ between test 1, generalization, and test 3, discrimination of arguments, in grade nine to a high of $.75$ between test 4, recognition of assumptions, and test 5, general logical reasoning in grade twelve.

All of the tests that showed a statistically significant difference are found in Table 9.

Table 9. Statistically significant differences between the inter-correlation coefficients of the Watson-Glaser tests.

Tests	: Grade	:	Tests	: Grade	:	t
1 & 3	9***	:	1 & 2	12***	:	4.17*
1 & 2	12	:	1 & 8	12	:	2.82*
1 & 4	9	:	1 & 2	12	:	2.12**
1 & 2	9	:	1 & 2	12	:	2.04**
1 & 8	9	:	1 & 2	12	:	2.04**
2 & 4	9	:	2 & 1	12	:	3.80*
2 & 8	12	:	2 & 1	12	:	3.04*
2 & 3	9	:	2 & 1	12	:	2.66*
3 & 1	9	:	3 & 5	12	:	2.93*
3 & 1	9	:	3 & 2	12	:	2.75*
3 & 1	9	:	3 & 8	12	:	2.16**
4 & 2	9	:	4 & 5	12	:	3.99*
4 & 3	9	:	4 & 5	12	:	3.85*
4 & 1	9	:	4 & 5	12	:	2.93*
4 & 5	12	:	4 & 3	12	:	2.46**
4 & 5	9	:	4 & 5	12	:	2.56**
4 & 2	9	:	4 & 2	12	:	3.16*
4 & 3	9	:	4 & 2	12	:	3.02*
4 & 1	9	:	4 & 2	12	:	2.11**
4 & 2	9	:	4 & 8	12	:	2.24**
4 & 8	9	:	4 & 2	9	:	2.37**
4 & 2	9	:	4 & 1	12	:	2.20**
4 & 3	9	:	4 & 8	12	:	2.11**
4 & 3	9	:	4 & 8	9	:	2.23**
4 & 3	9	:	4 & 1	12	:	2.06**
5 & 3	9	:	5 & 4	12	:	3.34*
5 & 4	9	:	5 & 4	9	:	3.02*
5 & 1	9	:	5 & 4	12	:	2.52**
5 & 8	9	:	5 & 3	9	:	3.44*
5 & 8	9	:	5 & 3	9	:	2.08**
5 & 8	9	:	5 & 4	9	:	2.13**
5 & 3	9	:	5 & 2	12	:	2.98*
5 & 4	9	:	5 & 2	12	:	2.61*
5 & 1	9	:	5 & 2	12	:	2.11**
5 & 8	9	:	5 & 1	12	:	3.07*
8 & 5	9	:	8 & 2	12	:	3.11*
8 & 5	9	:	8 & 3	9	:	2.76*
8 & 5	9	:	8 & 1	9	:	2.71*
8 & 5	9	:	8 & 3	12	:	2.29**

* Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

*** Grade nine N = 50 Grade twelve N = 41

The computations in Table 9, at least for this study, would seem to indicate that these tests of critical thinking measured different abilities although no conclusion can be drawn as to whether or not they are related to one general ability. Test 4, recognition of assumptions, test 2, ability to draw inferences, and test 5, general logical reasoning, in that order seem to definitely measure different abilities.

There is evidence, to a lesser degree, that the other tests also measure different abilities. In view of this it seems safe to say that, when critical thinking as measured by the Watson-Glaser tests is taught, the various skills should be taught separately.

The means for school marks in social science, certain intelligence quotients and Problems of Democracy scores are listed in the following table.

Table 10. Means for certain intelligence quotients, school marks in social science and Problems of Democracy scores.

School	Grade ten				Grade twelve			
	N	I.Q.	Marks	P.D.	N	I.Q.	Marks	P.D.
A	15	103.40	3.06	43.20	32	103.71	3.40	51.37
B	28	106.40	3.39	42.50	40	107.72	3.65	62.42
C	16	97.68	3.37	40.12	16	98.68	3.06	53.12
D	28	118.28	4.42	54.03	30	110.40	3.63	56.70

School C has had a tendency to be consistently low in any relationship involving intelligence quotients and school marks in social science or those things dependent upon the school administrators and teachers. In this case, however, the means of the Problems of Democracy test show no great difference, except

for school D, grade ten, where a few high scores brought the mean up. This indicates that perhaps the intelligence tests were not properly administered at school C. It was thought that school A would be different since they have a system of increasing or decreasing school marks on the basis of intelligence quotients. School D, grade ten, has an average comparable to those of grade twelve. The results previously given show that the scores made on these tests of critical thinking are somewhat dependent on intelligence so it seemed likely that this was a select group and not a true representation of that grade and school. The mean intelligence quotient of this group is eight points higher than any other group, also there is a difference of at least three-fourths of a point in school marks in social science over the next highest group, these two factors tend to bear this out.

The means involved in the computation of the Watson-Glaser relationships are found in Table 11.

Table 11. Means for certain intelligence quotients, school marks in social science, and Watson-Glaser Tests of Critical Thinking, for school B.

I.Q.	Marks	Watson-Glaser Tests					
		1	2	3	4	5	8
Grade nine N = 50							
110.98	3.60	11.86	23.68	65.00	11.36	15.48	14.54
Grade twelve N = 41							
108.82	3.39	12.90	28.17	67.65	12.85	17.21	15.85

In comparing the two grades with the exception of test 2, inferences, the difference between the grades is negligible ranging from a difference of one to less than three points in each case. If it is possible to teach critical thinking, a comparison of these two groups gives no evidence that it is being done at this school to any great extent at least as far as the Watson-Glaser is a valid and reliable test of critical thinking.

The analysis of variance showed that there was a statistically significant difference between the grades but a one to not more than three point gain in two years, including the taking of at least one more social science course, seems as if it would be of little practical value.

CONCLUSIONS

Before any conclusions are reached a word of caution should be added concerning the use of school marks or intelligence quotients, as available in school records, in the establishment of norms without a careful analysis of them. It should be ascertained whether or not these differences are due to the particular tests used, test administration, or the population.

From the results of this study the following general conclusions were reached.

1. The abilities measured by the Watson-Glaser test were less closely related to school marks in social science than the ability to read critically as measured by the Problems of Democracy test.

2. The results of this study show that there is a statistically significant difference between the grades in the abilities measured by these tests of critical thinking but whether the small difference between the means on the abilities measured by the Watson-Glaser tests would be of any practical value will have to be determined by further study.

3. The high correlation between certain intelligence quotients and the scores on the various tests of critical thinking makes it seem likely that success on these tests is dependent to a considerable degree on intelligence as measured by these tests.

4. There were no differences in the critical thinking abilities of the sexes as measured by these tests.

5. Inter-test correlations show that there is a relationship between the various abilities measured by the Watson-Glaser. However, only a minority of the differences between these correlations are of statistical significance so it is difficult to determine whether or not they are parts of one ability or separate abilities in themselves.

SUGGESTIONS FOR FURTHER STUDIES

It would be interesting to see how the results of this study of an actual situation would compare with those of an experimental situation, with special emphasis being placed on the fact that the one conducting the study should administer all tests personally. It is suggested that any further study of this subject be of that type. It is also suggested that the schools chosen for the study have a stable population.

ACKNOWLEDGMENTS

The author wishes to thank; Dr. D. F. Showalter, Department of Education and Psychology, Kansas State College, for his invaluable assistance and guidance throughout this study; the Institute of Citizenship for the use of their records; the administrators of the various schools for their cooperation in making school records available; and his wife, Mrs. Wanda L. Young, for her aid in the preparation and checking of this manuscript.

REFERENCES

- (1) Thouless, Robert H.
How to Think Straight. New York. Simon and Schuster.
1939
- (2) Burt, Edwin A.
Right Thinking. New York. Harper and Brothers. 1946.
- (3) Hyslop, Holger.
Education for Independent Thinking: An Attempt. Jour.
Genet. Psychol. 72: 295-301. June, 1948.
- (4) Bonser, Frederick G.
The Reasoning Ability of Children. New York. Columbia
University. 1910.
- (5) Anderson, Howard C., F. G. Marcham, and S. B. Dunn.
Jour. Educ. Res. 38: 241-51. Dec. 1944.
- (6) U. S. Armed Forces Institute.
Manual for the Problems of Democracy Tests. American
Council on Education. 8 p. 1944.
- (7) Watson, Goodwin and Edward M. Glaser.
Manual for the Watson-Glaser Tests of Critical Thinking.
New York. World Book Co. 13 p. 1943.
- (8) Edwards, Allen L.
Statistical Analysis. New York. Rinehart & Co. 1946.
- (9) Garrett, Henry E.
Statistics in Psychology and Education. New York.
Longmans-Green. 1947.
- (10) Guilford, J. P.
Fundamental Statistics in Psychology and Education.
Second edition. New York. McGraw-Hill. 1930.

APPENDIX

APPENDIX A

Formulas Used in Statistical Calculations

In the analysis of variance the formula used to compute the variances is as follows:

$$1. \sum \chi^2 = \sum X^2 - \frac{(\sum X)^2}{N}$$

$$a. \text{ total sum of scores} = \sum X = \sum X_1 + \sum X_2 + \dots + \sum X_r$$

$$b. \text{ correction for origin} = \frac{(\sum X)^2}{N}$$

$$c. \text{ total sum of sq.} = \sum X^2 - \frac{(\sum X)^2}{N}$$

$$d. \text{ sum sq. between groups} = \frac{(\sum X_1)^2}{n_1} + \frac{(\sum X_2)^2}{n_2} + \dots + \frac{(\sum X_r)^2}{n_r} - \frac{(\sum X)^2}{N}$$

WHERE:

$\sum \chi^2$ = total sum of squares

$\sum X$ = total sum of scores

N = total sample

n = number in a sample

r = number of samples

(8) p. 207

To determine the degree of relationship between the tests, intelligence quotients and school marks in social science, the gross score formula coefficient of correlation was employed as follows:

$$2. r = \frac{\sum XY - NM_x M_y}{\sqrt{[\sum X^2 - NM_x^2][\sum Y^2 - NM_y^2]}}$$

$X + Y$ = obtained scores

$M_x + M_y$ = means of X & Y series

N = number of cases

(9) p. 292

The standard error of the coefficient of correlation was computed according to the following formula:

$$\sigma_r = \frac{1 - r^2}{\sqrt{N - 1}}$$

The following formula was used to find the SE of the difference of the Zs.

$$t = \frac{Z_1 - Z_2}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}} \quad (10) \text{ p. 224}$$

To find the difference of the coefficients they were changed into Fisher's Z.

Table 12. Intelligence quotients, school marks in social science and raw scores made on Problems of Democracy test.

School A			School B			School C			School D		
I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.
Grade ten - boys											
96	2	39	100	2	45	91	3	33	116	5	41
100	3	29	104	2	47	100	2	40	117	3	47
119	5	67	94	2	28	97	3	59	119	4	62
106	4	55	108	4	60	94	4	53	132	5	87
93	2	34	104	2	30				125	5	59
107	3	39	113	2	37				114	3	42
95	3	35	115	4	47				119	5	50
			107	4	46				132	5	82
			104	4	41				123	5	58
			102	3	36						
			103	3	44						
			120	4	46						
Grade ten - girls											
119	3	42	93	4	38	103	3	29	117	5	59
105	3	39	98	2	30	80	3	32	122	5	53
107	4	69	109	4	56	105	5	49	125	5	64
111	4	47	102	3	31	96	4	52	117	5	56
94	3	33	116	4	54	90	4	34	115	5	51
96	2	48	121	5	70	108	4	52	122	5	44
94	2	32	102	4	21	90	3	40	125	4	59
109	3	40	118	4	39	89	3	33	127	5	67
			108	4	34	107	4	14	110	5	41
			108	4	52	111	3	41	119	4	40
			128	5	59	94	2	32	122	5	57
			103	4	57	109	4	49	119	4	64
			115	4	51				115	3	37
			115	4	29				123	5	51

APPENDIX B

Table 12. (cont.).

School A			School B			School C			School D		
I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.
Grade ten - girls											
			98	2	33				95	2	37
			77	2	29				107	4	54
									112	5	40
									119	5	65
									104	3	46
Grade twelve - boys											
102	3	45	107	4	64	106	3	73	122	4	73
102	4	66	106	4	62	109	5	77	113	4	71
99	4	40	102	3	55	77	2	36	110	3	57
92	3	44	97	4	52	85	3	18	119	3	46
103	3	44	136	5	96	110	5	96	111	5	70
110	4	52	107	3	62	64	2	39	110	3	69
121	4	62	104	2	60	95	4	33	114	3	44
112	4	46	111	3	52	115	3	51	91	3	47
123	5	73	95	3	65	99	3	50	121	4	68
92	2	45	89	2	30	99	3	60	122	5	87
95	3	45	107	4	67				118	4	60
83	2	32	90	2	36				128	4	86
96	2	37	132	5	99				101	4	44
103	3	49	126	4	73				83	2	43
Grade twelve - girls											
98	3	43	106	4	46	109	3	48	123	5	55
101	3	42	104	4	51	98	2	46	126	5	77
87	2	63	114	4	76	98	3	44	85	3	40
105	3	46	118	5	82	119	3	55	108	3	46
115	4	63	98	4	62	105	4	49	119	5	74
108	4	48	111	4	45	91	2	45	115	4	49

Table 12. (concl.).

School A			School B			School C			School D		
I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.	I.Q.	Marks	P.D.
Grade twelve - girls											
107	4	39	94	5	71				119	5	76
90	3	38	124	5	79				93	3	53
115	5	95	128	4	94				107	3	49
132	5	78	124	4	79				102	3	45
101	2	44	94	4	58				125	3	70
113	4	52	92	3	53				108	2	34
95	3	41	117	4	67				103	3	41
87	3	58	100	4	63				112	3	40
107	3	43	85	2	46				102	3	51
123	5	72	111	5	71				102	4	36
105	3	37	128	4	80						
97	4	62	117	5	78						
			108	3	43						
			107	3	50						
			105	2	48						
			87	3	38						
			126	4	80						
			118	3	66						
			81	2	33						
			103	4	65						

Table 13. Intelligence quotients, school marks in social science and raw scores made on Watson-Glaser Tests of Critical Thinking for school B.

I.Q.	Marks	Watson-Glaser Tests					
		1	2	3	4	5	8
Grade nine - boys							
98	2	13	20	52	12	14	14
90	3	10	22	54	12	13	11
116	4	16	30	58	8	18	12
104	3	11	21	60	10	6	10
93	3	13	18	52	13	11	15
121	3	13	28	70	11	21	20
130	4	12	33	74	14	19	20
132	4	14	31	66	17	19	20
105	4	13	25	62	14	16	15
102	3	10	24	54	9	15	13
121	4	13	22	66	9	17	20
113	4	15	22	74	11	16	17
111	3	13	21	60	11	17	16
105	3	9	25	62	13	17	14
114	3	11	28	64	11	16	17
114	3	13	23	68	15	20	21
125	3	13	23	70	10	15	16
113	3	9	17	64	11	11	7
127	4	14	33	52	16	21	19
Grade nine - girls							
112	4	16	20	62	7	14	14
121	4	11	28	78	11	18	20
106	4	11	21	74	11	18	11
115	4	11	24	70	8	15	11
123	4	8	24	90	11	18	17
96	3	8	19	66	9	11	10
80	2	9	6	40	9	9	6
98	2	13	18	56	14	12	12
93	2	9	22	50	3	16	9
114	4	7	25	72	12	11	15
131	5	13	30	70	17	21	21
109	4	9	24	70	11	13	15
103	3	10	23	58	8	11	7
90	3	10	17	74	9	7	9
104	3	10	19	72	11	11	13
112	4	17	27	70	13	16	13
102	4	9	24	62	12	17	11
97	4	9	21	56	9	16	14
111	4	15	26	76	12	17	13
123	4	16	27	62	14	18	19
127	5	11	30	68	9	16	18

Table 13. (cont.).

I.Q.	Marks	Watson-Glaser Tests					
		1	2	3	4	5	8
Grade nine - girls							
113	4	15	27	70	14	17	15
113	5	13	17	64	11	11	9
127	5	17	30	68	12	18	16
122	4	13	28	62	15	18	16
111	4	7	25	74	11	14	15
115	3	11	20	68	12	14	17
124	4	13	20	64	12	21	18
107	4	11	22	72	10	17	14
120	4	14	24	66	13	18	19
106	4	12	30	64	11	13	13
Grade twelve - boys							
98	2	14	23	62	12	13	15
98	3	12	26	66	11	15	14
115	4	11	26	78	12	16	17
107	2	16	28	64	17	19	17
110	2	9	23	68	11	16	18
118	4	14	36	76	16	21	18
102	3	15	36	52	13	20	12
106	4	15	26	62	12	18	14
100	2	14	29	64	11	15	16
118	3	12	32	78	16	21	18
103	2	12	29	52	13	16	11
109	4	14	27	68	13	18	16
115	3	9	28	66	7	16	15
102	2	12	24	58	9	13	12
112	4	14	28	88	13	21	19
108	3	12	32	72	13	15	19
109	4	14	36	80	15	23	20
Grade twelve - girls							
92	4	12	23	66	13	17	12
125	4	17	32	80	16	20	14
122	5	11	28	70	17	22	17
87	2	10	15	62	8	12	10
110	3	13	29	62	11	16	16
123	4	15	31	72	11	13	13
121	4	14	34	64	15	23	19
92	3	9	23	56	7	7	8
94	3	9	18	60	13	14	16
122	4	15	32	84	14	20	17
105	3	11	26	60	14	13	13

Table 13. (concl.).

I.Q.	Marks	Watson-Glaser Tests					
		1	2	3	4	5	8
Grade twelve - girls							
119	5	13	27	68	15	19	18
87	2	10	23	40	10	13	15
97	3	13	21	70	13	19	16
121	4	15	22	64	14	19	21
117	4	14	38	74	17	19	20
90	3	13	28	72	10	13	11
115	2	14	26	78	12	21	14
118	4	11	27	56	14	18	13
115	5	17	40	80	13	17	21
115	5	15	30	70	18	17	15
107	3	13	29	68	11	19	16
120	5	15	35	76	16	20	18
118	4	11	29	68	11	19	16

Tests Used in This Study

WATSON-GLASER TESTS OF CRITICAL THINKING

By GOODWIN WATSON, PH.D., and EDWARD MAYNARD GLASER, PH.D.

I-A

BATTERY I: DISCRIMINATION IN REASONING—FORM A

TEST 1. GENERALIZATIONS

DIRECTIONS. In this test you will find statements about the behavior or characteristics of certain groups of persons at the present time. Each statement can begin with *All*, *Most*, *Few*, or *No*, thus:

All men have white hair. Most men have white hair.
 Few men have white hair. No men have white hair.

You are to decide, if you can, which form of the statement is most nearly correct.

There will be five possible answers to each statement: *All*, *Most*, "Don't know," *Few*, or *No*.

The statements will appear in the test in the following form:

Sample statements						
	1	2	3	4	5	
(a)	All	Most	DK	Few	No	— men have white hair.
	6	7	8	9	10	
(b)	All	Most	DK	Few	No	— doctors are college graduates.
	11	12	13	14	15	
(c)	All	Most	DK	Few	No	— persons will catch cold next year.
	16	17	18	19	20	
(d)	All	Most	DK	Few	No	— grown persons were formerly children.
	21	22	23	24	25	
(e)	All	Most	DK	Few	No	— college presidents are ten years old.

Sample answers					
	1	2	3	4	5
(a)	⋮	⋮	⋮	█	⋮
	6	7	8	9	10
(b)	⋮	█	⋮	⋮	⋮
	11	12	13	14	15
(c)	⋮	⋮	█	⋮	⋮
	16	17	18	19	20
(d)	█	⋮	⋮	⋮	⋮
	21	22	23	24	25
(e)	⋮	⋮	⋮	⋮	█

All means *every one* without exception. (*All* persons must die sometime.)

Most means *definitely more than half* but not all. (*Most* mothers are fond of their children.)

DK stands for *Don't Know*. It means you don't know whether the number is more or less than half.

Few means *definitely less than half*, but some. (*Few* persons commit suicide.)

No means *not any whatsoever*. (*No* living person is 500 years old.)

Suppose that in Sample (a) you think that, to be true, the statement should be: *Few* men (less than half) have white hair. In Sample (a) *Few* is number 4; so you would make a heavy mark in the space under 4 on the Answer Sheet, as shown in the sample answers.

