DOCUMENT RESUME

ED 041 424 EC 006 077

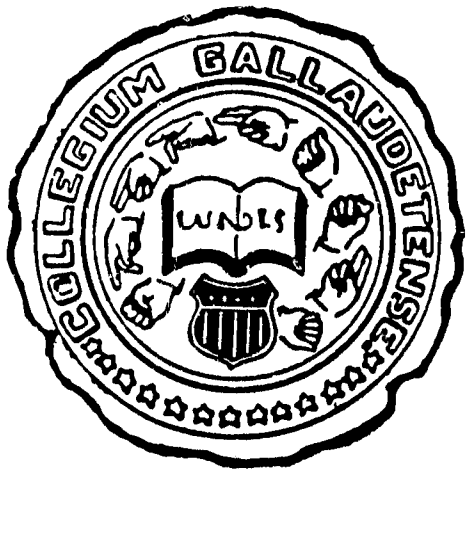
| | |
|---|---|
| AUTHOR | Gentile, Augustine; DiFrancesca, Sal |
| TITLE | Item Analysis of Academic Achievement Tests - Hearing Impaired Students. |
| INSTITUTION | Gallaudet Coll., Washington, D.C. Office of Demographic Studies. |
| SPONS AGENCY | Office of Education (DHEW), Washington, D.C. |
| PUB DATE | Apr 70 |
| NOTE | 47p. |
| AVAILABLE FROM | Gallaudet College Book Store, Washington, D.C. 20002 ($1.00) |
| EDRS PRICE | EDRS Price MF-$0.25 HC-$2.45 |
| DESCRIPTORS | *Academic Achievement, Achievement Tests, *Aurally Handicapped, *Exceptional Child Research, Item Analysis, Psychometrics, Statistical Data, *Student Evaluation, Test Reliability, Test Results |
| IDENTIFIERS | Stanford Achievement Test |

ABSTRACT

An item analysis of the Stanford Achievement Test performance of about 12,000 students in schools and classes for the hearing impaired is presented. Tables show the percentage of correct answers to each question, as well as a summary of the responses for each sub-test and major categories within some sub-tests. Because the test was developed for use with normal hearing students, the reliability and validity of the test results are discussed. Three appendixes present information about The Annual Survey of Hearing Impaired Children and Youth, a copy of the annual census of hearing impaired children form, and a list of participants in the Annual Survey of Hearing Impaired Children and Youth 1968-69 School Year. (GD)

# ANNUAL SURVEY OF HEARING IMPAIRED CHILDREN AND YOUTH

This research was supported by a grant from the Office of Education, U.S. Department of Health, Education & Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.




**OFFICE OF DEMOGRAPHIC STUDIES**
**Publication Number — Series D — Number 2**

*For Sale by Gallaudet College Book Store*
*Washington, D.C. 20002 — Price One Dollar*

SERIES D
NUMBER 2

*DATA FROM THE*
**ANNUAL SURVEY OF HEARING IMPAIRED CHILDREN AND YOUTH**

# ITEM ANALYSIS OF ACADEMIC ACHIEVEMENT TESTS HEARING IMPAIRED STUDENTS

## UNITED STATES: SPRING 1969



**The percentage of Stanford Achievement Test questions answered correctly by 12,000 students in schools and classes for the hearing impaired. Presented with the Item Content Outlines for each test battery.**

---

OFFICE OF DEMOGRAPHIC STUDIES
GALLAUDET COLLEGE

**Washington, D.C.** **April 1970**

## ADMINISTRATIVE OFFICERS OF GALLAUDET COLLEGE

Edward C. Merrill, Jr., Ph.D. ..... *President*

R. Orin Cornett, Ph.D. ..... *Vice President for Long Range Planning*

George E. Detmold, Ph.D. ..... *Dean*

Paul K. Nance ..... *Business Manager*


OFFICE OF DEMOGRAPHIC STUDIES

AUGUSTINE GENTILE, DIRECTOR

Sal DiFrancesca, Ph.D., Research Psychologist



LIBRARY OF CONGRESS CATALOG CARD NUMBER 74-98885

# TABLE OF CONTENTS

# Acknowledgements

The publication of data from the Annual Survey of Hearing Impaired Children and Youth is the result of the efforts of many individuals. In acknowledging these contributions, we must first express our gratitude to the administrators, teachers, secretaries and other staff members of the participating educational institutions who work so hard to prepare the Survey forms. Without their help, interest and encouragement, there would be no Annual Survey. The names of the schools that participated in the Annual Survey for the 1968-69 school year appear in Appendix III.