Suppose that in Sample (b) you think that the statement should be: *Most* doctors are college graduates. In Sample (b) *Most* is number 7; so for Statement (b) you would make a heavy mark in the space under 7 on the Answer Sheet, as shown in the sample answers.

Suppose that in Sample (c) you do not know whether more or less than half the persons in the world will catch cold next year. In such a case you are to choose the answer DK. In Sample (c) DK is number 13; so you would make a heavy mark in the space under 13 on the Answer Sheet, as shown in the sample answers.

Samples (d) and (e) show how to answer if you believe that "All grown persons were formerly children" and "No college presidents are ten years old."

That is the way you are to answer the questions in this test. There is no time limit, but keep steadily at work until you finish. Be sure not to skip any statements. ANSWER EVERY ONE as best you can.

Do not write your name or make any marks anywhere in this booklet. Your name goes on the Answer Sheet only, as explained by the examiner, and all your marks go on the Answer Sheet.


In marking the Answer Sheet make your mark as long as the pair of lines, and move the pencil up and down firmly to make a heavy black line so it can be easily seen. If you change your mind, erase the first mark thoroughly. Do not leave any stray marks on the Answer Sheet.

Patent No. 1,586,628

Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois
 Copyright 1942 by World Book Company. Copyright in Great Britain. All rights reserved. PRINTED IN U.S.A. W-G:TCT:I-A-2

Copyright 1941 by Goodwin Watson and Edward Glaser

Edition a

 This test is copyrighted. The reproduction of any part of it by mimeograph, hectograph, or in any other way, whether the reproductions are sold or are furnished free for use, is a violation of the copyright law.

TEST 1. GENERALIZATIONS (Cont'd)

Begin here.

PART A

- | | | | | | | |
|-----|-----|------|----|-----|----|--|
| 1. | 1 | 2 | 3 | 4 | 5 | |
| | All | Most | DK | Few | No | — people in Boston like to read detective stories. |
| 2. | 6 | 7 | 8 | 9 | 10 | |
| | All | Most | DK | Few | No | — uneducated, illiterate people are more superstitious than people who have graduated from universities. |
| 3. | 11 | 12 | 13 | 14 | 15 | |
| | All | Most | DK | Few | No | — persons in the United States bought new automobiles during 1941 and paid cash in full for them. |
| 4. | 16 | 17 | 18 | 19 | 20 | |
| | All | Most | DK | Few | No | — dark-haired persons are better-natured than blond-haired persons. |
| 5. | 21 | 22 | 23 | 24 | 25 | |
| | All | Most | DK | Few | No | — college professors read little in the newspapers except the sports pages and comics. |
| 6. | 26 | 27 | 28 | 29 | 30 | |
| | All | Most | DK | Few | No | — teachers know better than their pupils what subjects or courses their pupils in elementary school ought to take. |
| 7. | 31 | 32 | 33 | 34 | 35 | |
| | All | Most | DK | Few | No | — Scotchmen are more careful than are people of any other nationality in spending their money. |
| 8. | 36 | 37 | 38 | 39 | 40 | |
| | All | Most | DK | Few | No | — criminals would rather be in prison than be free. |
| 9. | 41 | 42 | 43 | 44 | 45 | |
| | All | Most | DK | Few | No | — Irishmen are more hot-tempered than Italians. |
| 10. | 46 | 47 | 48 | 49 | 50 | |
| | All | Most | DK | Few | No | — people believe that women drivers of automobiles do not, as a group, drive as skillfully as men. |

PART B

- | | | | | | | |
|-----|-----|------|----|-----|-----|---|
| 11. | 51 | 52 | 53 | 54 | 55 | |
| | All | Most | DK | Few | No | — Communists are interested only in helping their fellow-men rather than in increasing their own personal power or privileges. |
| 12. | 56 | 57 | 58 | 59 | 60 | |
| | All | Most | DK | Few | No | — Jews would try to cheat a man in a business deal if they thought they had an opportunity to do so. |
| 13. | 61 | 62 | 63 | 64 | 65 | |
| | All | Most | DK | Few | No | — politicians will take graft from representatives of large corporations who want laws passed giving special privileges or benefits to their companies. |
| 14. | 66 | 67 | 68 | 69 | 70 | |
| | All | Most | DK | Few | No | — labor-union leaders really try to bring about improvements in the wages, hours, and working conditions of the members of their unions. |
| 15. | 71 | 72 | 73 | 74 | 75 | |
| | All | Most | DK | Few | No | — physically able persons on relief are willing to take decent jobs that are offered them in private industry. |
| 16. | 76 | 77 | 78 | 79 | 80 | |
| | All | Most | DK | Few | No | — persons getting government jobs through competitive civil service examinations are not so capable as persons doing similar work in private industry. |
| 17. | 81 | 82 | 83 | 84 | 85 | |
| | All | Most | DK | Few | No | — Fascists are interested only in helping their fellow-men rather than in increasing their own personal power or privileges. |
| 18. | 86 | 87 | 88 | 89 | 90 | |
| | All | Most | DK | Few | No | — Protestants would try to cheat a man in a business deal if they thought they had an opportunity to do so. |
| 19. | 91 | 92 | 93 | 94 | 95 | |
| | All | Most | DK | Few | No | — poor people are poor because they have been too lazy or shiftless to work when jobs were offered to them. |
| 20. | 96 | 97 | 98 | 99 | 100 | |
| | All | Most | DK | Few | No | — people who are getting the biggest salaries in our largest corporations today worked their way up from humble beginnings without money or influential friends to help them. |

TEST 2. INFERENCES

DIRECTIONS. If we know that it is raining, we decide that the ground is wet. The belief that the ground is wet is called an *inference* or a conclusion which we draw from the fact that it is raining.

From a given statement or given set of facts one person may infer one thing and another person may infer something else. Sometimes people draw wrong inferences or conclusions from given statements of facts.

In this test you will find various *statements of facts*. After each statement of fact you will find five possible inferences — that is, inferences which some persons might make from the stated fact. In each of the exercises below you are to accept the statement of fact as true — assume it to be true even if you do not personally believe it to be true. Then examine each inference and make a decision as to its truth or falsity in the light of the given statement.

You are to be concerned not with the truth of the statement of fact but only with the truth of the inference to be drawn from it. It is an error in thinking to jump at conclusions without sufficient evidence; but it is also an error to be over-cautious and fail to recognize a conclusion that may properly be drawn from given facts.

At the left of each inference you will find the letters T, PT, ID, PF, and F. The meaning of these letters is as follows:

T means that you think the inference is definitely a *true* one; that it properly follows from the statement of fact given in the exercise.

PT means that you think the inference is *probably true*; that the facts in the statement point to the probability of the truth of the inference, but that one cannot be entirely sure that it is true on the basis of the facts given in the statement.

ID means that there are *insufficient data*; that you cannot tell from the facts given whether the inference is likely to be true or false.

PF means that, in the light of the facts given in the statement, you think the inference is *probably false*; that the chances are that it is false, but one cannot be entirely sure that it is false.

F means that you think the inference is definitely a *false* one; that it cannot possibly be drawn or inferred from the statement of fact as given in the exercise and in some manner contradicts the stated fact.

Sometimes, in deciding whether a given inference is probably true or probably false, you will have to use certain common knowledge or information which practically every person knows who has ordinary sense. This will be illustrated in the example which follows:

Sample statement and inferences

I. Five thousand first-year high school students recently attended a week-end conference at which questions of race relations and of possible attitudes toward war were discussed, these being the problems the students felt to be the most vital today.

(a) As a group, the students who attended this conference had a greater interest in humanitarian or broad social problems than most first-year high school students have.	1	2	3	4	5
	T	PT	ID	PF	F
(b) The students were all between the ages of 10 and 11.	6	7	8	9	10
	T	PT	ID	PF	F
(c) The students came from all sections of the country.	11	12	13	14	15
	T	PT	ID	PF	F
(d) The students came to discuss trade-union problems.	16	17	18	19	20
	T	PT	ID	PF	F
(e) The question of attitudes toward war is considered by many high school students to be important enough to be discussed.	21	22	23	24	25
	T	PT	ID	PF	F

Sample answers

	1	2	3	4	5
(a)	⋮	■	⋮	⋮	⋮
	6	7	8	9	10
(b)	⋮	⋮	⋮	■	⋮
	11	12	13	14	15
(c)	⋮	⋮	■	⋮	⋮
	16	17	18	19	20
(d)	⋮	⋮	⋮	⋮	■
	21	22	23	24	25
(e)	■	⋮	⋮	⋮	⋮

In the above sample, inference (a) is *probably true* (PT) because (as is common knowledge) most first-year high school students are not likely to be so seriously concerned with such broad social problems.

Inference (b) is *probably false* (PF) because children between 10 and 11 years of age are not usually so interested in social problems that 5000 of them would attend such a conference; furthermore, there are extremely few high school students between 10 and 11 years of age.

There is just no evidence for inference (c); there are *insufficient data* (ID) for making a judgment in the matter.

Inference (d) is definitely *false* (F) because it contradicts the given statement of fact.

Inference (e) is the only one among those offered which necessarily follows from the given facts; it is therefore *true* (T).

In the exercises which follow, more than one of the inferences from a given statement may be true, or false, or probably true, or probably false, or have insufficient data to warrant a judgment. That is, you are to consider each inference by itself and disregard your answers to other inferences.

TEST 2. INFERENCES (Cont'd)

PART A

I. Yesterday, a freight elevator in the Main Building | cleaning crew. Just as Jackson was about to open the
fell four stories and struck the bumpers at the bottom of | door, the elevator began to drop. Jackson immediately
the shaft. The elevator, operated by Michael Jackson, | applied the emergency brake, but it did not hold, where-
had stopped at the fourth floor to let off part of the | upon he shouted, "We're going to crash!"

- | | | | | | |
|---|----|----|----|----|----|
| 1. The original cause of the accident was a deficient emergency brake.... | 1 | 2 | 3 | 4 | 5 |
| | T | PT | ID | PF | F |
| 2. The emergency brake was deficient..... | 6 | 7 | 8 | 9 | 10 |
| | T | PT | ID | PF | F |
| 3. The elevator operator tried to stop the elevator from falling..... | 11 | 12 | 13 | 14 | 15 |
| | T | PT | ID | PF | F |
| 4. Some of the cleaning crew were very much frightened by the drop..... | 16 | 17 | 18 | 19 | 20 |
| | T | PT | ID | PF | F |
| 5. The cleaning crew of the Main Building never uses the passenger elevators in that building. | 21 | 22 | 23 | 24 | 25 |
| | T | PT | ID | PF | F |

II. Mr. Brown, who lives in the town of Salem, was | He pleaded guilty and was again given the maximum
brought to court for the fourth time in the past month on | fine of \$100 by the authorities of Salem.
a charge of keeping his dance hall open after midnight. |

- | | | | | | |
|--|----|----|----|----|----|
| 6. The neighbors complained that Mr. Brown's customers made a lot of noise; that is why the midnight closing law was enacted..... | 26 | 27 | 28 | 29 | 30 |
| | T | PT | ID | PF | F |
| 7. The maximum fine of \$100 is effective in keeping all dance halls closed in Salem after midnight..... | 31 | 32 | 33 | 34 | 35 |
| | T | PT | ID | PF | F |
| 8. Mr. Brown's dance hall is located within the legal jurisdiction of the town of Salem. | 36 | 37 | 38 | 39 | 40 |
| | T | PT | ID | PF | F |
| 9. Less than half a dozen people want Mr. Brown's dance hall open after midnight. | 41 | 42 | 43 | 44 | 45 |
| | T | PT | ID | PF | F |
| 10. Mr. Brown thought either that he could "get away with it," or that he could get the law changed or that it would pay him to keep his place open after twelve o'clock, even though he had to risk paying frequent fines. | 46 | 47 | 48 | 49 | 50 |
| | T | PT | ID | PF | F |



III. Every year during spells of intense heat an un- | drowned while bathing during heat spells than at any
usually large number of people crowd to the beaches | other time.
and go swimming. Newspapers report more people |

- | | | | | | |
|---|----|----|----|----|----|
| 11. Intense heat causes cramps in many swimmers. | 51 | 52 | 53 | 54 | 55 |
| | T | PT | ID | PF | F |
| 12. The newspapers print such reports for the purpose of persuading people not to go swimming. | 56 | 57 | 58 | 59 | 60 |
| | T | PT | ID | PF | F |
| 13. The most important reason why more people are drowned during heat spells is that more people go swimming then..... | 61 | 62 | 63 | 64 | 65 |
| | T | PT | ID | PF | F |
| 14. The actual number of deaths from drowning is the same during heat spells as at any other time, but the newspapers just make a point of featuring them at such times. | 66 | 67 | 68 | 69 | 70 |
| | T | PT | ID | PF | F |
| 15. Since there are more lifeguards at the beaches during the very hot weather, there is no danger of drowning..... | 71 | 72 | 73 | 74 | 75 |
| | T | PT | ID | PF | F |

TEST 2. INFERENCES (Cont'd)

IV. The town of Westfield, beginning twenty years ago, has gradually bought up farms abandoned by owners who failed to pay taxes, and set out some 5600 acres of community forest. The pine trees set out twenty years ago are now more than twenty feet tall. The town forests yielded \$6000 profit last year on cordwood, and local authorities believe that the lumber revenue will eventually be \$20,000 a year, thus eliminating the need for town taxes.

16. The town of Westfield has found one way of using abandoned farm land.	76	77	78	79	80
	T	PT	ID	PF	F
17. The soil of the community forest in Westfield is favorable for the growth of pine trees.	81	82	83	84	85
	T	PT	ID	PF	F
18. The Westfield town forests will yield an annual profit of \$20,000 within two or three years.	86	87	88	89	90
	T	PT	ID	PF	F
19. The owners who failed to pay their taxes and abandoned their farms were either incompetent farmers or lazy ones.	1	2	3	4	5
	T	PT	ID	PF	F
20. It costs the town more to cut and sell the cordwood and lumber than the sales bring in.	6	7	8	9	10
	T	PT	ID	PF	F

V. An English teacher in a small-town high school was interested in finding out whether her students would gain more knowledge and appreciation of Charles Dickens's story *Great Expectations*, through (1) seeing a motion-picture production of the story, or through (2) reading the book and studying and discussing it in class without seeing the picture. Accordingly, she arranged for the students in one of her classes to see the movie *Great Expectations*, adapted from Dickens's book of that title, while the students in one of her other classes studied the book itself, in the usual manner, without the aid of the picture. On all the tests to measure appreciation and understanding of the story, the class which was taught with the aid of the movie did better. The class which saw the movie enjoyed it so much and became so interested that before the semester was over most of the students read the book entirely on their own initiative. They were curious to see how well the movie producers had portrayed Dickens's characters.

21. The teacher who conducted the experiment will hereafter try to use motion pictures when they are available, as an aid in teaching literary appreciation.	11	12	13	14	15
	T	PT	ID	PF	F
22. The children who were taught with the aid of the motion picture were required to read the book <i>Great Expectations</i> immediately after seeing the picture.	16	17	18	19	20
	T	PT	ID	PF	F
23. Pupils can learn more about a given subject from motion pictures than they can from books.	21	22	23	24	25
	T	PT	ID	PF	F
24. Most of the children in the class which saw the picture would have preferred to study the book <i>Great Expectations</i> in the usual way without the aid of the movie.	26	27	28	29	30
	T	PT	ID	PF	F
25. The students who saw the movie gave evidence that they understood the story at least as well as did those who only read the book.	31	32	33	34	35
	T	PT	ID	PF	F

TEST 2. INFERENCES (Cont'd)

PART B

VI. The first newspaper established in America appeared in Boston late in the seventeenth century. During a period of unrest when many people were dissatisfied with the government of Boston, the publisher ran into difficulties with the Boston authorities, who tried

to suppress the paper. His long fight to continue his little paper and to print the truth as he saw it marks an important episode in the continuing struggle to maintain a free press.

- | | | | | | |
|---|----|----|----|----|----|
| 26. The publisher of the first American newspaper resisted attempts to interfere with his freedom of expression. | 36 | 37 | 38 | 39 | 40 |
| | T | PT | ID | PF | F |
| 27. The publisher of this paper wrote articles against taxes of the kind that later brought about the "Boston Tea Party." | 41 | 42 | 43 | 44 | 45 |
| | T | PT | ID | PF | F |
| 28. The first American newspaper was published by the Boston government authorities. | 46 | 47 | 48 | 49 | 50 |
| | T | PT | ID | PF | F |
| 29. The editor of the first American newspaper, as soon as he discovered the disapproval of the Boston authorities, changed the policy of his paper to conform to their wishes, and after that the authorities did not bother him. | 51 | 52 | 53 | 54 | 55 |
| | T | PT | ID | PF | F |
| 30. Before this newspaper criticized the authorities there had been no criticisms of any kind whatsoever of the authorities of Boston. | 56 | 57 | 58 | 59 | 60 |
| | T | PT | ID | PF | F |

VII. In the midst of a disastrous coal strike, the company police fired their revolvers directly into a crowd of striking miners. Two days later one of the United States Senators from the state and several labor leaders spoke at a mass meeting called by the union and held in the capital city of the state. The meeting was attended by 10,000 people. Some miners wearing bandages were

on the platform. Although reporters from the city where the strike occurred were present, not a word about the meeting or the speeches, most of which strongly condemned the mine owners, was printed in any newspaper in that city. Nearly every other newspaper in the state, as well as some out-of-state newspapers, did report the mass meeting.

- | | | | | | |
|---|----|----|----|----|----|
| 31. None of the striking miners was injured by the company police. | 61 | 62 | 63 | 64 | 65 |
| | T | PT | ID | PF | F |
| 32. The newspapers in that city were controlled or strongly influenced by the mine owners. | 66 | 67 | 68 | 69 | 70 |
| | T | PT | ID | PF | F |
| 33. The United States Senator who spoke at the meeting supported the union side in this affair. | 71 | 72 | 73 | 74 | 75 |
| | T | PT | ID | PF | F |
| 34. The miners had aroused antagonism by destroying the property of other people. | 76 | 77 | 78 | 79 | 80 |
| | T | PT | ID | PF | F |
| 35. In this instance the union did not get fair treatment for its side of the controversy in the newspapers of the city where the strike occurred. | 81 | 82 | 83 | 84 | 85 |
| | T | PT | ID | PF | F |



VIII. June 25, 1939 (*N. Y. Times*). Japan bought aircraft material costing more than \$1,000,000 in this country during the first five months of 1939, the Department of Commerce reported today. The United States has protested strongly against Japanese bombing in

China. Total United States exports of aeronautic equipment . . . totaled \$38,247,052 in the period, an increase of 31 per cent over the first five months of 1938. Japan also imported airplanes from Europe.

- | | | | | | |
|--|----|----|----|----|----|
| 36. In spite of its protest, the United States government either could not or did not wish at that time to stop American aircraft concerns from exporting aircraft material to Japan. | 1 | 2 | 3 | 4 | 5 |
| | T | PT | ID | PF | F |
| 37. The American aircraft material exported to Japan was primarily of a commercial rather than of a military type. | 6 | 7 | 8 | 9 | 10 |
| | T | PT | ID | PF | F |
| 38. Most of the United States exports of aeronautic material for the first five months in 1939 were to Japan. | 11 | 12 | 13 | 14 | 15 |
| | T | PT | ID | PF | F |
| 39. If the manufacturers knew that the aircraft materials they sold to Japan might be used in the bombing of China, they would not have sold these materials to Japan. | 16 | 17 | 18 | 19 | 20 |
| | T | PT | ID | PF | F |
| 40. If the United States had prohibited export of aeronautic equipment to Japan, Japan would have discontinued her war on China. | 21 | 22 | 23 | 24 | 25 |
| | T | PT | ID | PF | F |

TEST 2. INFERENCES (Cont'd)

IX. On November 15, 1941, Saburu Kurusu arrived in Washington as a special Japanese envoy, sent by his government presumably to try to agree on a peaceful settlement with the United States of differences between the two countries. After several conversations among the President of the United States and Japan's envoys — Kurusu and Ambassador Nomura — our Secretary of State — Cordell Hull — on November 26 gave the Japanese a memorandum containing the basis for a general peaceful settlement of the problems between the two countries. On December 7, the two Japanese envoys called at the State Department in Washington to present a document containing their reply to the memorandum which Secretary Hull gave them Novem-

ber 26. At the precise moment that Secretary Hull received the Japanese envoys, word was being received at the White House that Japan's air force and submarines had suddenly and without warning attacked Hawaii, killing many Americans and causing serious damage to United States warships and airplanes stationed there. The Japanese planes took off against Hawaii from airplane carriers which had managed to come within striking distance unobserved in the vast expanses of the Pacific Ocean. The nearest bases from which Japanese naval and air forces could have operated were in certain islands in the Pacific which are more than 2200 miles from Hawaii.

- | | | | | | |
|---|----|----|----|----|----|
| 41. The Japanese had little knowledge of the condition of the American defenses in Hawaii. | 26 | 27 | 28 | 29 | 30 |
| | T | PT | ID | PF | F |
| 42. If the American forces in Hawaii had known at least a few hours in advance that the Japanese were on the way to attack them, they could have offered more effective resistance than they did. | 31 | 32 | 33 | 34 | 35 |
| | T | PT | ID | PF | F |
| 43. If President Roosevelt had talked personally with Japan's envoys instead of sending them to see Secretary of State Hull, Japan would not have attacked the United States forces at Hawaii. | 36 | 37 | 38 | 39 | 40 |
| | T | PT | ID | PF | F |
| 44. Japanese envoy Saburu Kurusu knew before he saw Cordell Hull on December 7 that Japanese forces had already attacked Pearl Harbor. | 41 | 42 | 43 | 44 | 45 |
| | T | PT | ID | PF | F |
| 45. The Japanese attackers must have been approaching Hawaii for several days and must have been planning this attack for some time, even while their envoy was supposedly trying to reach a peaceful settlement in Washington. | 46 | 47 | 48 | 49 | 50 |
| | T | PT | ID | PF | F |

X. On August 23, 1939, in the midst of negotiating a possible military alliance with England and France, Soviet Russia unexpectedly announced a non-aggression pact with Nazi Germany. The pact provided that Germany and Russia would "refrain from every act of force, every aggressive action, and every attack against one another"; that "if either should become the object of warlike acts by a third power, the other party will in no

way support this third power." On September 1, Germany invaded Poland. On September 3, England and France, bound by treaty to aid Poland, declared war on Germany. By September 15, the Germans had seized all of Poland's industrial centers. Russia, although not declaring war, on September 17 sent troops to occupy more than one third of Poland. On September 22, Germany and Russia divided Poland between themselves.

- | | | | | | |
|---|----|----|----|----|----|
| 46. If negotiations between Russia and England and France had been successful, and Russia had not concluded this non-aggression pact with Germany, the probability of Germany's invasion of Poland would have been lessened. | 51 | 52 | 53 | 54 | 55 |
| | T | PT | ID | PF | F |
| 47. In accordance with the terms of the Russian-German non-aggression pact as given in the statement of this problem, Russia was obligated to invade Poland and to fight on the side of Germany. | 56 | 57 | 58 | 59 | 60 |
| | T | PT | ID | PF | F |
| 48. Whoever wins the war, Poland will rise again, as she has risen in the past. | 61 | 62 | 63 | 64 | 65 |
| | T | PT | ID | PF | F |
| 49. The portion of Poland which Russia took was obtained more easily as a result of her "friendship" pact with Germany than it could have been obtained if Russia had gone to war with Germany and fought for that territory. | 66 | 67 | 68 | 69 | 70 |
| | T | PT | ID | PF | F |
| 50. Russia took advantage of the situation in which Germany was at war with the Allies to occupy a large portion of Poland which otherwise might have been taken by Germany. | 71 | 72 | 73 | 74 | 75 |
| | T | PT | ID | PF | F |

TEST 3. DISCRIMINATION OF ARGUMENTS

DIRECTIONS. In deciding important questions it is necessary to distinguish between arguments that are strong and important and those that are weak and unimportant.

This test consists of a series of questions. Under each question are four statements or arguments which might be put forth in support of either side of the question. Some of these arguments, if regarded as true,

would be strong and important arguments in support of or in opposition to the question at issue. Others, even though regarded as true, would nevertheless be weak and relatively unimportant. Read each argument carefully, and for *the purposes of this test regard the argument as true*; then decide whether you would call it strong or weak.

You are to indicate your decision as shown below.

<i>Sample question and arguments</i>				<i>Sample answers</i>	
I. Is it desirable for all young men to go to college?				1	2
(a)	Yes; if they go to college they will learn the school yells.....	Strong	Weak	(a)	<input type="checkbox"/> <input checked="" type="checkbox"/>
		3	4	(b)	<input type="checkbox"/> <input checked="" type="checkbox"/>
(b)	No; some college men are conceited.	Strong	Weak	(c)	<input checked="" type="checkbox"/> <input type="checkbox"/>
(c)	Yes; college is likely to increase their earning powers and culturally enrich their lives.....	Strong	Weak	(d)	<input checked="" type="checkbox"/> <input type="checkbox"/>
(d)	No; many young men cannot profit from college work and might better spend those years in more definite vocational training.....	Strong	Weak		

Argument (a) is a rather unimportant and silly reason for spending four years at college; hence it is marked *Weak*.

Argument (b) does not state that all college men are conceited, or that some non-college men are not also conceited or that everyone who goes to college will become conceited. The reason as stated is practically meaningless as an argument against going to college; hence it also is marked *Weak*.

Argument (c), if taken to be true, is a *strong* argument for the statement; hence it is marked *Strong*.

Argument (d), if taken to be true, is a strong argument against the statement; hence it is marked *Strong*.

Judge each of the arguments with care. Assume that each argument is true. Decide whether you think the

argument is a strong, important argument with reference to deciding the question at issue, and if you think it is, you are to mark it *Strong*; if, however, you think the argument is weak and unimportant or unrelated to the question at issue, you are to mark it *Weak*.

Try to arrive at a judgment for every argument, but if you feel that you cannot determine whether a given argument is *Strong* or *Weak*, then do not guess, for in this test there is an extra score penalty for answers that are marked incorrectly.

Judge each argument separately. In connection with some of the questions you may decide that all the arguments given are *Strong* or that all the arguments are *Weak*. Be sure to judge each argument on its own merit without regard for how you have judged any of the other arguments with reference to the given question.

PART A

I. Should some refugees from religious and political persecution in other countries be granted admission to the United States?

- | | | |
|--|--------|------|
| 1. No; we have not provided jobs for millions of our own citizens at present, and until we solve that problem these refugees would add seriously to the burden of unemployed. | 1 | 2 |
| | Strong | Weak |
| 2. Yes; if the United States took some of the refugees, it would help the cause of democracy, freedom, and tolerance at a time when these achievements of civilization are being sorely attacked in many parts of the world..... | 3 | 4 |
| | Strong | Weak |
| 3. Yes; the United States has been a country to which the oppressed from all lands could come for refuge and a new life. | 5 | 6 |
| | Strong | Weak |
| 4. No; many of the refugees did not obey all the laws in the countries from which they escaped. | 7 | 8 |
| | Strong | Weak |

Remember: For purpose of this test regard each argument as true; then decide whether you would call it Strong or Weak.

TEST 3. DISCRIMINATION OF ARGUMENTS (Cont'd)

II. In time of war or other national emergency, should full freedom of press, speech, and assembly be granted in a democracy to minority groups who do not believe in and are actively opposed to democracy?

- | | | |
|---|--------------|------------|
| 5. Yes; for variety of ideas makes life more interesting. | 9
Strong | 10
Weak |
| 6. No; for the unpopularity of the ideas of the groups who do not believe in democracy might start some disagreements and fights. | 11
Strong | 12
Weak |
| 7. No; for if the opponents of democracy were given freedom they would mislead and disunite the people, which in turn would lead to a loss of democracy and all democratic freedoms. | 13
Strong | 14
Weak |
| 8. Yes; for democracy will learn from its critics what must be done to deserve and to preserve the confidence of the people. | 15
Strong | 16
Weak |

III. Should the Federal government pay farmers for soil-conservation practices that cost time and money?

- | | | |
|---|--------------|------------|
| 9. Yes; the welfare of every group in the nation depends eventually upon the soil, which would be rapidly worn out if conservation practices were not made possible through Federal aid to the farmers. | 17
Strong | 18
Weak |
| 10. No; by soil-conservation practices the farmer adds to the fertility and value of his own land; to pay farmers out of public funds for helping themselves would be unfair to everyone else and opposed to the public welfare. | 19
Strong | 20
Weak |
| 11. Yes; some farmers have come to depend on such payments and would be required to reduce their standard of living if the payments stopped. | 21
Strong | 22
Weak |
| 12. No; it would require a considerable expenditure of public funds to pay farmers for soil-conservation practices. | 23
Strong | 24
Weak |

IV. Are labor unions helpful to the welfare of the majority of the people in the United States?

- | | | |
|---|--------------|------------|
| 13. No; labor unions sometimes require men to go out on strike and these strikes often hurt the business of the employer. | 25
Strong | 26
Weak |
| 14. Yes; labor unions are the only form of organization which will adequately protect the interests and rights of the workers. | 27
Strong | 28
Weak |
| 15. No; organized labor constitutes a monopoly which often serves its own selfish interests in opposition to the public welfare by creating scarcity of workers, opposing efficiency and work-saving machinery, and requiring unnecessary men to be hired on jobs, thus raising costs. | 29
Strong | 30
Weak |
| 16. Yes; organized labor groups were among the first advocates of public schools in the United States, and opportunity for free education is a desirable thing. | 31
Strong | 32
Weak |

V. In a time of widespread unemployment should relief funds be provided by the Federal government?

- | | | |
|--|--------------|------------|
| 17. No; for individuals and localities will then lean on the Federal government rather than exercise their own efforts, initiative, and ingenuity. | 33
Strong | 34
Weak |
| 18. Yes; for the Federal government owns billions of dollars' worth of gold now buried in the hills of Kentucky. | 35
Strong | 36
Weak |
| 19. Yes; for the problem is national in scope and cannot otherwise be solved by individuals or by those localities where, due to poverty, the burden is heaviest. | 37
Strong | 38
Weak |
| 20. No; for in some regions the local officials are corrupt and use the money from Washington not to help those most in need but to reward their political supporters. . . | 39
Strong | 40
Weak |

Remember: For purpose of this test regard each argument as true; then decide whether you would call it Strong or Weak.

TEST 3. DISCRIMINATION OF ARGUMENTS (Cont'd)

PART B

VI. Can rich and poor obtain, on the whole, equal justice from the courts in the United States today?

- | | | |
|---|--------|------|
| 21. No; for all governmental agencies in a capitalistic society are fundamentally designed to protect the privileges of the owning class. | 41 | 42 |
| | Strong | Weak |
| 22. No; there are many dramatic cases illustrating prejudice against the poor. . . . | 43 | 44 |
| | Strong | Weak |
| 23. Yes; judges take an oath to support the law and the Constitution without fear or special favors. | 45 | 46 |
| | Strong | Weak |
| 24. Yes; when a poor man sues a rich man or a large corporation, the jury's sympathies are more likely to be with the poor man, thus balancing any other advantage which the rich man may have. | 47 | 48 |
| | Strong | Weak |

VII. Should the government take over all the main industries, employ all who want to work, and reduce prices of the products made?

- | | | |
|--|--------|------|
| 25. Yes; the government is already running the army, navy, marines, post offices, veterans' insurance, public health, public housing, public works, and national parks. . . | 49 | 50 |
| | Strong | Weak |
| 26. No; few men will work as hard and as intelligently for the public in general as they will for their own business; government enterprise will therefore lack the efficiency to produce as high a standard of living as we have had with private business. . . | 51 | 52 |
| | Strong | Weak |
| 27. No; there have been numerous instances in which public officials have been found guilty of graft and corruption. | 53 | 54 |
| | Strong | Weak |
| 28. Yes; when all who want to work are employed by the government, prices will be reduced and people will have the purchasing power to buy the increased output. Only in this way can poverty be abolished. | 55 | 56 |
| | Strong | Weak |

VIII. Should the government of the United States put into effect a "health security" system that would bring free medical care to those families having annual incomes of less than \$3000?

- | | | |
|--|--------|------|
| 29. No; socialized medicine or "health security" means that the doctors work for the government on a straight salary basis. The personal interest of doctor in patient would be seriously lessened; thus the patients would not receive competent treatment. | 57 | 58 |
| | Strong | Weak |
| 30. Yes; many doctors who do not at present earn a comfortable living because they do not have enough paying patients could find steady jobs in this new government health service. | 59 | 60 |
| | Strong | Weak |
| 31. No; many people may hardly ever need a doctor; under a "health security" system they would be paying money and not receiving any services in return. | 61 | 62 |
| | Strong | Weak |
| 32. Yes; "health security" would make available complete and competent medical and dental treatment for those millions of citizens who earn so little money that they cannot save and cannot now afford proper care. | 63 | 64 |
| | Strong | Weak |

IX. Should the public be taxed to provide college education free for all intellectually superior young persons who want it but cannot afford to pay their own way?

- | | | |
|--|--------|------|
| 33. No; facing difficulties builds character; why not let the poor try to work their way through college? | 65 | 66 |
| | Strong | Weak |
| 34. Yes; the public spends a great deal of money on free education for the dull, delinquent, and handicapped; why not make possible a higher education for gifted young persons? | 67 | 68 |
| | Strong | Weak |
| 35. Yes; without free tax-supported education available to such persons society will lose the contributions of many of our ablest minds in fields where special college training is necessary, such as scientific research. | 69 | 70 |
| | Strong | Weak |
| 36. No; intellectually superior young persons can get the equal of a formal college education through study on their own initiative plus a few evening courses in more technical subjects. The expense involved in such a plan therefore is not justified. . . | 71 | 72 |
| | Strong | Weak |

TEST 3. DISCRIMINATION OF ARGUMENTS (Cont'd)

X. Should the income of every family head be increased by a government subsidy for each dependent child, so that the cost of proper care for the child is provided without lowering the standard of living for the rest of the family?

- | | | | | |
|--|----|----|--------|------|
| 37. No ; additional revenue would have to be found in order to make possible such government support and taxes are already high. | 73 | 74 | Strong | Weak |
| 38. No ; such an arrangement would reduce enterprise and the desire to work, and would lead to the birth of children unwanted except for the subsidy they bring in. . . . | 75 | 76 | Strong | Weak |
| 39. Yes ; such an arrangement would reduce the worries of many parents. | 77 | 78 | Strong | Weak |
| 40. Yes ; with state financial support for the care of offspring, no child would have to suffer from undernourishment, bad housing, inadequate education, or other evil consequences of poverty ; the public as a whole would, in the long run, benefit. | 79 | 80 | Strong | Weak |

TEST 4. RECOGNITION OF ASSUMPTIONS

DIRECTIONS. *An assumption is something supposed or taken for granted, frequently as a basis for argument or inference. For example, when we say to a friend, "Good night, I'll see you tomorrow," we make many unstated assumptions, usually without realizing that we are doing so. We assume, for instance, that tomorrow will come, that we will be alive tomorrow and able to see, and that our friend will be at a place where we can see him.*

There are other kinds of assumptions which are not so easy to recognize and are not so well founded as the kind illustrated above. Suppose, for example, that a man is brought into court on a charge of beating his wife. The man denies the charge. The lawyer turns to the man and asks, "All right, when did you stop beating your wife?" Do you recognize the unstated assumption

in the lawyer's question? It is assumed in the question that the man has been beating his wife, for he could not have stopped unless he previously had begun to beat her, and therefore the question would not be sensible.

It is valuable to be able to recognize unstated assumptions in people's reasoning. This test contains twenty exercises similar in form to the sample which follows. Each exercise consists of a main statement followed by four alternative statements about the assumptions involved in the main statement. Only one of these four alternatives is true. You are to choose the correct one of these four alternatives and indicate your choice on the Answer Sheet, as shown in the sample below. In each case the fourth alternative is given merely for you to choose in case no one of the first three alternatives is true.

Sample statement

(a) "I want to be sure I don't get typhoid fever while I'm in South America, so I shall go to my physician and get typhoid injections before I sail."

Sample assumptions

- 1 It is assumed in the statement that I am going to South America by railroad.
- 2 It is assumed in the statement that most people who go to South America and do not take typhoid injections get typhoid fever.
- 3 It is assumed in the statement that the typhoid injections will prevent my getting typhoid fever.
- 4 None of the above assumptions is made.

Sample answer

	1	2	3	4
(a)	⋮	⋮	█	⋮

In the samples given above, alternative 1 is not true because the main statement says "before I sail"; hence it is not assumed that I am going "by railroad."

Alternative 2 is not correct. It is assumed that there is some danger of contracting typhoid fever in South America, but it is not necessarily assumed that *most* people who go to South America and who do not take typhoid injections get typhoid fever.

Alternative 3 is true because of the word "sure" in the statement." The speaker could only be sure he wouldn't get typhoid if it is a fact (as the speaker *assumes* it is) that the injections will certainly prevent his getting

typhoid. Hence a mark is made under the number 3. Alternative 4 is not true, of course, because one of the other alternatives, 3, is true.

Remember that an assumption is something that the speaker supposes or takes for granted in connection with what he says. It is something that must be true in order that the main statement can be sensible.

For example, the statement in the sample *assumes* that typhoid injections will prevent one from getting typhoid fever because if typhoid injections will not prevent one from getting typhoid fever it would not be sensible to take the typhoid injections for that purpose.

TEST 4. RECOGNITION OF ASSUMPTIONS (*Cont'd*)

PART A

Begin here.

1. "A wise man will save at least ten dollars a week out of his earnings."
 - 1 It is assumed in the statement that no fools are thrifty.
 - 2 It is assumed that a person needs to be wise in order to save ten dollars a week.
 - 3 It is assumed that a wise man earns enough to be able to save at least ten dollars a week.
 - 4 None of the above assumptions is made.

2. "Atkins stepped into the captain's office and saluted. 'Atkins!' said the captain, 'you are guilty of several infractions of the army rules. In order to correct your bad habits I am going to sentence you to two days in the guardhouse.'"
 - 5 It is assumed in the statement that a two-day stay in the guardhouse would help to correct Atkins's bad habits.
 - 6 It is assumed in the statement that Atkins is a new recruit who has not yet become familiar with army rules and discipline.
 - 7 It is assumed in the statement that Atkins does not like being in the army.
 - 8 None of the above assumptions is made.

3. "Alice awakened on Friday morning with a bad stomach ache, pain in her right side, and a fever. Upon learning about Alice's condition, her mother felt sure that Alice was suffering from appendicitis."
 - 9 It is assumed in the statement that Alice's mother immediately called a doctor.
 - 10 Alice's mother assumed that the symptoms Alice showed could be caused only by appendicitis.
 - 11 It is assumed in the statement that Alice felt perfectly well up until Friday morning.
 - 12 None of the above assumptions is made.

4. "Socrates was judged by the Athenian court to be a doer of evil in that he corrupted the youth by trying to make them curious."
 - 13 The Athenian court assumed that Socrates was wise.
 - 14 The Athenian court assumed that the youth of Athens wanted Socrates to be punished for corrupting them.
 - 15 It is assumed in the statement that the youth of Athens became curious as a result of Socrates' teaching.
 - 16 None of the above assumptions is made.

5. "Let the punishment fit the crime."
 - 17 It is assumed in the statement that punishment will serve to reform the criminal.
 - 18 It is assumed in the statement that criminals fear punishment.
 - 19 It is assumed in the statement that persons who commit crimes should be punished.
 - 20 None of the above assumptions is made.

6. "In 1870 it cost on the average about \$16.00 a year to give a child an education in our public schools; in 1938 it cost on the average about \$100.00 a year. The children in our public schools today must be receiving a better education than the children in 1870 received."
 - 21 It is assumed in the statement that we are spending too much money on public education.
 - 22 It is assumed in the statement that the meaning of "better education" must be made clear before the argument can be understood.
 - 23 It is assumed in the statement that there is a direct relationship between the amount of money spent on education and the quality of that education.
 - 24 None of the above assumptions is made.

7. "That climate is wonderful for John's health; John hasn't been ill a day in the last two years that he has been there."
 - 25 It is assumed in the statement that John's good health during the last two years is due to the climate.
 - 26 It is assumed in the statement that John had been seriously ill for a long time before the last two years.
 - 27 It is assumed in the statement that if John were to leave that climate he would become ill.
 - 28 None of the above assumptions is made.

8. "Johnnie and Willie each had five cents and decided to buy some apples. They bought green apples, ate them, and soon they both got stomach cramps and felt ill. A few days later some of their friends were going to eat green apples but Johnnie warned them not to do so, telling them that if they did they surely would get cramps and feel sick."
 - 29 It is assumed in the statement that Johnnie and Willie had never before eaten green apples.
 - 30 Johnnie assumed that the green apples his friends were going to eat would affect them in about the same way as he and Willie had been affected.
 - 31 It is assumed in the statement that Johnnie's friends did not eat the green apples after his warning.
 - 32 None of the above assumptions is made.