We also would like to extend our appreciation to the National Advisory Committee whose continued assistance has helped guide the staff. Their collective and individual direction has been invaluable. The members of the committee are listed below.

**NATIONAL ADVISORY COMMITTEE**

Thomas R. Behrens, Ph.D.
*Jack W. Brady
*William E. Bragner
Donald W. Brown, Ph.D.
Nona Burrows
Marvin B. Clatterbuck, L.H.D.
William N. Craig, Ph.D.
David M. Denton
*George E. Detmold, Ph.D.
Albert W. Douglas
*Eldon L. Eagles, M.D.
George W. Fellendorf
*Marilyn L. Flynn
D. Robert Frisina, Ph.D.
*W. Lloyd Graunke, Ph.D.
*Bernard L. Greenberg
Barry L. Griffing
John D. Harrington, Ed.D.
Doin Hicks, Ed.D.
Ben E. Hoffmeyer, L.H.D.
Arthur G. Jillette, Jr.
Sister Nora Letourneau
James A. Little
Kenneth R. Mangan, Ed.D.
Walter E. Nance, M.D.
*Edward W. Reay
*Jerome D. Schein, Ph.D.
*Sidney L. Schoenfeld
*Ruth Lynn Scott, Ph.D.
Roy M. Stelle, Litt.D.
*Frances R. Tucker
Armin G. Turechek, Ed.D
*Dorothy L. Vaill
McCay Vernon, Ph.D.

*Terms expired December 1969.

Thanks also must be given to the many individuals at Gallaudet College whose help and encouragement have been unending. We especially acknowledge the help of the following staff members of the Data Processing Laboratory: Jerald Jordan, Robert Herbold and Kathleen Schreiber.

To all the staff members of the Office of Demographic Studies we express our gratitude for the loyalty and devotion that sustains the Annual Survey program. To the following staff members we give special recognition for their help in preparing this publication: Susan Carey, Barbara McCarthy, Carol Hodge, Regina McManus, Brenda Rawlings, and Sally W. Wagner.

Augustine Gentile
Sal DiFrancesca
Washington, D.C.
April 1970

# Item Analysis of Academic Achievement Tests Hearing Impaired Students United States: Spring 1969

Augustine Gentile and Sal DiFrancesca, Ph.D.

## INTRODUCTION

This report contains the item analysis of the Stanford Achievement Test performance of about 12,000 students in schools and classes for the hearing impaired who took the test during the Spring of 1969. The item analysis, simply, is the proportion of correct answers given to each question in the test series. Essentially the item analysis gives an indication of the difficulty (or ease) of each test question for the students who took the tests. A description of the specific learning area (referred to as the Item Content Outline) which each item is supposed to measure is presented for most items. Suggestions for proper use of these data also are given in this report.

The Achievement Testing Program, on which these data are based, was conducted by the Office of Demographic Studies of Gallaudet College, as part of the Annual Survey of Hearing Impaired Children and Youth. A description of the Annual Survey program is given in Appendix I. The results of these achievement tests were published in the Fall of 1969[1]. The earlier publication discusses in more detail than given here questions related to the reliability and validity of the Stanford Achievement Tests when administered to hearing impaired students. It contains also a more detailed description of the Stanford Achievement Tests and the procedures followed in administering the tests.

### Background for the Achievement Testing Program

As part of any data collection system, it is sometimes necessary to develop standard measuring instruments to describe the reliability and validity and to enhance the comparability of the collected data. This was the primary factor that led the Annual Survey to initiate an achievement testing program, which has, as a long range goal, the development of effective measures to assess the educational progress of students in academic programs for the hearing impaired. The achievement tests on which the data in this report are based represent a first step towards the attainment of this goal. Because the tests presently used to assess the academic accomplishment of the hearing impaired have been developed for use with normal hearing students, they cannot be assumed to be reliable or valid for students with impaired hearing. This first step and other planned activities will result in measures of the adequacy of currently available achievement tests, and also will lead to the development of standardized procedures for administering tests to hearing impaired students.