9. "Every argument that has been used to justify the teaching of grammar in elementary schools may be applied with still greater force to the teaching of logic. If it is desirable that a child should speak correctly, it is much more desirable that he think correctly."
 - 33 It is assumed in the statement that all children who have been taught grammar can speak correctly.
 - 34 It is assumed in the statement that there are reasons to believe that the teaching of logic in elementary schools can help children to think correctly.
 - 35 It is assumed in the statement that logic is not being taught in elementary schools at the present time.
 - 36 None of the above assumptions is made.

TEST 4. RECOGNITION OF ASSUMPTIONS (Cont'd)

10. "Doctor Oliver decided to test out Darwin's theories about the value of earthworms as soil improvers. He got a large number of flowerpots and painted half the pots red and the others green. He planted the same common flowers or vegetables in all the pots, but in the red pots he removed from the soil all worms and their eggs, while in the green pots he added some worms. A few weeks later the plants in the green pots were stronger and nearly twice the size of those in the red pots."
- 37 It is assumed in the statement that Doctor Oliver was a professor of agriculture.
- 38 It is assumed in the statement that the soil in the green pots required more water than the soil in the red pots in order to keep the earthworms alive.
- 39 It is assumed in the statement that people who own land ought to see to it that there are earthworms in the soil.
- 40 None of the above assumptions is made.

PART B

11. "All Communists in the United States should be sent back to Russia."
- 41 It is assumed in the statement that all Communists would prefer to live in Russia rather than in the United States.
- 42 It is assumed in the statement that the United States Congress would like to get all Communists out of the United States.
- 43 It is assumed in the statement that all Communists in the United States came here from Russia.
- 44 None of the above assumptions is made.
12. "There are those in our country today who ask me and the other veterans who fought in World War No. 1: 'What did it get you?' Let me answer them now. People who ask that question, 'What did it get you?' forget one thing. True, we fought the last war to make the world safe for democracy, and we did for a while. The thing they forget is that liberty and freedom and democracy are so very precious that you do not fight to win them once — and then stop. Liberty and freedom and democracy are prizes awarded only to those peoples who fight to win them and then keep fighting eternally to hold them."
- 45 It is assumed in the statement that most people in this country believe that we didn't get anything worth while out of fighting in World War No. 1.
- 46 It is assumed in the statement that people who fight will obtain liberty and freedom and democracy as a reward for their fighting.
- 47 It is assumed in the statement that the world will never again be safe for democracy until the United States again defeats those nations which are opposed to democracy.
- 48 None of the above assumptions is made.
13. "Democracy is based on intelligent liberty — a liberty which is restricted by consideration for the welfare of others. To disarm a murderous gunman is obviously not to deprive him of his proper liberty. In an intelligent society his liberty to kill must give way before his neighbor's liberty to live. To prevent a motorist from driving while drunk is not to take from him any truly democratic right."
- 49 It is assumed in the statement that some liberties are not proper.
- 50 It is assumed in the statement that a murderous gunman has no proper liberties.
- 51 It is assumed in the statement that getting drunk is not a truly democratic right.
- 52 None of the above assumptions is made.
-
14. "There be now at sea a ship called *Welcome*, which has on board 100 or more of the heretics . . . called Quakers, with William Penn at the head of them. The General Court has accordingly given sacred orders to Master Malachi Huscott, of the brig *Porpoise*, to waylay the said *Welcome* . . . and make captive the said Penn and his ungodly crew, so that the Lord may be glorified and not mocked on the soil of this new country with the heathen worship of these people."
- 53 It was assumed by the General Court that if the Quakers were made captive everyone else on the soil of this new country would worship in a manner that would be glorifying to the Lord.
- 54 It was assumed by the General Court that Master Malachi Huscott and his men would probably be capable of making captive William Penn and his crew aboard the *Welcome*.
- 55 It was assumed by the General Court that the Quakers aboard the ship *Welcome* worshiped heathen idols.
- 56 None of the above assumptions is made.
-
15. "To confuse by propaganda, to divide by corruption, to paralyze by intimidation, and then to destroy by blitzkrieg — that is the new technique of the 'total war.'"
- 57 It is assumed in the statement that the new technique of the "total war" generally is successful.
- 58 It is assumed in the statement that the new technique of the "total war" requires that many spies be planted in the enemy countries.
- 59 It is assumed in the statement that blitzkrieg can be successful only against a nation that has first become demoralized.
- 60 None of the above assumptions is made.

TEST 4. RECOGNITION OF ASSUMPTIONS (Cont'd)

16. "Oriental guns are turning westward. Asia presses toward us. . . . It is time to turn from our quarrels and to build our White ramparts again. . . . Our civilization depends on a. . . . Western Wall of race and arms which can hold back either a Genghis Khan or the infiltration of inferior blood. . . . We can have peace and security only so long as we band together to preserve that most priceless possession, our inheritance of European blood, only so long as we guard ourselves against attack by foreign armies and dilution by foreign races."

- 61 It is assumed in the statement that the Western nations will form some kind of alliance or union to protect themselves against the Eastern or Oriental nations.
- 62 It is assumed in the statement that there is a difference between European blood and Oriental or Asiatic blood, and that European blood is superior.
- 63 It is assumed in the statement that the peoples who possess European blood ought to get together and attack foreign armies and races.
- 64 None of the above assumptions is made.

17. "In the future days . . . we look forward to seeing and living in a world founded upon four essential human freedoms. The first is freedom of speech and expression — everywhere in the world. The second is freedom of every person to worship God in his own way — everywhere in the world. The third is freedom from want . . . — everywhere in the world. The fourth is freedom from fear — which means a world-wide reduction of armaments . . . such . . . that no nation will be in a position to commit an act of physical aggression . . . — anywhere in the world."

- 65 It is assumed in the statement that if the four human freedoms referred to are achieved throughout the world, everyone will then be happy.
- 66 It is assumed in the statement that no people in the world today enjoy the four freedoms referred to.
- 67 It is assumed in the statement that the four freedoms referred to are a basis for a kind of world which may be attained in our time.
- 68 None of the above assumptions is made.

18. "Several European countries and some states in our country have passed compulsory sterilization laws which require that certain classes of mentally defective or insane persons, whose defect is caused by bad heredity, submit to a surgical operation which will prevent them from becoming parents."

- 69 It is assumed that it is possible to tell when an individual's mental defect is caused by bad heredity and when it may be caused by something else.
- 70 It is assumed that most mentally defective persons would not submit to sterilization if it was not made compulsory by law.
- 71 It is assumed that by preventing the mentally defective and insane from having children eventually no one will ever be mentally defective or insane.
- 72 None of the above assumptions is made.

19. "Efficiency is a matter of getting a job done as well as possible and with as little effort as possible. The mayor of a certain city boasted that his city was the most efficiently managed in the United States because it had the lowest real-estate tax rate and spent less money from the public treasury than any other city of equal size."

- 73 It is assumed in the mayor's boast that in order to estimate how well a job is done in any instance we must know what it was intended to accomplish.
- 74 It is assumed in the mayor's boast that the great majority of the residents of the city referred to were happy and satisfied with the economic management of the city's affairs.
- 75 It is assumed in the mayor's boast that the chief job which an efficiently managed city has to accomplish is to operate with low real-estate taxes and with relatively little spending of public funds.
- 76 None of the above assumptions is made.

20. "Our democratic system of government is now threatened by an aggressive, expanding fascism; but more fundamentally, self-government is being undermined by its failure to solve the crucial problems of our technological age. Up until the recent armament program we have long suffered from widespread unemployment, vast farm surpluses, and utterly needless poverty in the presence of scientific power for unprecedented productivity. — These are the factors which threaten democratic life."

- 77 It is assumed in the statement that our democratic system of government cannot solve the crucial problems of this technological age.
- 78 It is assumed in the statement that the American people cannot eat as much food as the farmers grow.
- 79 It is assumed in the statement that if the United States could solve its crucial technological problems, such as widespread unemployment and farm surpluses, we could not be undermined or hurt by the fascist states.
- 80 None of the above assumptions is made.

ANSWER SHEET: FORM A

TEST 1 (Page 1) GENERALIZATIONS

PART A				
1	2	3	4	5
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50

TEST 2 (Page 3) INFERENCE

PART A				
1	2	3	4	5
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50

TEST 3 (Page 8) DISCRIMINATION OF ARGUMENTS

PART A			
1	2	21	22
1	2	21	22
3	4	23	24
5	6	25	26
7	8	27	28
9	10	29	30
11	12	31	32
13	14	33	34
15	16	35	36
17	18	37	38
19	20	39	40

TEST 4 (Page 11) RECOGNITION OF ASSUMPTIONS

PART A			
1	2	3	4
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

PART B				
51	52	53	54	55
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

PART B				
51	52	53	54	55
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90

PART B				
1	2	3	4	5
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75

PART B			
41	42	61	62
41	42	61	62
43	44	63	64
45	46	65	66
47	48	67	68
49	50	69	70
51	52	71	72
53	54	73	74
55	56	75	76
57	58	77	78
59	60	79	80

PART B			
41	42	43	44
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80

TEST 2		TEST 3	
T	Right	Wrong	Omit
PT	Right	Wrong	Omit
ID	Right	Wrong	Omit
PF	Right	Wrong	Omit
F	Right	Wrong	Omit
Total	50	Score	

21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

Test	Raw Scores			Stand. Score
	Part A	Part B	Total	
1				
2				
3				
4				
Total score, Battery I				

WATSON-GLASER TESTS OF CRITICAL THINKING

By GOODWIN WATSON, PH.D., and EDWARD MAYNARD GLASER, PH.D.

BATTERY I: DISCRIMINATION IN REASONING—FORM A

I-A

Name Sex (circle a letter) M F
 Date of birth 19.... Age last birthday years Teacher
 Grade* School City

* If you are not in school, enter last school grade completed.

PSYCHOCHART

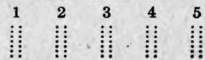
Classification	Very Low	Low	Low Avg.	Avg.	High Avg.	High	Very High
Percentile rank	0-2	3-11	12-34	35-65	66-88	89-97	98-100
Test 1. Generalizations							
Test 2. Inferences							
Test 3. Discr. of Arg'm'ts							
Test 4. Recog. of Assump's							
Total score							

GENERAL DIRECTIONS

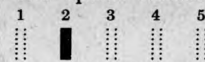
Each test in this booklet consists of from 20 to 50 questions. Your answers to all the questions are to be put on one page called the Answer Sheet. It is on the back of this page.

Several possible answers are given to each question. These answers are numbered. You are to choose the right answer to each question and indicate your choice by marking on the Answer Sheet the number of the answer you chose.

In some tests, as in Test 1, there are five possible answers to each question. In such a case there will be, for each question, five numbered spaces on the Answer Sheet, like this:



If you think answer number 2 to a given question is the right answer, you are to make a heavy mark in the space numbered 2 on the Answer Sheet, like this:



If you think that answer number 4 is the right answer, you are to make the heavy mark in the space numbered 4, etc. That is the way you are to mark your answers to the questions.

The special directions for the separate tests explain further how to put your answers on the Answer Sheet. The directions for Test 1 are on the front page of this booklet.

Tear off along this line.

Patent No. 1,586,628

Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois
 Copyright 1942 by World Book Company. Copyright in Great Britain. All rights reserved. PRINTED IN U.S.A. W-G:TCT:I-A-2

Copyright 1941 by Goodwin Watson and Edward Glaser

Edition A

This test is copyrighted. The reproduction of any part of it by mimeograph, hectograph, or in any other way, whether the reproductions are sold or are furnished free for use, is a violation of the copyright law.

WATSON-GLASER TESTS OF CRITICAL THINKING

By GOODWIN WATSON, PH.D., and EDWARD MAYNARD GLASER, PH.D.

BATTERY II : LOGICAL REASONING — FORM A

II-A

TEST 5. GENERAL LOGICAL REASONING

PART A

DIRECTIONS. (Read carefully.) This is a test to measure your ability to draw valid (correct) conclusions from given statements or given information.

In Part A each exercise begins with two statements. For the purpose of this test you are to regard them as true even when you know that in fact one or both of the statements are not true. In each exercise these two statements are followed by four possible conclusions that

some people might draw from them. You are to decide which conclusion is the correct one. If you think that no one of the four conclusions *necessarily* follows from the two given statements, then you are to choose the fifth answer in each exercise, which reads, "None of these conclusions necessarily follows." Study the two sample exercises with statements and conclusions given below.

Sample statements and conclusions

(a) All horses drink milk.
Turf Nag is a horse.
Therefore —

- 1 Turf Nag has four legs.
- 2 Milk is good for horses.
- 3 Turf Nag drinks milk.
- 4 It is expensive to give milk to a horse.
- 5 None of these conclusions necessarily follows.

In sample (a) above, Conclusion 3 necessarily follows from the two given statements; so a heavy black mark is made between the two rows of dots under 3 in the answer spaces, to show that answer number 3 is the correct choice.

Sample answers				
1	2	3	4	5
(a) ⋮	⋮	■	⋮	⋮

Sample statements and conclusions

(b) All traitors will be shot.
Adolph will be shot.
Therefore —

- 1 Adolph is a traitor.
- 2 Adolph is a soldier.
- 3 Adolph is a murderer.
- 4 When Adolph is shot he will die.
- 5 None of these conclusions necessarily follows.

In sample (b) above, none of the first four conclusions necessarily follows from the two given statements. We are not told why Adolph will be shot, and we cannot be sure that when he is shot he will die. A heavy black mark is therefore made between the two rows of dots under 5 in the answer spaces.

Sample answers				
1	2	3	4	5
(b) ⋮	⋮	⋮	⋮	■

You are to indicate your choice by making a mark in the space on the Answer Sheet that is numbered the same as the answer you think is correct. The answer spaces for this test (Test 5) are at the left-hand side of the Answer Sheet. Notice that you are to make one mark and *only* one mark for each exercise. You will either choose one of the four conclusions or the answer, "None of these conclusions necessarily follows."

Remember, for purposes of the test you are to assume that the statements which are given with each exercise are true; your problem is to see whether any conclusion properly and *necessarily* follows from the given statements.

Judge every conclusion with care. *Do not skip any.* There is no time limit for this test; simply work as rapidly as you can without making mistakes.

Do not write your name or make any marks anywhere in this booklet. Your name goes on the Answer Sheet only, as explained by the examiner, and all your marks go on the Answer Sheet.

In marking the Answer Sheet make your mark as long as the pair of lines, and move the pencil up and down firmly to make a heavy black line so it can be easily seen. If you change your mind, erase the first mark thoroughly. Do not leave any stray marks on the Answer Sheet.

Patent No. 1,586,628

Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois
Copyright 1942 by World Book Company. Copyright in Great Britain. *All rights reserved.* PRINTED IN U.S.A. W-G: TCT: II-A-2

Copyright 1941 by Goodwin Watson and Edward Glaser

Edition a

⚠ This test is copyrighted. The reproduction of any part of it by mimeograph, hectograph, or in any other way, whether the reproductions are sold or are furnished free for use, is a violation of the copyright law.

TEST 5. GENERAL LOGICAL REASONING (Cont'd)

PART A

Begin here.

1. All stout people are popular.
Some handsome people are stout.
Therefore —
- 1 All handsome people are popular.
2 Some handsome people are popular.
3 No handsome people are popular.
4 All popular people are stout.
5 None of these conclusions necessarily follows.
-
2. No four-legged animals chase mice.
All cats are four-legged animals.
Therefore —
- 6 All mice are four-legged animals.
7 No mice chase cats.
8 No cats chase mice.
9 Some cats chase mice.
10 None of these conclusions necessarily follows.
-
3. No babies have strong teeth.
No very old people have strong teeth.
Therefore —
- 11 Some people who are not babies have strong teeth.
12 Some people who are not old have strong teeth.
13 All babies are old people.
14 No babies are old people.
15 None of these conclusions necessarily follows.
-
4. Some holidays are rainy.
All rainy days are boring.
Therefore —
- 16 Some holidays are not boring.
17 No clear days are boring.
18 Some rainy days are not boring.
19 Some holidays are boring.
20 None of these conclusions necessarily follows.
-
5. Some dancing instructors need crutches.
No persons with two good legs need crutches.
Therefore —
- 21 All persons who do not have two good legs need crutches.
22 No persons who need crutches can teach dancing.
23 All dancing instructors have two good legs.
24 Some dancing instructors do not have two good legs.
25 None of these conclusions necessarily follows.
-
6. All fish live in water.
No dogs are fish.
Therefore —
- 26 No dogs live in water.
27 All dogs live in water.
28 Some dogs live in water.
29 Some dogs do not live in water.
30 None of these conclusions necessarily follows.
-
7. No good logicians are poor citizens.
Some students are good logicians.
Therefore —
- 31 Some students are not poor citizens.
32 Some students are poor citizens.
33 All good citizens are good logicians.
34 No good logicians are poor students.
35 None of these conclusions necessarily follows.
-
8. Some conversations become tiresome.
Some tiresome things should be dropped.
Therefore —
- 36 Some conversations should be dropped.
37 Some conversations should not be dropped.
38 All conversations should be dropped.
39 No conversations should be dropped.
40 None of these conclusions necessarily follows.
-
9. All children are good-hearted.
All good-hearted persons go to Sunday School.
Therefore —
- 41 Only good persons go to Sunday School.
42 Some children do not go to Sunday School.
43 All children go to Sunday School.
44 No children go to Sunday School.
45 None of these conclusions necessarily follows.
-
10. If McGuire is of military age he is in the Army.
McGuire is not in the Army. Therefore, we may conclude that —
- 46 He is of military age.
47 He is not of military age.
48 The Army doesn't want him.
49 He is in the Navy.
50 None of the above conclusions necessarily follows.
-

TEST 5. GENERAL LOGICAL REASONING (Cont'd)

PART B

DIRECTIONS. In this Part each exercise begins with a paragraph containing information which, for purposes of this test, you are to regard as true. After each paragraph there are four possible conclusions.

In Part A a conclusion, in order to be marked as the correct one, had to follow *necessarily* from the two statements in that exercise. In Part B you are to find the one conclusion which properly or most logically follows from the information. For example:

Sample paragraph and conclusions

(a) John was very stout and had an enormous appetite. His mother took him to Dr. Sawbones. The doctor said there was something wrong with John's glands, and prescribed some medicine which he told John to take every day without fail. Soon after John began taking the medicine he felt better, his appetite became normal, and he began to lose weight. Every time John stopped taking the medicine for a few days his appetite greatly increased and he gained weight quickly. On the basis of these facts we may properly conclude that —

- 1 The medicine that the doctor prescribed seems to have helped John reduce his appetite and lose weight.
- 2 If John had not gone to Dr. Sawbones he never would have reduced his weight.
- 3 There was something wrong with John's thyroid gland.
- 4 John would have become normal in weight as he grew older, and didn't need to take any medicine.
- 5 None of the above conclusions properly follows from the information given.

Sample answers

	1	2	3	4	5
(a)	█	⋮	⋮	⋮	⋮

Conclusion 1 in the sample exercise above properly follows from the information given; the medicine surely does *seem* to have helped John. Therefore, a mark has been made in the answer space under number 1.

None of the other conclusions logically follows; John

might have lost weight even if he had not gone to Dr. Sawbones; we are not told that his *thyroid* gland was the cause of the trouble; and we cannot be certain that he would have become normal without any medicine as he grew older.

11. In a study of the relation between school absence and arithmetic grades in a certain public school system, it was found that during the year 1940 every child who had been absent from school more than four weeks failed in arithmetic. John, a pupil in that school system during the year 1940, did not fail in arithmetic. We may therefore conclude that —

- 51 John was absent more than four weeks.
- 52 John was not absent more than four weeks.
- 53 John might have been absent more than four weeks.
- 54 John liked arithmetic.
- 55 None of the above conclusions properly follows from the information given.

12. The census shows that the death rate among married persons is lower than that among unmarried persons in the same age group. This proves that —

- 56 Marriage causes persons to live longer.
- 57 Marriage does not cause persons to live longer.
- 58 Only healthy persons get married.
- 59 The census figures are incorrect.
- 60 None of the above conclusions properly follows from the information given.

TEST 5. GENERAL LOGICAL REASONING (Cont'd)

13. In an experiment to determine the effect of two different types of diet upon the weight and health of rats, two groups of them—all of the same type, age, and size—were assembled, 50 rats in each group. Group A was fed a balanced diet, and Group B a diet with plenty of food, but lacking certain minerals and vitamins. All other conditions were the same for both groups. At the end of 30 days all the rats in Group A were alive and well, and had gained 14 ounces, on the average. In Group B, 10 per cent had died, and the average gain in weight among the others was 2 ounces. The results of this experiment indicate that —

- 61 The kind of diet these rats were fed affected their weight and health.
- 62 All the rats in Group A were of healthier stock to start with.
- 63 The rats in Group B just didn't get enough to eat.
- 64 People need to eat more vitamins.
- 65 None of the above conclusions properly follows from the information given.

14. Jane's posture used to be poor, she dressed in bad taste, had very few friends, and she always felt ill at ease in company. Jane was an unhappy girl. Then someone advised her to go see Dr. Syke, author of a well-known book entitled, "How to Improve Your Personality." Jane visited the doctor and after three months of treatment she carries herself beautifully, is socially popular, and in general is a much happier girl. We are therefore justified in concluding that —

- 66 Jane's improvement was due entirely to Dr. Syke's treatment.
- 67 Jane would have become happier and better adjusted as she grew older without going to Dr. Syke.
- 68 It appears likely that Dr. Syke's treatment did help Jane to improve.
- 69 Jane's improvement is only temporary. When she stops getting all this attention from the doctor she will slip back to the way she was before.
- 70 None of the above conclusions properly follows from the information given.

15. At the end of the term the pupils in Mr. Black's class scored 10 points higher than the pupils in Miss White's class on the same geometry test. This proves that —

- 71 The pupils in Mr. Black's class were smarter than the pupils in Miss White's class.
- 72 The pupils in Mr. Black's class were better in geometry at the beginning of the term than the pupils in Miss White's class.
- 73 The method used by Mr. Black in teaching geometry is better than the method used by Miss White.
- 74 The pupils in Mr. Black's class studied harder than the pupils in Miss White's class.
- 75 None of the above conclusions properly follows from the information given.

16. "Gentlemen of the jury!" began the defense attorney in summing up his case, "I implore you! See this mother, her hands worn, her face lined with care and responsibility. See these beaming, radiant, devoted children of hers. Picture the appreciative love and happiness in that family circle. Could you believe this woman, Mary Jones, this sweet and God-fearing mother, to be the one who could have committed such a horrible crime?"

Only persons who deny the charges against them go to trial. We may properly conclude that —

- 76 Mary Jones is on trial for murder.
- 77 The jury probably will acquit Mary Jones.
- 78 The jury probably will convict Mary Jones.
- 79 Mary Jones was accused of a crime and pleaded "not guilty."
- 80 None of the above conclusions properly follows from the information given.

17. A salesman for Brown's Liniment claimed that his product would promptly soothe sore parts of the body because it would penetrate very quickly to the affected parts. In order to demonstrate the wonderful penetrating qualities of Brown's Liniment, the salesman poured ten drops on a very thick piece of sole leather, and in two minutes it went right through this substance. On the basis of this demonstration we are justified in concluding that —

- 81 If Brown's Liniment is applied to the skin it will penetrate to sore muscles in about two minutes or less.
- 82 There is no relationship between the liniment's ability to penetrate sole leather and to penetrate into the human body.
- 83 A liniment which can penetrate so well would be very effective in relieving body aches and pains.
- 84 The liniment the salesman poured on the sole leather is very effective for penetrating through the kind of sole leather used in the demonstration.
- 85 None of the above conclusions properly follows from the information given.

18. I usually fall asleep promptly, but about once a month I drink coffee in the evening, and whenever I do I lie awake and toss restlessly for hours. I may conclude that —

- 86 I lie awake during the nights after I have taken coffee because I expect it to keep me awake — it thus is really my imagination which keeps me awake.
- 87 I probably would sleep better on those nights if I gave up drinking coffee in the evening.
- 88 Coffee is a stimulant, and drinking coffee excites my nervous system so that I cannot sleep well.
- 89 The caffeine which is in all coffee is the cause of my inability to fall asleep promptly after I have had coffee in the evening.
- 90 None of the above conclusions properly follows from the information given.

TEST 5. GENERAL LOGICAL REASONING (Cont'd)

19. Intelligence tests show that the children of parents who are engineers are, on the average, brighter than children of parents who are farmers. This shows that —

- 91 Living on a farm is bad for children's minds.
- 92 Parents who are engineers are brighter than parents who are farmers.
- 93 The engineers' children who were tested made, on the average, higher scores on the intelligence tests used than did farmers' children of the same age who were tested.
- 94 Parents who are engineers probably teach their children more at home than do parents who are farmers.
- 95 None of the above conclusions properly follows from the information given.

20. The inhabitants of the town consist of men, women, and children of all ages. All those who resisted the invading soldiers by taking up arms against them were inhabitants of the town. It necessarily follows, therefore, that —

- 96 Those who took up arms were men, women, and children of all ages.
- 97 Just the men and the older boys took up arms.
- 98 Most of the inhabitants of the town took up arms against the invading soldiers.
- 99 No persons who were not inhabitants of the town took up arms against the invading soldiers.
- 100 None of the above conclusions properly follows from the information given.

21. Rice and potatoes must have plenty of moisture in order to grow well. Rye and cotton can be grown well where it is dry. Rice and cotton grow only where it is hot and potatoes and rye only where it is cool.

In South Dakota it is cool and dry. Assume that climate (hot-cool and moist-dry) is the only factor that affects the growth of the four crops mentioned. According to the information given, then, the crop which could grow well there is —

- 1 Rye.
- 2 Rice.
- 3 Potatoes.
- 4 Cotton.
- 5 None of the above conclusions properly follows from the information given.

22. A prominent educator stated that a university may be a kindergarten, a reform school, a social club, a marriage bureau, a place to waste time, or a community of scholars trying to understand everlasting truths. Since a university is not a kindergarten, a reform school, a social club, a marriage bureau, or a place to waste time, we may logically conclude that —

- 6 It is a community of scholars trying to understand everlasting truths.
- 7 It is a place where intelligent people who can afford it may go for professional training.
- 8 It is a special kind of college.
- 9 It is a place where everlasting truths are taught.
- 10 None of the above conclusions properly follows from the information given.

23. John maintained that it is the duty of the school to make an intelligent citizen out of every pupil, even if that requires more work on the part of the teachers with the slower pupils. Kenneth replied that if John had the slightest knowledge of the situation he would not say such ridiculous things. We may properly conclude that —

- 11 John assumed that it is possible to make an intelligent citizen out of every pupil in school.
- 12 John did not understand that some pupils are so slow that no amount of coaching by the teacher could make intelligent citizens of them.
- 13 Kenneth knew more about the problem than John.
- 14 Knowledge about a problem prevents one from making ridiculous statements with regard to that problem.
- 15 None of the above conclusions properly follows from the information given.

24. Mr. Adams took out a form of automobile insurance which insured him only if his car was struck by another car. One day, while driving around a curve on a narrow, icy road, Mr. Adams saw another car coming toward him. The other driver saw him about the same time and both drivers applied brakes, but it was too late and they both skidded and there was a head-on collision. The insurance company refused to pay Mr. Adams's claim, declaring that his car was not struck *by* the other one, but rather that his car *struck* the other one. We are justified in concluding that —

- 16 The insurance company was right in refusing to pay the claim.
- 17 The insurance company was wrong in refusing to pay the claim.
- 18 Further information, including a clear-cut definition of "struck by another car," is needed before one can properly come to a conclusion about whether or not the insurance company was justified in its stand.
- 19 Mr. Adams was foolish not to have taken out a form of insurance which would have covered any kind of accident.
- 20 None of the above conclusions properly follows from the information given.

25. A man found dead held a piece of cloth from a coat clutched in his hand. Jones was suspected of having murdered the man, and in Jones's room the police found a coat with a piece torn out, and the cloth in the dead man's hand fitted the tear in Jones's coat. Although Jones denied that he had killed anyone, we may conclude that —

- 21 Jones has murdered the man.
- 22 There is ground for suspecting Jones of having murdered the man.
- 23 The dead man was murdered by someone.
- 24 Jones was lying when he denied having killed anyone.
- 25 None of the above conclusions properly follows from the information given.

TEST 6. WHAT DO YOU THINK?

DIRECTIONS. Below are a number of statements which represent opinions about various social problems. Since these statements deal with unsettled questions, *there are no right or wrong answers*. Persons differ in the way they feel about each item. You are to express *your* point of view about them. Answer every question.

Note that each statement is followed by A, U, and D.

A stands for Agree.

Choose the answer A if you *agree* with the opinion expressed.

U stands for Undecided.

Choose the answer U if you are *undecided* about the opinion expressed.

D stands for Disagree.

Choose the answer D if you *disagree* with the opinion expressed.

Indicate your answer to each exercise in the usual way by making a heavy mark on the Answer Sheet under the number of the A, or the U, or the D.

Sample statements			
(a) Every normal person should have an opportunity to earn a living.....	1	2	3
	A	U	D
(b) Wars cost more than the gain is worth.....	4	5	6
	A	U	D
(c) No aliens should even be allowed to enter the United States.....	7	8	9
	A	U	D

Sample answers			
	1	2	3
(a)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4	5	6
(b)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	7	8	9
(c)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

In sample (a) the answer indicates agreement.

In sample (b) the answer indicates being undecided.

In sample (c) the answer indicates disagreement.

This is not a knowledge examination. There are no right answers which you are expected to give. It is merely a request for *your honest opinion*.

Begin here.

1. In general the wages or salaries persons receive are a fair measure of the value to society of the service they render..... A U D

2. Our government should adopt an even more severely restricted immigration policy than the present one, so as to keep almost all refugees from other countries, or any other foreigners, from coming into the United States. A U D

3. Most labor strikes during recent years have been caused by radical agitators or the lack of understanding on the part of labor leaders of the problems of business..... A U D

4. During periods of large-scale unemployment, it is fair and just for the government to tax all the people in order to provide public work jobs for those who are unemployed..... A U D

5. Negroes should be allowed to go to the same theaters, hotels, and restaurants to which white people go..... A U D

6. Employers should not be required to contribute to old-age and unemployment insurance for their workers..... A U D

7. The main purpose of a religion should be to try to spread its ideas among persons of other faiths..... A U D

8. People who are on public relief should be deprived of the right to vote..... A U D

9. In the interests of preserving our democratic form of government, Communists should not be allowed to air their views by public speeches..... A U D

10. Since the welfare of a whole nation depends on its natural resources, such as coal, oil, and lumber, their use should be subject to public control..... A U D

11. What this country needs is more active and intelligent participation by each citizen in the affairs of government and in the making of public policies..... A U D

12. Joining together in a labor union is not a fair method for laborers to use in trying to improve their working conditions..... A U D

13. A businessman ought to be allowed to say whatever he wishes in advertising his product..... A U D

14. Persons who get together and work for changes in our present laws are generally radicals taking unfair advantage of the democratic right of free speech in the United States..... A U D

15. The sale of electricity by municipal, state, or Federal agencies should be continued; government competition with private power companies helps to win fair prices for the consumer..... A U D

TEST 6. WHAT DO YOU THINK (Cont'd)

16. It is the duty of the government to promote the welfare of all the people, even if that requires government regulation of business in such matters as hours, minimum wages, types of stocks which may be issued, etc. A 46 47 48
 U D

17. Only through competition spurred by the profit motive can men be stimulated to put forth their best efforts in their work. A 49 50 51
 U D

18. Persons elected to executive positions in public service, with few exceptions, should not have the right to appoint whomever they wish to fill jobs in their departments, but should be required to obtain their staffs on the basis of competitive civil service examinations open to all properly qualified citizens. A 52 53 54
 U D

19. Newspapers, newsreels, and radio programs should be required by the government to give all candidates for public office an opportunity to express their views and to reply to criticisms and attacks from their opponents. . . . A 55 56 57
 U D

20. The wages paid to most workmen in America are too low to maintain the decent standard of living that is possible and desirable for all American families. A 58 59 60
 U D

21. Most persons who are unemployed are willing and eager to work, but cannot find jobs. A 61 62 63
 U D

22. Since the people have made many unintelligent choices in electing government officials, elections by the people should be discarded as a method of choosing the country's leaders. A 64 65 66
 U D

23. Fascists have a right to try to air their views by public speeches. A 67 68 69
 U D

24. In the United States, all persons have an equal opportunity for as much education as they are intellectually able to acquire. A 70 71 72
 U D

25. Jews have contributed much to the world in science, music, art, philosophy, and practically every other worth-while field of human endeavor. A 73 74 75
 U D

TEST 7. SURVEY OF OPINIONS

DIRECTIONS. Below are a number of statements which represent opinions about various social problems. Since these statements deal with unsettled questions, *there are no right or wrong answers*. Persons differ in the way they feel about each item. You are to express *your* point of view about them. Answer every question.

Note that each statement is followed by A, U, and D.

A stands for Agree.

Choose the answer A if you *agree* with the opinion expressed.

U stands for Undecided.

Choose the answer U if you are *undecided* about the opinion expressed.

D stands for Disagree.

Choose the answer D if you *disagree* with the opinion expressed.

Indicate your answer to each exercise in the usual way by making a heavy mark on the Answer Sheet under the number of the A, or the U, or the D.

Sample statements			Sample answers				
(a) The leaders of any warring nation usually proclaim that their nation's cause is just.	1	2	3	(a)	1	2	3
(b) Lightning never strikes twice in the same place.	4	5	6	(b)	4	5	6
(c) A college education will greatly improve almost any person's intelligence.	7	8	9	(c)	7	8	9

In sample (a) the answer indicates agreement.

In sample (b) the answer indicates being undecided.

In sample (c) the answer indicates disagreement.

This is not a knowledge examination. There are no right answers which you are expected to give. It is merely a request for *your honest opinion*.

Begin here.

1. Our government should adopt a liberal immigration policy which will quickly permit refugees from political and religious persecution in other countries to enter the United States if they seem likely to make good citizens of our country. A U D

2. In general, the wages or salaries persons receive are not a fair measure of the value to society of the service they render. A U D

3. Negroes should not be allowed to go to the same theaters, hotels, and restaurants as those to which white people go. A U D

4. During periods of large-scale unemployment, it is unjust and unfair of the government to tax all the people in order to provide public works jobs for those who are unemployed. A U D

5. Most labor strikes during the last four years and at present have been caused by the unwillingness of employers to grant their workers good wages and working conditions, or membership in unions of the workers' choosing. A U D

6. It is better to be tolerant and to respect the religious views of others than to try to convert them to one's own faith. A U D

7. Under our present form of society, employers should be required to contribute to old-

age and unemployment insurance for their workers. A U D

8. Men or corporations owning oil wells, coal mines, timber, water power, or other natural resources should be allowed to operate them as they think best. A U D

9. Communists have a right to air their views in public speeches. A U D

10. Persons who are living on public relief should not be deprived of the right to vote. A U D

11. The government ought to protect the consumer by making it illegal to make false or misleading statements in advertising. A U D

12. Joining together in a labor union is one of the fair methods for workers to use in trying to secure better working conditions. A U D

13. What this country needs is a good strong dictator who will get things done without so much discussion and debate. A U D

14. Laws regulating hours, minimum wages, the types of stock that may be issued, etc., are unjust interferences with individual freedom and the rights of business. A U D

15. The sale of electricity by municipal, state, or Federal agencies should be discontinued because governmental competition with private power companies is unfair. A U D

TEST 7. SURVEY OF OPINIONS (Cont'd)

16. It is right, and indeed desirable, that if people think a law is bad, they should try to get it changed by assembling peacefully and petitioning their government.A 46 47 48
 U D

17. Newspapers, newsreels, and radio programs should be free to support any candidates for public office whom their owners may favor, and should not be required to give space or time to their opponents' views.A 49 50 51
 U D

18. Men who are elected to executive positions in public service should have the right to appoint whomever they wish to fill jobs in their departments.A 52 53 54
 U D

19. In stimulating men to do good work, other motives such as desire for honor and satisfaction in one's work may serve just as well as, or better than, the desire to profit.A 55 56 57
 U D

20. Although the people have made some unwise choices in electing governmental officials, elections remain on the whole the best method of selecting leaders.A 58 59 60
 U D

21. Most of the unemployed today are shiftless and lazy, and could secure work if they wanted to.A 61 62 63
 U D

22. Most American workmen are paid a living wage on which they can afford to bring up their families in decency and reasonable comfort if they manage their affairs properly.A 64 65 66
 U D

23. Jews are interested only in making money; they have contributed little to the world in science, music, art, philosophy, or any other worth-while field of human endeavor.A 67 68 69
 U D

24. Children from well-to-do homes have better opportunities for education than children of equal intellectual abilities from poorer homes.A 70 71 72
 U D

25. In the interests of preserving our democratic form of government, even in time of peace, Fascists should not be allowed to air their views by public speeches.A 73 74 75
 U D

TEST 8. APPLIED LOGICAL REASONING

PART A

DIRECTIONS. (Read carefully.) This is a test to measure your ability to draw a valid (correct) conclusion from two related statements.

Each exercise in Part A presents two statements. For the purposes of this test you are to regard these two statements as true even if you know that in fact they are not true.

In each exercise the two statements are followed by four possible conclusions that people might draw from

the statements. In some exercises one of these conclusions is a valid (correct) one. In some exercises *no one of the four conclusions* given necessarily follows from the two statements. In no exercise is there more than one valid (correct) conclusion. There are therefore five possible answers to each exercise: (1) the first conclusion, (2) the second, (3) the third, (4) the fourth, or (5) no conclusion at all. Notice how the sample exercise is answered.

Sample statements and conclusions

(a) All Socialists want to help the poor.

Mr. Mann wants to help the poor.

Therefore —

- 1 Mr. Mann is a Socialist.
- 2 Mr. Mann is not a Socialist.
- 3 Some people who are not Socialists want to help the poor.
- 4 The poor ought to be helped.
- 5 None of these conclusions necessarily follows.

Sample answers

	1	2	3	4	5
(a)	⋮	⋮	⋮	⋮	█

In the sample above, Conclusion 1 is unproved because others besides Socialists may want to help the poor.

Conclusion 2 is clearly wrong because, for all we know, Mr. Mann might be a Socialist.

Conclusion 3 is true enough, but the two given statements do not logically prove it; hence we cannot choose this answer.

Conclusion 4 is likewise an acceptable idea in general, but it does not follow from the two statements given.

Since no one of the four possible conclusions given above is the right answer, we must choose the last answer, "None of these conclusions necessarily follows." And since this answer is No. 5, a heavy mark has been made in the space under 5 in the sample answers.

If Conclusion No. 3 had been the right answer, you would mark the space under 3, thus :

	1	2	3	4	5
(a)	⋮	⋮	█	⋮	⋮

You will see that you are to make one mark and only one mark for each exercise. You will either choose one of the four conclusions or the answer, "None of these conclusions necessarily follows."

Remember, for purposes of the test you are to assume that the statements which are given with each exercise are true; your problem is to see whether any conclusion properly and *necessarily* follows from the given statements.

Judge every conclusion with care. Do not skip any. There is no time limit for this test; simply work as rapidly as you can without making mistakes.

Begin here.

1. All Republicans want government to help business.
Some Jews are Republicans.
Therefore —

- 1 All Jews want government to help business.
- 2 Some Jews want government to help business.
- 3 No Jews want government to help business.
- 4 All who want government to help business are Republicans.
- 5 None of these conclusions necessarily follows.

2. All patriotic people are to be admired.
No radicals are patriotic people.
Therefore —

- 6 No radicals are to be admired.
- 7 All radicals are to be admired.
- 8 Some radicals are to be admired.
- 9 Some radicals are not to be admired.
- 10 None of these conclusions necessarily follows.