Publication of the item analyses in this report is intended to provide a better understanding of the test scores obtained by hearing impaired students and to stimulate research in areas related to the educational assessment of this special group of students.

## METHODOLOGY AND SOURCES OF THE DATA

The schools and classes that were invited to participate in the Achievement Testing Program were selected from the programs that participated in the first year basic data gathering efforts of the Annual Survey. However, a limited number of programs were not invited due to the following reasons: 1) the student enrollment was very small; 2) the program consisted of students too young to have obtained measurable academic achievement levels, i.e., preschool programs; and 3) the program enrolled primarily multiply handicapped students. A total of 156 schools and classes remained after these eliminations.

[1] *Academic Achievement Test Performance of Hearing Impaired Students, United States, Spring 1969.* Annual Survey of Hearing Impaired Children and Youth, Gallaudet College, Washington, D. C.

In December of 1968, letters were sent asking them to join the Achievement Testing Program. Agreements to participate were received from a total of 70 schools and 39 classes. The names of the schools and classes that participated in the Annual Survey and in the Achievement Testing Program are given in Appendix III. The reasons most frequently given by the schools which did not participate in the program were: reservations concerning the adequacy of the Stanford Achievement Tests for use with deaf students; insufficient staff to manage the testing program; adherence to school district testing programs that did not use the Stanford Tests or were not conducting achievement testing that year; and inability to include the testing program in the school's schedule.

Achievement tests for 12,051 students were received by this office. Of these, 507 were obtained too late to be included in the item analysis. A distribution of the records received, according to the type of program the students were enrolled in, is given in Table A.

TABLE A: Number of achievement tests obtained according to schools and classes for the hearing impaired

| | Both | Schools | Classes |
|---|---|---|---|
| Total | 12,051 | 10,559 | 1,492 |
| Included in report | 11,544 | 10,095 | 1,449 |
| Excluded from report | 507 | 464 | 43 |

The Stanford Achievement Tests used in this study, consist of five separate, but to some extent, overlapping test batteries. The respective batteries generally are intended for administration according to the grade placement level of the student. As grade levels are de-emphasized in educational programs for the hearing impaired, it was necessary to use alternative battery selection criteria. It was expected that the test administrators would select a battery for a student on the basis of matching the content of the battery to their estimation of what the student could handle. However, for programs that had never used these tests before and were unable to make such judgments, the Survey office made available chronological age guidelines which could be used for selecting test levels. These guidelines are presented in Table B. Because there are extensive variations in the academic levels of students of identical ages, the guidelines were meant to be suggestive only.

TABLE B: Recommended age guidelines for selecting Stanford Achievement Test batteries for hearing impaired students

| Age | Test Battery Levels |
|---|---|
| 7-9 yrs. | Primary I, Form W |
| 10 yrs. | Primary II, Form W |
| 11 yrs. | Intermediate I, Form W |
| 12-13 yrs. | Intermediate II, Form W |
| 14 yrs. & over | Advanced, Form W |

Table C presents the number of achievement tests represented in the report according to chronological age and battery level. Table D depicts the number of students for whom achievement test results are available according to chronological age and hearing threshold levels.

The Annual Survey made no effort to regulate or standardize the test administration procedures used by the participating schools. The schools decided who was to administer the test, which test battery levels to use, and which sub-tests within each test battery were appropriate to administer. No doubt variations in these procedures occurred among the schools.