TEST 8. APPLIED LOGICAL REASONING (Cont'd)

3. If Zaslovsky is a Communist he holds that the owning class will use violence rather than give up their power and wealth.
Zaslovsky does not hold that the owning class will use violence rather than give up their power and wealth. Therefore —
- 11 Zaslovsky is a Communist.
12 Zaslovsky may be a Communist.
13 Zaslovsky is not a Communist.
14 All of Zaslovsky's opinions are similar to the opinions held by Communists.
15 None of these conclusions necessarily follows.
-
4. No politicians believe in democracy.
All labor leaders are politicians.
Therefore —
- 16 All who believe in democracy are politicians.
17 None who believe in democracy approve of labor leaders.
18 No labor leaders believe in democracy.
19 Some labor leaders believe in democracy.
20 None of these conclusions necessarily follows.
-
5. All laborers desire greater job-security.
All people who desire greater job-security should join unions.
Therefore —
- 21 Only laborers should join unions.
22 Some laborers should not join unions.
23 All laborers should join unions.
24 No laborers should join unions.
25 None of these conclusions necessarily follows.
-
6. Some banks influence strongly the course of economic and social progress. Some agencies which influence strongly the course of economic and social progress should be publicly owned.
Therefore —
- 26 Some banks should be publicly owned.
27 Some banks should not be publicly owned.
28 All banks should be publicly owned.
29 No banks should be publicly owned.
30 None of these conclusions necessarily follows.
-
7. No large taxpayers fail to support community social services. Some employers are large taxpayers.
Therefore —
- 31 Some employers do not fail to support community social services.
32 Some employers fail to support community social services.
33 All generous supporters of community social services are large taxpayers.
34 No large taxpayers are employers.
35 None of these conclusions necessarily follows.
-
8. Some radicals are citizens of the United States. All citizens of the United States are entitled to free speech, free press, and freedom of assembly.
Therefore —
- 36 Some radicals are not entitled to free speech, free press, and free assembly.
37 No non-citizens are entitled to free speech, free press, and free assembly.
38 Some citizens of the United States are not entitled to free speech, free press, and free assembly.
39 Some radicals are entitled to free speech, free press, and free assembly.
40 None of these conclusions necessarily follows.
-
9. Some children in families with moderate incomes have physical defects which need correction. No children in families receiving adequate medical service have physical defects which need correction.
Therefore —
- 41 All children in families which receive inadequate medical service have physical defects which need correction.
42 No children who have physical defects which need correction live in families with moderate incomes.
43 Some families with moderate incomes do not have enough money to meet all the needs of their children.
44 Some children in families with moderate incomes do not receive adequate medical service.
45 None of these conclusions necessarily follows.
-
10. No Negroes have opportunity for an adequate diet. No sharecroppers have opportunity for an adequate diet.
Therefore —
- 46 Some white people have an adequate diet.
47 Some farm owners have an adequate diet.
48 All Negroes are sharecroppers.
49 No Negroes are sharecroppers.
50 None of these conclusions necessarily follows.

TEST 8. APPLIED LOGICAL REASONING (Cont'd)

PART B

DIRECTIONS. In this Part each exercise begins with a paragraph containing information which, for the purpose of this test, you are to regard as true. After each paragraph there are four possible conclusions. In Part A a conclusion, in order to be marked as the correct one, had to follow *necessarily* from the two statements in that exercise. In Part B you are to find the one conclusion which properly or most logically follows from the information. For example :

Sample paragraph and conclusions

(a) Last year at Squeedunk College, 40 men tried out for the football team, 30 men for the track team, and 20 men for the tennis team. This shows that —

- 1 Only 90 individuals at Squeedunk College played those sports last year.
- 2 There are not many students attending Squeedunk College.
- 3 Squeedunk had good sports teams with so many men to pick from.
- 4 Some men took part in more than one sport.
- 5 None of the above conclusions properly follows from the information given.

Sample answers

	1	2	3	4	5
(a)	|||	|||	|||	|||	█

None of the conclusions in the sample exercise above properly follows from the information given ; so a mark has been made in the space numbered 5.

11. According to Army psychological tests given to drafted men during the 1917-18 World War, the average score of white men was 59, of Northern Negroes 39, and of Southern Negroes 12. This proves that —

- 51 Negroes have less inborn intelligence than have white people.
- 52 The white children must have had many educational and cultural advantages not available to the Negroes, especially in the South.
- 53 The tests, being composed by white psychologists, tend to favor the special abilities of whites and to neglect the special abilities of Negroes.
- 54 White students work harder in school than do Negro students.
- 55 None of these conclusions properly follows from the information given.

12. In an experiment to determine the effect of two different types of discipline on the behavior of boys, two groups were assembled, alike in ability, background, and previous social adjustment. One group followed democratic procedures and made their plans coöperatively. Their leader acted like one of the group. The leader of the other group behaved like a kindly dictator, who directed the group and made the plans for them. All other conditions (program, etc.) were kept alike for both groups. It was found that the boys under dictator control expressed 30 times as much dislike and aggression toward one another as did the similar group under democratic control. The results of this experiment indicate that —

- 56 The character of the social control affected the attitudes of the boys toward one another.
- 57 The boys in the democratic group were better behaved in the first place, before the experiment began.
- 58 The boys in the dictator group were made to do projects which were less enjoyable than those undertaken by the democratic group.
- 59 Democratic nations will coöperate better with one another than will dictator nations because under dictatorship people quarrel too much among themselves.
- 60 None of the above conclusions properly follows from the information given.

13. All Fascists hate democracy. Therefore —

- 61 All people who hate democracy are Fascists.
- 62 No Fascists like democracy.
- 63 All anti-Fascists like democracy.
- 64 Others besides Fascists hate democracy.
- 65 None of these conclusions properly follows from the information given.

14. In 1932-1933 when President Franklin Roosevelt was first inaugurated, the country was in severe crisis, with closed banks, closed factories, and bankrupt farms. National income had fallen from \$80 billion in 1929 to \$40 billion in 1932-1933. Farm income was down from \$7 billion in 1929 to \$2½ billion in 1932-1933. Dividends had decreased from \$8 billion in 1929 to \$3 billion. The index of industrial production which stood at 120 in 1929 had fallen to 65. Then President Roosevelt came, and the New Deal, with bank deposit insurance, monetary reform, industrial planning, agricultural adjustment, social security, etc. At the close of President Roosevelt's first term the national income was up to over \$70 billion, wages were up to \$11 billion, farm income to \$6 billion, and dividends to \$7½ billion. The industrial production index again touched 120.

We are therefore justified in concluding that —

- 66 The marked improvement in economic conditions was due entirely to the New Deal.
- 67 As much or more improvement would have taken place without the New Deal.
- 68 It appears likely that the New Deal did aid in economic recovery.
- 69 The economic conditions of farmers and workers improved but the condition of the wealthy investors was injured by the New Deal.
- 70 None of the above conclusions properly follows from the information given.

TEST 8. APPLIED LOGICAL REASONING (Cont'd)

15. A Mexican law provides a labor board to decide whether each strike is legal or not. If the board decides that a strike is illegal, then leaders who promote that strike by physical or moral coercion are subject to heavy fines and imprisonment. Manuel was the leader of a union whose strike was declared "illegal." An all-day picnic for the union members had been planned for the next day. The employer demanded that his workers return to the factory. Manuel announced that the picnic would be held as planned and the workers would return the following day. Manuel was arrested on the charge of promoting an illegal strike by moral coercion. We may therefore conclude that —

- 71 The government was right in arresting Manuel.
- 72 The government was wrong; Manuel should not have been arrested.
- 73 Further information, including a clear-cut definition of "moral coercion," is needed before one can decide whether Manuel violated the law or not.
- 74 Manuel was foolish ever to let his union begin a strike which the board would declare illegal.
- 75 None of these conclusions properly follows from the information given.

16. A comparison of unemployment figures for all depression periods of the twentieth century shows a steady increase: in 1907-1909 about 11% of the working population were unemployed; in 1914-1915 about 16%; in 1921-1922 about 21%; and in 1932-1933 about 35%. We may conclude that —

- 76 In the next depression unemployment will be still worse.
- 77 Some factor aside from periodic ups and downs in business has operated during the twentieth century to increase unemployment during depressions.
- 78 Unemployment is a result of lack of initiative, ability, and effort on the part of workers themselves.
- 79 Unemployment is bound to develop in a capitalist society such as ours and can never be cured until we do away with capitalism.
- 80 None of the above conclusions properly follows from the information given.

17. John asserted that all races are alike in abilities; only differences in opportunity make some better educated, more artistic, more honest, or more successful than others. Jim answered, "John, you're crazy! The idea that Negroes, Indians, and Japanese all have the same ability and talent and character that white people do is ridiculous. Anyone with the least bit of common sense should not make such a foolish statement."

We may properly conclude that —

- 81 Jim believed that there are differences between the abilities of white people and the abilities of Negroes, Indians, and Japanese.
- 82 John failed to take account of the history of the accomplishments of the various races.
- 83 Jim understood the facts better than John did.
- 84 John understood the facts better than Jim did.
- 85 None of the above conclusions properly follows from the information given.

18. The employees at the B. S. & O. mill were out on strike. Six employees had recently been discharged, and four of these were officials of the newly organized C.I.O. union. The employer had long been bitterly opposed to unions, and said he did not propose to have union racketeers telling him how to run his business. He said that in this case, however, union membership had nothing to do with the discharge; that the men were fired for inefficiency. At the Labor Board investigation it was shown that two non-union employees who had not been long with the mill had bad records, in one case for absence on Mondays due to excessive drinking and in the other for "unsatisfactory" ratings by several different departmental foremen. These two men nevertheless were not discharged. One of the union officials also had a record of tardiness which, although not as bad as some others in the shop, was evidence against him. All four union officials had been with the company for more than seven years, and one of them for fifteen years. Office records showed no previous complaints or warnings until the sudden discharge notice. One factory supervisor testified that the men had grown very careless in their work recently. Fellow workers, mainly but not all union members, testified that they had seen no evidence of any inefficiency on the job. The strike took place in a period when workers were greatly in demand to speed up defense production. This proves that the cause of the strike was —

- 86 Desire of radicals to sabotage defense production.
- 87 The effort of the union to protect their officials in spite of their inefficiency on the job.
- 88 The drunkenness and inefficiency of the two non-union men discharged.
- 89 The employer's effort to break up the union.
- 90 None of these conclusions properly follows from the information given.

19. The National Resources Committee in 1938 submitted to President Roosevelt a report of its study of the total incomes of American families. The report stated that 87 per cent of the twenty-nine million families in America had an income of less than \$2500 during 1935-1936; 2 per cent had incomes of between \$5000 and \$10,000; 1 per cent had incomes of \$10,000 or more. An average family cannot afford decent shelter (which includes modern plumbing, adequate heat, and electric light), a minimum of health care from doctors and dentists, and a sufficient variety and quantity of nourishing foods if its income is less than \$2500 a year. Assuming these statements to be true, it may properly be concluded that —

- 91 Every family of only two persons whose income was \$2500 for the year 1929 had enough money to live in adequate comfort, good health, and decency.
- 92 A larger percentage of families in the group having an income of less than \$2500 a year suffer from under-nourishment than in the group having an income of more than \$2500.
- 93 Those in the group of 1 per cent whose income was more than \$10,000 are more intelligent than those in the group whose income was only between \$5000 and \$10,000.
- 94 The majority of American families did not have a sufficient income during the year 1935-1936 to maintain themselves at minimum standards of adequate comfort, health, and decency.
- 95 None of the above conclusions properly follows from the information given.

TEST 8. APPLIED LOGICAL REASONING (Cont'd)

20. In an Eastern college a study of students holding radical opinions about the economic order showed that all of them scored above the average score made by college students on certain reading tests. Tom, a student at that college, was below the average score made by college students on those reading tests. We may, therefore, conclude that —

- 96 Tom was one of the radicals.
- 97 Tom did not like to read.
- 98 Tom might have been one of the radicals.
- 99 Tom was not one of the radicals.
- 100 None of the above conclusions properly follows from the information given.

21. A consumers' coöperative may be a hotbed of radicalism, an expression of impractical idealism, a scheme for getting people's money, or a business arrangement through which consumers save some money on the things they buy. Of course a consumers' coöperative is not a hotbed of radicalism, an expression of impractical idealism, or a scheme for getting people's money. We may logically conclude, therefore, that —

- 1 It is a business arrangement through which consumers save some money on the things they buy.
- 2 It is a store controlled by consumers who wish to protect themselves against inferior-quality goods.
- 3 It is a special kind of department store.
- 4 It is a store where customers wait on themselves to reduce costs.
- 5 None of the above conclusions properly follows from the information given.

22. The following letter from a New Orleans subscriber appeared in a New York newspaper: "You seem to favor no discrimination (in military service) in regard to Negroes. I think you are a menace. Will not renew my subscription nor read any more of your paper. Would you make an intimate friend of a Negro? Would you let your daughter marry one? How would you like to be the father of a few black children? I think the (army and) navy are right (in barring Negroes from preferred posts) and in my opinion you don't know what you are talking about." We may justifiably conclude from the above letter that —

- 6 If Negroes are given opportunities in aviation or other preferred branches of military service, that is likely to lead to more intermarriage between whites and Negroes.
- 7 The writer of the letter does not want Negroes to have an opportunity to get preferred army and navy posts on the same basis as whites.
- 8 The writer of the letter is obviously defending a principle of deep concern to a majority of Americans and his reactions are naturally somewhat emotional.
- 9 There is no connection or similarity between granting equal opportunities to Negroes in military service and the problem of intermarriage.
- 10 None of the above conclusions properly follows from the information given.

23. The average income reported for persons in the United States for 1940 was at least five times as great as the average income reported for persons in Russia for the same year. Assuming the statistics reported are correct, this proves that —

- 11 The United States can produce more than Russia can.
- 12 The United States cannot produce as much as Russia will someday be able to produce.
- 13 The natural resources of the United States are greater than the resources of Russia.
- 14 People in Russia did not, on the average, earn as much as did people in the United States during 1940.
- 15 None of the above conclusions properly follows from the information given.

24. The members of a certain Peace Congress included Quakers, Methodists, Socialists, Communists, and others. At a meeting at which the President's picture was on the platform, eggs were thrown at the picture. All those who threw eggs at the President's picture were members of the Peace Congress. It necessarily follows, therefore, that —

- 16 No persons who were not members of the Peace Congress threw eggs at the President's picture.
- 17 Those who threw eggs at the President's picture included Quakers, Methodists, Socialists, Communists, and others.
- 18 Only the Communists threw eggs at the picture.
- 19 Most of the members of the Peace Congress probably participated in the egg-throwing demonstration.
- 20 None of the above conclusions properly follows from the information given.

25. "Members of the City Council, permit me to urge you to believe that it is time to call upon the troops! See those pickets forcibly preventing our American citizens from going back to work; see those broken factory windows — property destroyed by irresponsible mob violence; see those outnumbered police trying to keep them in check. Can you believe that these strikers, these agitators, can have a just grievance against the company, as they claim in their propaganda?" From the company president's speech before the City Council we may properly conclude that —

- 21 The strikers probably are foreign agents or radicals.
- 22 Police who were present at the scene of the strike clubbed the pickets while trying to keep them in check.
- 23 The City Council voted to call for troops to force the pickets away from the factory.
- 24 The City Council did not vote for troops to force the pickets away from the factory.
- 25 None of the above conclusions properly follows from the information given.

ANSWER SHEET: FORM A

TEST 5 (Page 1)
GEN'L LOGICAL REASONING

PART A

	1	2	3	4	5
1	⋮	⋮	⋮	⋮	⋮
	6	7	8	9	10
2	⋮	⋮	⋮	⋮	⋮
	11	12	13	14	15
3	⋮	⋮	⋮	⋮	⋮
	16	17	18	19	20
4	⋮	⋮	⋮	⋮	⋮
	21	22	23	24	25
5	⋮	⋮	⋮	⋮	⋮
	26	27	28	29	30
6	⋮	⋮	⋮	⋮	⋮
	31	32	33	34	35
7	⋮	⋮	⋮	⋮	⋮
	36	37	38	39	40
8	⋮	⋮	⋮	⋮	⋮
	41	42	43	44	45
9	⋮	⋮	⋮	⋮	⋮
	46	47	48	49	50
10	⋮	⋮	⋮	⋮	⋮

PART B

	51	52	53	54	55
11	⋮	⋮	⋮	⋮	⋮
	56	57	58	59	60
12	⋮	⋮	⋮	⋮	⋮
	61	62	63	64	65
13	⋮	⋮	⋮	⋮	⋮
	66	67	68	69	70
14	⋮	⋮	⋮	⋮	⋮
	71	72	73	74	75
15	⋮	⋮	⋮	⋮	⋮
	76	77	78	79	80
16	⋮	⋮	⋮	⋮	⋮
	81	82	83	84	85
17	⋮	⋮	⋮	⋮	⋮
	86	87	88	89	90
18	⋮	⋮	⋮	⋮	⋮
	91	92	93	94	95
19	⋮	⋮	⋮	⋮	⋮
	96	97	98	99	100
20	⋮	⋮	⋮	⋮	⋮
	1	2	3	4	5
21	⋮	⋮	⋮	⋮	⋮
	6	7	8	9	10
22	⋮	⋮	⋮	⋮	⋮
	11	12	13	14	15
23	⋮	⋮	⋮	⋮	⋮
	16	17	18	19	20
24	⋮	⋮	⋮	⋮	⋮
	21	22	23	24	25
25	⋮	⋮	⋮	⋮	⋮

TEST 6 (Page 6)
WHAT DO YOU THINK?

A U D

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

*** * ***

	31	32	33
11	⋮	⋮	⋮
	34	35	36
12	⋮	⋮	⋮
	37	38	39
13	⋮	⋮	⋮
	40	41	42
14	⋮	⋮	⋮
	43	44	45
15	⋮	⋮	⋮
	46	47	48
16	⋮	⋮	⋮
	49	50	51
17	⋮	⋮	⋮
	52	53	54
18	⋮	⋮	⋮
	55	56	57
19	⋮	⋮	⋮
	58	59	60
20	⋮	⋮	⋮
	61	62	63
21	⋮	⋮	⋮
	64	65	66
22	⋮	⋮	⋮
	67	68	69
23	⋮	⋮	⋮
	70	71	72
24	⋮	⋮	⋮
	73	74	75
25	⋮	⋮	⋮

TEST 7 (Page 8)
SURVEY OF OPINIONS

A U D

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

*** * ***

	31	32	33
11	⋮	⋮	⋮
	34	35	36
12	⋮	⋮	⋮
	37	38	39
13	⋮	⋮	⋮
	40	41	42
14	⋮	⋮	⋮
	43	44	45
15	⋮	⋮	⋮
	46	47	48
16	⋮	⋮	⋮
	49	50	51
17	⋮	⋮	⋮
	52	53	54
18	⋮	⋮	⋮
	55	56	57
19	⋮	⋮	⋮
	58	59	60
20	⋮	⋮	⋮
	61	62	63
21	⋮	⋮	⋮
	64	65	66
22	⋮	⋮	⋮
	67	68	69
23	⋮	⋮	⋮
	70	71	72
24	⋮	⋮	⋮
	73	74	75
25	⋮	⋮	⋮

TEST 8 (Page 10)
APPL. LOGICAL REASONING

PART A

	1	2	3	4	5
1	⋮	⋮	⋮	⋮	⋮
	6	7	8	9	10
2	⋮	⋮	⋮	⋮	⋮
	11	12	13	14	15
3	⋮	⋮	⋮	⋮	⋮
	16	17	18	19	20
4	⋮	⋮	⋮	⋮	⋮
	21	22	23	24	25
5	⋮	⋮	⋮	⋮	⋮
	26	27	28	29	30
6	⋮	⋮	⋮	⋮	⋮
	31	32	33	34	35
7	⋮	⋮	⋮	⋮	⋮
	36	37	38	39	40
8	⋮	⋮	⋮	⋮	⋮
	41	42	43	44	45
9	⋮	⋮	⋮	⋮	⋮
	46	47	48	49	50
10	⋮	⋮	⋮	⋮	⋮

PART B

	51	52	53	54	55
11	⋮	⋮	⋮	⋮	⋮
	56	57	58	59	60
12	⋮	⋮	⋮	⋮	⋮
	61	62	63	64	65
13	⋮	⋮	⋮	⋮	⋮
	66	67	68	69	70
14	⋮	⋮	⋮	⋮	⋮
	71	72	73	74	75
15	⋮	⋮	⋮	⋮	⋮
	76	77	78	79	80
16	⋮	⋮	⋮	⋮	⋮
	81	82	83	84	85
17	⋮	⋮	⋮	⋮	⋮
	86	87	88	89	90
18	⋮	⋮	⋮	⋮	⋮
	91	92	93	94	95
19	⋮	⋮	⋮	⋮	⋮
	96	97	98	99	100
20	⋮	⋮	⋮	⋮	⋮
	1	2	3	4	5
21	⋮	⋮	⋮	⋮	⋮
	6	7	8	9	10
22	⋮	⋮	⋮	⋮	⋮
	11	12	13	14	15
23	⋮	⋮	⋮	⋮	⋮
	16	17	18	19	20
24	⋮	⋮	⋮	⋮	⋮
	21	22	23	24	25
25	⋮	⋮	⋮	⋮	⋮

TEST 5

Part	Raw score
A	
B	
Total	

TESTS 6-7

	25
CP	
C score	

U score	
---------	--

PR	
× 2	
U score	
P score	

TEST 8

Part	Raw score
A	
B	
Total	

Standard Scores

Test	Score
5	
6-7	
8	
Total	

WATSON-GLASER TESTS OF CRITICAL THINKING

By GOODWIN WATSON, PH.D., and EDWARD MAYNARD GLASER, PH.D.

BATTERY II : LOGICAL REASONING — FORM A

II-A

Name..... Sex (circle a letter) M F
 Date of birth..... 19.... Age last birthday.... years Teacher.....
 Grade*..... School..... City.....

* If you are not in school, enter last school grade completed.

PSYCHOCHART

Classification	Very Low	Low	Low Avg.	Avg.	High Avg.	High	Very High
Percentile rank	0-2	3-11	12-34	35-65	66-88	89-97	98-100
Test 5. General Logical Reasoning							
Tests 6 { What do you think? and 7. { Survey of opinions.							
Test 8. Applied Logical Reasoning							
Total score							

GENERAL DIRECTIONS

Each test in this booklet consists of 25 questions or statements. Your answers to all the questions are to be put on one page called the Answer Sheet. It is on the back of this page.

Several possible answers are given to each question. These answers are numbered. You are to choose the right answer to each question and indicate your choice by marking on the Answer Sheet the number of the answer you chose.

In some tests, as in Test 5, there are five possible answers to each question. In such a case there will be, for each question, five numbered spaces on the Answer Sheet, like this :

1	2	3	4	5
⋮	⋮	⋮	⋮	⋮

If you think answer number 2 to a given question is the right answer, you are to make a heavy mark in the space numbered 2 on the Answer Sheet, like this :

1	2	3	4	5
⋮	■	⋮	⋮	⋮

 If you think that answer number 4 is the right answer, you are to make the heavy mark in the space numbered 4, etc. That is the way you are to mark your answers to the questions.

The special directions for the separate tests explain further how to put your answers on the Answer Sheet. The directions for Test 5 are on the front page of this booklet.

Tear off along this line.

Patent No. 1,586,628

Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois
 Copyright 1942 by World Book Company. Copyright in Great Britain. All rights reserved. PRINTED IN U.S.A. W-G:TCT:II-A-2
 Copyright 1941 by Goodwin Watson and Edward Glaser

Edition a

⚠ This test is copyrighted. The reproduction of any part of it by mimeograph, hectograph, or in any other way, whether the reproductions are sold or are furnished free for use, is a violation of the copyright law.



THE UNITED STATES ARMED FORCES INSTITUTE

Examination in PROBLEMS OF DEMOCRACY—High-School Level
Form SPd-I-B-4

DIRECTIONS: You have two hours for this test. As you answer the questions, you should omit any that seem unusually difficult until you finish the others.

Your answers to the exercises in this test are to be recorded on the separate ANSWER SHEET which is loosely inserted in the test booklet. **Remove this answer sheet now;** write your name and the other information called for in the blanks at the top of the answer sheet; then finish reading these directions.

After the number on the answer sheet corresponding to that of each exercise, mark the **one** lettered space which designates the answer you have selected as correct. If your answer sheet contains rows of squares, indicate each answer with a cross (X), for example,

A	B	C	D	E
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If your answer sheet contains rows of paired dotted lines, indicate each answer with a **heavy black mark** with the special pencil, for example,

A	B	C	D	E

Avoid resting the point of your pencil on the answer sheet while you are considering your answer. Do not make unnecessary marks. If you change an answer, erase your first mark completely. Do not fold or crease your answer sheet.

This test consists of a number of short passages which represent different points of view on social problems. The questions based on these passages test

1. your ability to read passages correctly
2. your knowledge and understanding of the subject with which the passages deal

You are to judge for yourself whether any passage is factually correct in whole or in part.

EXAMPLE

Before answering the sample question, read the material in the box and the first seven lines of the passage on page 2.

0. The main topic of Speaker X is

[The correct answer is **crime**; therefore, answer space **B** would be marked on the answer sheet.]

- A. education
- B. crime
- C. the police
- D. justice

Prepared by the

EXAMINATIONS STAFF FOR THE UNITED STATES ARMED FORCES INSTITUTE

Published by

THE AMERICAN COUNCIL ON EDUCATION

Distributed by

THE AMERICAN COUNCIL ON EDUCATION
15 Amsterdam Avenue, New York 23

SCIENCE RESEARCH ASSOCIATES
228 South Wabash Avenue, Chicago 4

Copyright, 1944

THE AMERICAN COUNCIL ON EDUCATION

ORDER NO. 687

Following is a discussion between two speakers:

Speaker X:

1 "It is unthinkable that the people of this country should tolerate the drain on their pocketbooks that crime
2 causes. It is time that the law-abiding citizens of this country demand that the criminal element be suppressed.
3 The schools must instill in all citizens a greater respect for law. Criminals must be brought to justice and pun-
4 ished in such a way as to discourage them and others from future criminal acts."

Speaker Y:

5 "People must realize that the criminal is not simply an evil-intentioned individual but the product of social
6 conditions. Thus the state should not punish the criminal but correct him, and it should be even more interested
7 in measures to prevent crime. These measures must be applied in three directions: (1) elimination of bad social
8 and neighborhood conditions; (2) protection of individuals from developing traits or emotional disturbances
9 that lead to crime; and (3) more intelligent treatment of the first stages of delinquency."

1. Speaker Y's arguments are intended to contradict the view of Speaker X that
 - A. the basic causes of crime are a lack of respect for law and an insufficient fear of punishment
 - B. the treatment of criminals is an important means of preventing further crime
 - C. better education would help to reduce the amount of crime
 - D. criminals lack respect for law
2. When a recreation center was opened in a large city, the number of arrests of young people per year fell from 464 to 179. Such a fact could be used to support the arguments of
 - A. Speaker X
 - B. Speaker Y
 - C. both speakers
 - D. neither speaker, since it does not relate to their arguments
3. How would the speakers view the practice used in some prisons of teaching the prisoners a trade?
 - A. Speaker X would probably approve.
 - B. Speaker Y would probably approve.
 - C. Both speakers would put the same emphasis on the value of this practice.
 - D. It is impossible to tell how either speaker would view this practice.
4. A good understanding of the place of the school in crime prevention would add to Speaker X's statement (line 3) the fact that
 - A. the school is only one, and probably not the strongest, influence on children
 - B. generally, those who become criminals do not go to school
 - C. it has been shown that the criminal type cannot be taught to respect the law
 - D. it is recognized that the business of the school is to teach facts, not good behavior
5. Speaker X's argument suggests that he would probably agree that we need
 - A. a better understanding of the development of criminal tendencies
 - B. fewer laws
 - C. more rapid and certain enforcement of laws
 - D. more intelligent interpretation of laws
6. Do any of the arguments of Speaker Y help explain why some children of well-to-do middle-class families become delinquent?
 - A. Yes, his reference to psychological maladjustment as a factor
 - B. Yes, his reference to social and neighborhood conditions
 - C. No, he is concerned here only with the low-income group.
 - D. No, his argument assumes that all criminals grow up in poor neighborhoods.
7. The arguments advanced by Speaker Y could be used to support
 - A. the elimination of the parole system
 - B. increasing the number of trustees in prison
 - C. legislation lengthening prison terms for first offenders
 - D. the further extension of the system of juvenile courts

Following is an editorial:

- 1 "It is time more people recognized the grave meaning for the future of our country of certain facts about
2 our population. It has been found that, as time goes on, the size of families in the city falls more and more
3 below the size of families in the country. Yet the rural areas, particularly in certain parts of the country,
4 are much less able to give children the advantages they should have. We also know that there are conditions
5 which result in those at the lowest economic level having the largest families. Finally, although the life-
6 expectancy of the average person is still growing longer, it is expected that within a few decades the total
7 population will become stable or even start to decrease. The only reasonable conclusion to be drawn from
8 these facts is that, unless we want our population to fall off both in quality and numbers, we must take some
9 action to stop the present trend."
8. If asked to give the fundamental reasons for the difference between rural and urban advantages, the writer of the above editorial might correctly state that
- A. farmers are more likely to believe in having their children make their own way
 - B. people in the country are endowed with less intelligence than those in the city
 - C. the financial resources of rural areas are more limited than those of urban areas
 - D. farm children have to work harder than city children
9. The result of the population changes which the editorial describes in the sentence beginning in line 5 will be
- A. an increase in the proportion of old people
 - B. a decrease in the proportion of old people
 - C. that the proportion of young people to old will soon become stable
 - D. none of the above, because nothing can be told from the sentence except that the population will decrease
10. Which one of the following courses of action would most affect the advantages of rural children in a way the editorial above would approve?
- A. Laws which provided that all school expenses should be borne by local school districts
 - B. Laws compelling all rural children to attend school until the age of sixteen
 - C. Laws increasing the number of local school boards
 - D. Laws which provided that the amount of money spent for education in all sections of the country would be equal for all children
11. In which one of the following respects do the advantages of rural children differ **least** from those enjoyed by other children?
- A. Educational facilities
 - B. Number of clubs
 - C. Parental affection
 - D. Medical care
12. A good reason for supposing that the decline in quality of the population will occur, as predicted by the editorial, is that many children from rural areas and low economic groups
- A. do not have the opportunity to develop their full potentialities
 - B. are limited in intelligence by their heredity
 - C. are generally less ambitious
 - D. are likely to be the children of immigrants
13. The change described in the editorial between the proportions of old and young in the population is likely to give rise to
- A. a greater demand for extended educational possibilities
 - B. a demand for some provision which will take care of youth who are unemployed
 - C. a voting population which is more inclined to accept radical changes
 - D. an increased provision for old-age insurance
14. Rural areas in which of the following sections of the United States are the most striking illustration of what the writer of the above editorial is talking about?
- A. The South
 - B. New England
 - C. The Middle West
 - D. The West Coast
15. The writer of the above paragraph could argue correctly that
- A. poorer people have poorer educational opportunities
 - B. poorer people have poorer medical facilities
 - C. both of these are true
 - D. neither of these is true
16. Which one of the following statements gives a sound criticism of the writer's comparison of rural with urban areas?
- A. The writer shows bias against rural areas
 - B. The writer ignores the fact that many great leaders have grown up in rural areas.
 - C. The writer does not show appreciation for the contribution that large families make to the nation's welfare.
 - D. There are great differences within both the rural and the urban areas.

(Individuals designated as "X" throughout this examination are not the same persons; the same is true of "Y.")

Following is a discussion between two speakers:

Speaker X:

1 "The public has for a long time realized the need to curb monopoly and unfair business practices. But
2 labor unions are among the most guilty in this respect. Their activities have led to an artificial scarcity of
3 labor, the establishment of higher wages without increased productivity, and a restriction of management's
4 freedom to make adjustments leading to lower costs. Labor views technology as a menace. Further, it does
5 not understand how necessary to its own welfare is the accumulation of capital, resulting, as it does, in new
6 business ventures. Finally, unions have violated the worker's right to sell his labor as he wants to and the
7 rights of property in attempting to dictate to management. The public must awaken to the fact that all
8 these activities are against its interests both as consumers and as owners of the American industrial plant.
9 Corporations are, after all, the property not of bankers but of a cross-section of the American people. The
10 average investor owns less than \$1,250.00 of corporation securities."

Speaker Y:

11 "It is clear that Speaker X is making a plea for special privilege. He talks as though all reductions in cost
12 are passed on to the consumer. Unions want only a fair share of the rewards of labor and an opportunity to
13 carry into industry the democratic rights belonging to all citizens. Only a united labor can do this. The
14 policies of labor unions have been an advantage not only to the people as a whole but to the financial inter-
15 ests themselves. These policies have helped to prevent the reduction of consumer demand which might result
16 from changes in production methods or from the concentration of wealth in too few hands. Labor has always
17 had the interest of the country at heart; it can point to its record in supporting such measures as free public
18 education and restrictive immigration legislation."

For each of the following seven statements, mark answer space

- A. if Speaker X apparently would agree with the statement
- B. if Speaker Y apparently would agree with the statement
- C. if both speakers apparently would agree with the statement
- D. if neither speaker apparently would agree with the statement

- 17. The closed shop should be prohibited.
- 18. The best interests of both labor and capital can be reconciled by wise policies.

- 19. Collective bargaining ought to replace individual bargaining in determining wages.
- 20. Large corporation profits bring further industrial expansion and increased employment.
- 21. Government officials should make the final decision in all disputes between labor and management.
- 22. A competitive market for labor is necessary to assure an efficient economic system.
- 23. Unionization of industry results in a wider distribution of purchasing power.

24. In answering Speaker X, which one of the following arguments does Speaker Y emphasize?
- A. Because of the good work labor has done, it deserves special rights.
 - B. The interests of the country demand that unions restrict the labor supply.
 - C. Union demands can be justified by the good economic results these demands have produced for the country as a whole.
 - D. Unions do not interfere with the rights of workers to sell their labor as they want to.
25. Assuming the figures in line 10 are true, could Speaker Y criticize Speaker X's use of these figures?
- A. Yes, average investors cannot be regarded as real owners.
 - B. Yes, an average does not tell us anything about the way the shares are actually distributed.
 - C. No, the figures show that a large proportion of the American public owns corporation securities.
 - D. No, the figures show that the average securityholder is a typical American.
26. The first sentence of Speaker X suggests that he would favor
- A. further social security legislation
 - B. an extension of collective-bargaining agreements
 - C. enforcement of anti-trust laws
 - D. freeing business from all government regulation
27. Which one of the following would Speaker Y cite as an evidence of a democratic practice in industry?
- A. Free medical care furnished by the management
 - B. Joint labor-management committees
 - C. Both of these
 - D. Neither of these
28. Labor unions have sometimes attempted to limit the labor supply
- A. by demanding unreasonably high initiation fees from new members
 - B. by resisting compulsory education laws
 - C. by taking in more members than industry could use
 - D. in none of these ways, since the accusation cannot be supported
29. Which one of the following is a means which unions have used to achieve their objectives?
- A. Lockout
 - B. Black list
 - C. Appeal to the chamber of commerce
 - D. Picketing
30. Which of the following terms describes a means management has used to combat unions?
- A. Boycott
 - B. Craft union
 - C. Injunction
 - D. Business cycle

Following is a discussion between two speakers:

Speaker X:

1 "It is well known that the housing of the nation is inadequate. We know also that this shortage is having
2 far-reaching effects on family life, health, and juvenile delinquency. It is not generally recognized that this
3 shortage results from the selfishness of vested interests. The building trades unions insist on their high wages
4 and the producers and distributors of construction materials have a monopoly over their products. These
5 groups stand in the way of the introduction of new and cheaper methods into the housing industry. The advo-
6 cates of government-supported public housing ignore these facts. Instead of clearing the way for private
7 housing they propose a plan which is nothing less than a threat to private property ownership."

Speaker Y:

8 "There is some truth in Speaker X's analysis of conditions which prevent the revival of private housing,
9 but other facts must be considered in weighing the need for government-supported housing. We must remem-
10 ber, first, that, even in 1929, 21% of the nation's families had an income of under \$1,000; second, that taxes
11 and inflated land values in large cities prevent the development of low-cost housing; and, third, that private
12 capital is not interested in the long-term, low-return investment that would be needed to develop housing
13 for low-income groups, even if production costs were lowered."

31. Speaker Y's argument tries to disprove Speaker X's idea that
- A. mass production would lower the cost of housing
 - B. the selfishness of vested interests is one of the causes of the high cost of building
 - C. if only vested interests were controlled, private industry would fill our housing needs
 - D. government support of public housing is a threat to private property
32. What would the speakers say about real estate speculation as a cause of the housing shortage?
- A. Speaker X would emphasize it.
 - B. Speaker Y would emphasize it.
 - C. Both speakers would emphasize it.
 - D. It is impossible to tell.
33. Which one of the following statements could Speaker X correctly make in answer to Speaker Y?
- A. Extensive construction of low-cost housing with public funds would probably reduce the income of some owners of property.
 - B. We have good reason to believe that people with incomes under \$1,000 are able to afford good housing.
 - C. Lower-income groups would soon turn into slums any housing built for them by the government.
 - D. Speaker X could not correctly make any of the above statements.
34. With which one of the three points made by Speaker Y in the sentence beginning in line 9 is Speaker X likely to disagree?
- A. The first point
 - B. The second point
 - C. The third point
 - D. All of the points

35. What would Speaker X think of distributors of building materials agreeing among themselves to keep prices at a certain level?
- A. He would approve it as one means of encouraging the construction of privately owned housing.
 - B. He would disapprove and would consider it an important cause of the housing shortage.
 - C. He would probably disapprove of it, but would consider it a minor factor in the housing shortage.
 - D. It is impossible to tell.
36. Speaker Y suggests that private investors will not provide capital for an enterprise if
- A. the enterprise has a worthy social purpose
 - B. a large amount of money is needed
 - C. the government is competing with private enterprise
 - D. the interest rates are low

37. What is meant by the expression "inflated land values" (line 11)?
- A. Prices are high in proportion to the money that can be made from the use of the land.
 - B. People living on the land do not want lower-class neighbors.
 - C. The owners ask more for the land than they can get.
 - D. The land is heavily mortgaged.
38. An argument commonly advanced to support the payment of high wages to workers in the building trades is that
- A. more workers must be attracted to the industry
 - B. a large amount of building has been done with government funds
 - C. a good reward encourages initiative in using new methods
 - D. many building workers are not continuously employed

You may assume that the information in this table is factually correct.

PERCENTAGE DECLINE IN PRICES AND PRODUCTION—
1929 TO SPRING OF 1933

Item	Drop in Wholesale Prices (Per Cent)	Drop in Production (Per Cent)
Agricultural implements	15	80
Motor vehicles	16	80
Textile products	45	30
Agricultural commodities	63	6

Following are some comments on the table above. Mark answer space

- A. if the comment shows an understanding of the table and the conditions to which the table refers
 - B. if the comment does **not** show an understanding of the table and the conditions to which the table refers
39. The table refers to a period of economic depression.
 40. The drop in production of industrial goods can be explained partly by the demand of workers for a shorter working week.
 41. Prices of farm products would have been higher during this period if the market for them had been more competitive.
 42. The table suggests that the farmer's purchasing power was sharply cut between 1929 and 1933.
 43. The farmer was not able to control prices and production as successfully as some producers.
 44. The farmer was better off during the depression than the other producers indicated in the table, since the production of food did not decline greatly.
 45. The table shows that the farmer had failed to understand the value of farm machinery.
 46. Since the price of other goods besides the farmer's dropped, farmers were probably able to buy as much in 1933 as they were in 1929.
 47. Farmers did not need as many agricultural implements in 1933 as in 1929.
 48. The table indicates that farm prices are more likely to be affected by a decrease in demand than the prices of some other commodities.
 49. It is doubtful whether changes in prices of farm products would affect farmers, since farmers are largely self-sufficient.
 50. Information such as the table gives was used to support a program of crop limitation.

You may assume that information in this table is factually correct.

MEDIAN GRADE IN SCHOOL COMPLETED BY DIFFERENT GROUPS IN THE POPULATION OVER 21 YEARS OF AGE IN A LARGE NORTHERN CITY, 1934

I	II	III	IV	V
City as a Whole	Foreign-born White	Native White of Foreign or Mixed Parentage	Native White of Native Parentage	Negroes
8.1	6.4	8.4	9.3	7.5

Use any information you have about social conditions in answering the following questions. Mark answer space

- A. if the statement is probably **true**
- B. if the statement is probably **false**
- C. if it is impossible to say if the statement is probably true or probably false

51. There are more people in Group II than in Group V.
52. Differences in the ability to learn are the chief cause of the difference in grade completed by Group II and Group IV.
53. Differences in the ability to learn are the chief cause of the difference in grade completed by Group III and Group V.
54. Differences in family income were one factor in causing the difference in grade completed by Group IV and Group V.
55. The number of children now in the schools whose parents belong to Group II is smaller than the number whose parents belong to Group III.
56. Lawyers and doctors constitute a larger proportion of members of Group III than of Group IV.
57. In 1924 the median grade for the city as a whole was probably lower than in 1934.
58. If Negroes who had gone to school in the South were excluded from the census, the figure in column I would be smaller.