TABLE C: Number of achievement tests included in this report according to age and test battery level

| Age | TEST BATTERY LEVEL | | | | | |
|---|---|---|---|---|---|---|
| | All Levels | Primary I | Primary II | Intermediate I | Intermediate II | Advanced |
| All Ages | 11,544 | 3076 | 2521 | 1999 | 1870 | 2073 |
| 6 & Below | 119 | 115 | 4 | – | – | – |
| 7 | 317 | 306 | 11 | – | – | – |
| 8 | 513 | 455 | 58 | – | – | – |
| 9 | 855 | 636 | 197 | 20 | 2 | – |
| 10 | 1161 | 564 | 503 | 84 | 10 | – |
| 11 | 951 | 265 | 446 | 194 | 46 | – |
| 12 | 1005 | 210 | 382 | 246 | 167 | – |
| 13 | 1032 | 114 | 279 | 314 | 282 | 43 |
| 14 | 1005 | 62 | 203 | 294 | 285 | 161 |
| 15 | 1007 | 58 | 132 | 287 | 276 | 254 |
| 16 | 1004 | 27 | 88 | 232 | 291 | 366 |
| 17 | 853 | 19 | 44 | 140 | 245 | 405 |
| 18 | 604 | 9 | 26 | 67 | 127 | 375 |
| 19 | 337 | – | 9 | 28 | 51 | 249 |
| 20 & Above | 131 | – | – | 15 | 7 | 109 |
| Unknown | 650 | 236 | 139 | 78 | 81 | 116 |

TABLE D: Number of students for whom achievement test results were available by age and hearing threshold levels

| Age in Years | All Hearing Levels | HEARING THRESHOLD LEVELS IN DECIBELS (ISO)[1] | | | | |
|---|---|---|---|---|---|---|
| | | Under 30 | 30 to 59 | 60 to 84 | 85 and over | Unable To Determine |
| All Ages | 10,894[2] | 106 | 709 | 2570 | 4355 | 3154 |
| Under 7 | 119 | 1 | 12 | 26 | 41 | 39 |
| 7 | 317 | 11 | 33 | 59 | 133 | 81 |
| 8 | 513 | 11 | 38 | 92 | 220 | 152 |
| 9 | 855 | 15 | 48 | 196 | 346 | 250 |
| 10 | 1,161 | 15 | 90 | 289 | 401 | 366 |
| 11 | 951 | 7 | 64 | 229 | 376 | 275 |
| 12 | 1,005 | 10 | 68 | 227 | 391 | 309 |
| 13 | 1,032 | 11 | 64 | 230 | 414 | 313 |
| 14 | 1,005 | 6 | 68 | 233 | 392 | 306 |
| 15 | 1,007 | 3 | 51 | 277 | 438 | 238 |
| 16 | 1,004 | 8 | 58 | 278 | 413 | 247 |
| 17 | 853 | 2 | 66 | 198 | 344 | 243 |
| 18 | 604 | 4 | 19 | 115 | 259 | 207 |
| 19 and over | 468 | 2 | 30 | 121 | 187 | 128 |

[1]Average of hearing levels in the better ear computed at 500, 1000 and 2000 cycles per second.

[2]Does not include 650 students for whom age was not reported.

To obtain general uniformity regarding the time of administration, it was requested that the achievement tests be administered within approximately the same period of the academic year. March and April were selected. Some exceptions to these dates were allowed. Actual administration dates ranged from February to June, 1969. The majority of tests were administered within the recommended time period, however.

All test materials and scoring services were provided free of charge to the participating programs. After administration, the individual test booklets and answer forms were returned to the Office of Demographic Studies. They were checked for correct identifying information and clerical errors. The student's age and hearing threshold level were added to the answer sheets. The test materials were then forwarded to the Harcourt, Brace & World scoring center and machine scored. In about four weeks, each program received the following information for its student body: raw scores and grade equivalent scores for each student for each sub-test and the arithmetic and reading totals; the student's percentile rank for each sub-test; class averages, standard deviations and quartiles for the sub-tests and totals; an item analysis for each test battery for each class within the school, and one for the entire school.

Some qualifications and limitations of the data are given in sections that follow. However, it is important to note here that, at the time the achievement tests were administered, about fifty percent of all hearing impaired students in special educational programs were enrolled in day classes, but only about 13 percent of the students for whom data appear in this report were in day class programs.

## QUALIFICATIONS AND LIMITATIONS OF THE DATA

To interpret the data obtained from the Achievement Testing Program correctly, it is important to note certain qualifications and limitations that appear inherent in the testing data itself. The most important limitation of the data is that the Stanford Achievement Tests were standardized on and intended for use by hearing students attending regular school programs. This raises general questions concerning the reliability and validity of the tests when they are administered to deaf and hard-of-hearing students in special educational programs.