Following is an editorial:

1 "Our country prides itself on its democratic form of government, but there are several trends which may
2 prove dangerous and against which we must be on guard if our democracy is to be preserved. Our formal
3 system of government which rests on geographical representation is being modified by an informal system
4 which gives representation to occupational and other interest groups. These groups are nonpartisan in politics,
5 and politics is only one means they take to get what they want. Some of the means they take as well as the
6 goals they hope to achieve are certainly not for the public good. The same could be said of some of the practices
7 which have crept into local and national politics. The main object of parties now is to stay in office. Their
8 platform and candidates are the result of many compromises and take no stand on important issues. Many
9 local governments are in the grasp of bosses who keep themselves in power by flattering the public. It is clear
10 that if we are to have better government we will have to develop better means for keeping government more
11 sensitive to the will of the people."

59. The view that the system of occupational representation is undemocratic could be supported best by arguing that
- A. such representation makes it possible for interest groups to exert an influence out of proportion to their size
 - B. dissatisfied people are likely to wield the most influence
 - C. the interests of occupational groups necessarily run counter to the country's welfare
 - D. the membership of interest groups cuts across geographical lines
60. What opinion does the writer hold about the existence of special interest groups?
- A. They could be reconciled with democratic government if they worked only through politics.
 - B. They could be reconciled with democratic government if they were carefully supervised.
 - C. They cannot be reconciled with democratic government.
 - D. He does not clearly express any of the foregoing opinions
61. Special interest groups are most likely to be interested in achieving
- A. economic advantages
 - B. the recognition of minority rights
 - C. radical changes in the form of government
 - D. improvement in government
62. Which is an example of an "interest group"?
- A. The National Association of Manufacturers
 - B. The Congress of Industrial Organizations
 - C. Both groups
 - D. Neither group
63. Interest groups are "nonpartisan" in the sense that they
- A. work only for their own welfare
 - B. support only those political parties organized to achieve the objectives of the interest group
 - C. support any party which will work in their interest
 - D. do not become involved in issues which mean taking sides
64. The representation of interest groups is "informal" in the sense that such representation
- A. is not provided by the Constitution
 - B. has no effect on national legislation
 - C. has no rules or regulations
 - D. is recognized by few people
65. The writer of the editorial refers to an "informal system" which is modifying our formal system of government. Which of these is another "informal" modification of our formal system of government?
- A. The way senators are elected
 - B. The way presidential appointments are confirmed
 - C. The way members of the Supreme Court are appointed
 - D. The way presidential candidates are chosen
66. The editorial describes pressure groups in the sentence beginning in line
- A. 1 B. 2 C. 7 (Their) D. 9
67. The editorial refers most clearly to machine politics in the sentence beginning in line
- A. 2 B. 4 C. 7 (Their) D. 8

68. Which one of the following has been advocated as a partial remedy for the condition described in the sentence beginning in line 9?

- A. The city-manager plan
- B. Making it illegal for politicians to receive orders from bosses
- C. Making many more public offices elective
- D. The mayor-council system of government

69. The tendency which the editorial denounces in the sentence beginning in line 7 (Their) is explained partly by the

- A. inability of politicians to make up their minds on difficult questions
- B. necessity for a party to obtain the support of as many interests as possible if it wishes to win power
- C. politicians' lack of confidence in the ability of voters to make decisions on difficult issues
- D. dishonesty of politicians

70. The editorial suggests that the author disapproves of

- A. bureaucracy
- B. the two-party system
- C. the civil service
- D. lobbying

71. Which of the following measures (numbered I, II, III, and IV) have resulted from a line of thought similar to that in the last sentence of the editorial?

- I. Poll tax
- II. Direct primaries
- III. Referendum and recall
- IV. Electoral College

- A. I and II
- B. II and III
- C. III and IV
- D. II and IV

Following is the first part of an editorial:

ARE OUR CHILDREN BEING TAUGHT AMERICANISM?

1 "The policy of this paper has always been to expose unsound thinking wherever it is found. It is with
2 regret that we bring to our readers' attention the following quotation from a pamphlet used in our schools:
3 'Insurance against the loss of a job is no different from insurance against sickness. Both are neces-
4 sary, not only for the individual's welfare but for the welfare of society.'
5 "The falsity of this comparison is too evident to require discussion. The intent of the writer is not as plain.
6 Under the guise of talking about 'society's' welfare, he is attempting to indoctrinate youth with the com-
7 munist idea that they should give up the present system, which stresses opportunity for employment and
8 success, and substitute a system where the thrifty and ambitious support the idle.
9 "But this is only a part of a program which the writer claims may be made necessary by 'economic disloca-
10 tions.' This program includes the use of taxation for the control of our economy, public works, and other
11 idealistic schemes. The reader is not warned that an increasing public debt will soon bankrupt the country
12 nor that taxation inevitably hits the poor hardest of all.
13 "Instead of a pamphlet of this sort the youth in our schools should be reading material which will develop
14 in them an appreciation of our economic system and the opportunities it assures to all who will work hard
15 and save."

72. The writer's purpose in using the word "Americanism" in the title of the editorial was to
- A. describe views which have been adopted by Congress as those which Americans should hold
 - B. describe views which are suggested by the Constitution
 - C. suggest to the reader that the views of the editorial writer are those which all good Americans hold
 - D. suggest to the reader that all school children should be taught the truth
73. In the quotation the **writer of the pamphlet** probably intended to support
- A. a wider use of life insurance
 - B. communism
 - C. the Red Cross
 - D. a social security program
74. The author of the editorial is using the word "indoctrinate" (line 6) correctly if the pamphlet which he tells of
- A. gives publicity to an idea which some people would call "un-American"
 - B. gives arguments on both sides of a controversial question
 - C. tries to assure the unthinking acceptance of an idea
 - D. describes a political doctrine
75. What evidence is given in the editorial that the pamphlet mentioned seeks to indoctrinate youth with a communistic idea?
- A. The pamphlet presents an argument for a specific policy.
 - B. The pamphlet is used in a school.
 - C. The pamphlet gives only one side of the case.
 - D. There is no evidence in the editorial that the pamphlet seeks to indoctrinate youth with a communistic idea.
76. "If people have the right sort of character they can always have a job and money in the bank." Which one of the following statements is true of this idea?
- A. The writer of the **editorial** would agree with this statement.
 - B. The writer of the **pamphlet** would agree with this statement.
 - C. It is impossible to say what the writer of the **editorial** would think of this statement.
 - D. It is impossible to say what the writer of the **pamphlet** would think of this statement.

77. "We ought to leave entirely to private business the function of providing opportunities for everyone to work." Which one of the following statements is true of this idea?
- A. The writer of the **editorial** would disagree with this statement.
 - B. The writer of the **pamphlet** would disagree with this statement.
 - C. It is impossible to say what the writer of the **editorial** would think of this statement.
 - D. It is impossible to say what the writer of the **pamphlet** would think of this statement.
78. "In a complex industrial economy, provision must be made for the fact that many workers, through no fault of their own, will fail to find employment at certain times." Which one of the following statements is true of this idea?
- A. The writer of the **editorial** would agree with this statement.
 - B. The writer of the **pamphlet** would agree with this statement.
 - C. It is impossible to say what the writer of the **editorial** would think of this statement.
 - D. It is impossible to say what the writer of the **pamphlet** would think of this statement.
79. From the evidence given in the editorial, it can be said that the writer of the pamphlet is concerned with the possible recurrence of
- A. depression
 - B. inflation
 - C. monopolies
 - D. financial failure of large insurance companies
80. Which of the following is a tax which might be cited correctly to support the views of the editorial writer as to the burden of taxation on the poor?
- A. A graduated income tax
 - B. A sales tax on food
 - C. A luxury tax
 - D. A vehicle tax
81. Assume that the citizens of the town in which this editorial was published adopt the attitude of the editorial writer. Which one of the following is the most probable consequence of this editorial?
- A. The mayor would be asked to order the pamphlet removed.
 - B. Police would remove the pamphlet from the schools.
 - C. The school board would discuss whether or not the pamphlet should be removed.
 - D. None of the foregoing would happen, because what is taught in schools is decided by the teachers.
82. What is meant by "public works" (line 10)?
- A. Ownership of public utilities by the state
 - B. Financing of projects by the government
 - C. Unlimited working opportunities for all
 - D. None of these meanings
83. Which one of the following is **not** a danger which might result from the public debt?
- A. Inflation
 - B. Taxation which will strain the resources of the country
 - C. Lack of business confidence as a result of uncertainty over the effect of the debt on our economy
 - D. Forced sale of property owned by the government as the result of the failure of the government to pay interest on the debt

Following is an excerpt from an editorial:

1 "America has been traditionally wary of international ties, but the events of the last twenty-five years
2 have convinced many people that the best interests of the country would be served by our active support of
3 some plan for the preservation of world peace. In discussing the nature of the plan which should be adopted,
4 the experience of the League is often brought up. One explanation of its failure has emphasized that a world
5 government must be able to enforce its decisions. Also, the League has been criticized for not recognizing how
6 great a threat economic nationalism was to world peace, and for not attacking successfully the problem of
7 trade barriers. Another criticism states that the failure of the League was a foregone conclusion, since any
8 effective world organization must have the very powers which it is hopeless to expect nations to give up.
9 Some individuals conclude that the most that can be expected is that the great powers will agree to give one
10 another a free hand in those areas in which they have special economic interests.

11 "Regardless of the merits of these criticisms, it is clear that many obstacles lie in the way of securing greater
12 international cooperation for peace. It is to be hoped that when the time comes for a decision on our future
13 role in world affairs, the Senate will have behind it a well-informed public opinion, and that a minority
14 will not obstruct the wishes of the people."

84. The writer of the editorial intends to
- A. warn his readers that the United States should not join any future organization such as the League of Nations
 - B. show that any future League of Nations will inevitably be a failure
 - C. outline some of the difficulties in the way of organizing for world peace
 - D. tell why the policy of the United States in regard to the League was the correct one
85. According to the argument beginning in line 5, successful international cooperation requires that
- A. no country should contain alien minorities
 - B. political corruption be eliminated in all countries
 - C. nonaggression treaties be concluded between all countries
 - D. all countries have access to markets and raw materials
86. In studying the attempts of the League to enforce its decisions, one would probably study
- A. the German invasion of Poland
 - B. the Spanish Civil War
 - C. the Italian war against Ethiopia
 - D. Russia's war against Finland
87. The sentence beginning in line 9 suggests that some people believe that after the war the great powers will probably
- A. agree to respect the rights of small nations
 - B. divide up the world into spheres of influence
 - C. re-establish the League of Nations
 - D. abandon imperialism
88. The writer refers to the Senate in the last sentence because
- A. it advises the Secretary of State in the conduct of foreign relations
 - B. a majority of both the Senate and the House of Representatives must approve treaties
 - C. it must initiate the constitutional amendment necessary before the United States could join a world organization
 - D. under the Constitution, two-thirds of the Senate must approve treaties with foreign countries
89. Which one of the following could be correctly cited as evidence supporting the statement concerning "international ties" in the first sentence?
- A. Public feeling against international cartels
 - B. Public resistance to the reciprocal trade treaties
 - C. Failure of the United States to subscribe to the Hague Convention
 - D. Failure of the United States to enter the League of Nations
90. Which one of the following is a correct statement that supports the criticism of the League expressed in sentence beginning in line 4?
- A. The League never attempted to stop aggression by any but diplomatic means.
 - B. The League had no way to punish aggressors.
 - C. The great powers never allowed the League to try to stop aggression.
 - D. The attempt of the League to stop aggression by using economic pressure was a failure.

91. The fundamental question raised in the sentence beginning in line 7 is whether or not nations will agree to

- A. limit their sovereignty
- B. reduce their armaments
- C. show a cooperative spirit
- D. arbitrate their disputes

92. To which of the following events is the writer of the editorial referring in the first sentence?

- A. Armed intervention of the United States in Nicaragua
- B. A series of revolutions in Cuba which has endangered the property of United States citizens
- C. Rise of the Communists in Russia
- D. Entrance of the United States into two world wars

(This examination is continued on page 16)

Following is an editorial:

1 "The defeat of the Axis and the coming of peace will raise many questions about the type of government
2 which should be encouraged in the defeated nations. It is probable that the chances for a stable world order
3 would be better if all nations were democratic. Yet it cannot be denied that the social and economic condi-
4 tions prevailing in many countries work against the development of a democratic system of government. It is
5 possible, too, that when these obstacles are overcome, local conditions will require a completely different
6 governmental machinery from that of the United States. Even in the United States, the necessity of dealing
7 with new situations has brought about many changes, both formal and informal, in our original plan of
8 government. Other democracies have been successful with governmental machinery quite different from ours.
9 The essential nature of democracy rests on its respect for the individual and its confidence in the great mass
10 of the people. Democracy requires that the citizens be free to appoint or recall their public officers and,
11 through their freely chosen representatives, to enact or revoke the laws by which they are governed. De-
12 mocracy requires, too, the preservation of freedom: freedom of thought, freedom of expression, and freedom
13 of association, so that the truth may prevail. We should see to it that the governments which are set up in
14 the defeated countries will give due importance to these fundamental values."

Each of the following describes conditions which may be true of government. Mark answer space

- A. if the condition is one which the writer would probably consider **indispensable** to democratic government
 - B. if the condition is **not** one which the writer would probably consider **indispensable** to democratic government
 - C. if the condition is one which the writer would consider **undemocratic**
93. A system of courts which enforce laws impartially
94. Laws forbidding radical groups to publish newspapers
95. A federal system
96. Laws forbidding the use of the radio for criticizing the government
97. Laws excluding certain racial groups from voting
98. Provision that no more than one political party may present candidates for office
99. A written constitution
100. Laws forbidding reactionary groups to publish newspapers
101. Legislation providing that everyone belong to one church
-
102. Which of the following (numbered I, II, III, IV) are important ways in which our "original plan" of government has been changed?
- I. Amendment of Constitution
 - II. Judicial interpretation
 - III. Usage
 - IV. Nullification
- A. I and II
 - B. I, II, and III
 - C. II, III, and IV
 - D. III and IV

103. Which one of the following would **not** be a good example of the "conditions" mentioned in lines 3 and 4?
- A. Concentration of wealth and power in a land-owning class
 - B. An army that has great prestige and is independent of civil control
 - C. Widespread anti-Fascist movements
 - D. Widespread illiteracy
104. Which one of the following does the author clearly approve?
- A. Government ownership of some industries
 - B. Limitation on the size of income people may make
 - C. Social security legislation
 - D. Civil liberties

Refer back to the statement made in the sentence beginning in line 2 of the editorial. For each of the following statements mark answer space

- A. if it is true and **supports** the statement in the editorial
 - B. if it is true and **questions** the statement in the editorial
 - C. if it is true and is **irrelevant** to the statement in the editorial
 - D. if it is **false**
105. Democratic values have some influence on the conduct of foreign relations.
106. All the wars of the last seventy years have been caused by dictators.
107. We do not know how influential the human instinct to fight is.
108. Some democratic countries have been imperialistic.
109. Modern technology makes war more destructive.
110. The interests of the masses are generally bound up in the preservation of order and the peaceful settlement of disputes between nations.

THE RELATIONSHIP OF SOME MEASURES OF CRITICAL
THINKING TO SCHOOL MARKS IN SOCIAL SCIENCE
AND CERTAIN INTELLIGENCE QUOTIENTS

by

JOHN CARL YOUNG

B. A., Southwestern College, 1949

AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the
requirements for the degree

MASTER OF SCIENCE

Department of Education and Psychology

KANSAS STATE COLLEGE
OF AGRICULTURE AND APPLIED SCIENCE

1951

THE RELATIONSHIP OF SOME MEASURES OF CRITICAL
THINKING TO SCHOOL MARKS IN SOCIAL SCIENCE
AND CERTAIN INTELLIGENCE QUOTIENTS

The purpose of this study was to investigate actual school situations in order to:

1. See to what degree those abilities measured by selected tests of critical thinking are related to school marks in social science as an indication of the extent to which critical thinking is considered when teachers assign marks.
2. See whether or not the abilities measured by these tests of critical thinking increase progressively in the grades selected, that is whether pupils improve.
3. Find the relation between some measures of critical thinking and intelligence as measured by these tests.
4. See if there is any significant difference between the sexes in these measures of critical thinking.
5. Find the extent of the correlation of the various forms of ability with one another in order to determine whether or not they are separate abilities and must be taught separately or are varieties of one general ability.

In general the purpose of this study was to find out in actual situations what teachers in Kansas high schools were doing to teach critical thinking as measured by these tests.

The tests used in this study were selected because they had been carefully constructed and validated, were readily available and are perhaps the most frequently used. Any conclusions drawn

from this study will be limited to the abilities as measured by the various tests and measures used.

The Problems of Democracy test and the Watson-Glaser Tests of Critical Thinking were chosen to measure a number of abilities involved in critical thinking.

School marks in social science were used because they were available and most closely related to the material used. The school marks were confined to those made the same year the tests were administered.

It was desired to obtain raw scores made on the intelligence tests but they were not available at part of the schools, therefore, so-called intelligence quotients were used. It was possible at three of the schools to obtain data from the Otis Quick Scoring Test Gamma Form AM but at school D the only intelligence quotients available were those from the Henmon-Nelson intelligence test.

The final results were based on data available for 205 tenth and twelfth grade students from the four schools, who had Problems of Democracy scores and 91 ninth and twelfth grade students from school B who had Watson-Glaser scores.

Analyses of variance showed that it was impossible to combine the schools or the grades within each school, however, it was possible to combine the sexes within each grade.

The relationships found for those students having Problems of Democracy scores were as follows:

In schools A, B, and D the coefficients of correlation between certain intelligence quotients and school marks in social science were fairly high, the range being from .63 to .72 in

grade ten and .57 to .69 in grade twelve. Grade ten and grade twelve of school C had coefficients of .31 and .26 respectively, but the difference between it and the largest coefficient of correlation is not statistically significant at the five per cent level of confidence.

In schools A, B, and D, the coefficients of correlation between certain intelligence quotients and raw scores on the Problems of Democracy test were quite similar, the range being .49 to .67 in grade ten and .58 to .89 in grade twelve. For schools B and C grade twelve the t was 2.71 which is significant at the one per cent level of confidence. This is the only difference that is statistically significant.

For grade twelve school B the difference between correlations for school marks in social science and Problems of Democracy scores has a t of 2.38 which is significant at the five per cent level of confidence.

The range for coefficients of correlation between school marks in social science and raw scores made on the Problems of Democracy test for schools A, B, and D, is .44 to .71 in grade ten and .52 to .89 in grade twelve. Grade ten of school C has a numerically smaller coefficient of correlation than the others with .16 but grade twelve with a .43 coefficient is quite similar to the others. However, the differences between the twelfth grades of schools B and C has a t of 2.00 which is barely significant at the five per cent level of confidence. No other differences are statistically significant.

The correlations between school marks in social science and

intelligence quotients, for students of school B who took the Watson-Glaser, are .60 to .65 compared to the correlations of .57 to .67 for those who took the Problems of Democracy test.

The relationship between school marks in social science and the various tests of the Watson-Glaser had a range of .22 to .57. These are numerically less than the .56 to .80 found between Problems of Democracy scores and school marks in social science.

Coefficients of .49 to .89 between intelligence quotients and Problems of Democracy scores are numerically greater than the .42 to .77 found between intelligence quotients and the various tests of the Watson-Glaser.

The coefficients of correlation between the scores on the different tests had a wide range from a $-.02$ between test 1, generalization, and test 3, discrimination of arguments, in grade nine to a high of .75 between test 4, recognition of assumptions, and test 5, general logical reasoning in grade twelve.

School C has had a tendency to be consistently low in any relationship involving intelligence quotients and school marks in social science or those things dependent upon the school administrators and teachers. However, the means of the Problems of Democracy test show no great difference, except for school D, grade ten, where a few high scores brought the mean up.

Means for the Watson-Glaser tests showed very little difference between the two grades in school B in most cases. This seems to indicate that not much is being done to teach critical thinking at this school as measured by the Watson-Glaser tests.

From the results of this study the following general conclusions were reached.

1. The abilities measured by the Watson-Glaser test were less closely related to school marks in social science than the ability to read critically as measured by the Problems of Democracy test.

2. The results of this study show that there is a statistically significant difference between the grades in the abilities measured by these tests of critical thinking but whether the small difference between the means on the abilities measured by the Watson-Glaser tests would be of any practical value will have to be determined by further study.

3. The high correlations between certain intelligence quotients and the scores on the various tests of critical thinking makes it seem likely that success on these tests is dependent to a considerable degree on intelligence as measured by these tests.

4. There were no differences in the critical thinking abilities of the sexes as measured by these tests.

5. Inter-test correlations show that there is a relationship between the various abilities measured by the Watson-Glaser. However, only a minority of the differences between these correlations are of statistical significance so it is difficult to determine whether or not they are parts of one ability or separate abilities in themselves.