The reliability of the test in this special situation may be depressed due to the difficulties in presenting directions to the students. Certain sub-tests were designed for administration by spoken directions. The written language level required to comprehend fully the test directions and subject matter has been determined according to the language level of the normal hearing student population. There are no satisfactory assurances that the directions for taking the test were understood adequately by all the hearing impaired students or that they were able to respond to the language level required to comprehend the questions they were asked. For some test batteries, it was necessary to use speech reading or the language of signs in communicating the test directions to the students. Thus, a student's test performance may be a function of his receptive ability with such modes of communication.

The presence of phrases in the test directions and body content that are longer and of a different structure than those commonly used by deaf students presents further potential complications. Administration of the Spelling and Word Study Skills sub-tests at the primary battery levels leads to technical difficulties. In presenting these sub-tests, some test administrators relied on showing pictures of the words to be spelled while others used pantomime, manual signs or strict speech reading. No control was maintained over these presentation methods. Thus, the techniques used and their effectiveness may have varied considerably. Data are still being collected, on a post hoc basis, that will yield more precise information on how the tests were administered in the various programs. As stated earlier, an additional important variable that was not standardized was the criteria for selecting the battery levels for different students.

The validity of the tests may be questioned because schools and classes for the hearing impaired may not follow the standard academic curriculum taught in regular schools. The Stanford Tests purport to measure achievement in the traditional academic subject areas of regular schools. This conventional content may not receive identical emphasis in educational programs for the hearing impaired. Such curricula are often highly specialized and may differ from regular school programs particularly during early academic years.

Other technical problems occur when the Stanford Tests are administered to hearing impaired students. Only those of major issue have been noted. The overall result of these problems may lower considerably the reliability and validity of the Stanford Tests when they are used with this population.

The Office of Demographic Studies is attempting to find the answers to some of these questions. Extensive studies for developing standardized administration procedures and determining the reliability and validity of the Stanford Tests for use with hearing impaired students are scheduled for the 1970-71 school year.

Until more evidence is available, the test results presented in this publication should not be used for comparisons of the academic achievement of deaf and hearing students. Pending further analyses of the data, evaluation of the techniques used in administering the tests, and determination of the representativeness of the sample used, these results are not presented as "national norms" but only as the results of an achievement test administered to a large group of hearing impaired students.

## DESCRIPTION OF THE STANFORD ACHIEVEMENT TESTS

The Stanford Achievement Tests are described by their publishers, Harcourt, Brace & World, Inc., as a series of comprehensive academic achievement tests developed to measure the important knowledges, skills and understandings commonly accepted as desirable outcomes of elementary and secondary education. The tests are intended to provide dependable measures of these outcomes, comparable from pupil to pupil and grade to grade, for use in connection with improvement of instruction, pupil guidance, and evaluation of progress. The Stanford Tests are revised periodically to ensure that their content continues in line with what is currently being taught in the schools. The edition used in the Achievement Testing Program of the Spring of 1969, was Form W, published in 1964.

The Stanford Tests used by the Annual Survey program consisted of five separate test batteries or levels. These batteries cover the range of academic grade achievement levels from the middle of grade 1 to the end of grade 9. Each battery is intended for use with students within certain academic grade ranges. The batteries themselves are made up of a series of sub-tests which cover the various academic content areas appropriate to the respective grades (See Table E). Descriptions of what each sub-test purports to measure and their general content and rationale are found in the *Directions for Administering* manuals that accompany the respective test batteries. Other publications that would be helpful in understanding the development and design of the

TABLE E: Sub-tests contained in successive battery levels of the Stanford Achievement Test Series, Form W

| PRIMARY I | PRIMARY II | INTERMEDIATE I | INTERMEDIATE II | ADVANCED |
|---|---|---|---|---|
| Word Reading | Word Meaning | Word Meaning | Word Meaning | |
| Parag. Meaning | Parag. Meaning | Parag. Meaning | Parag. Meaning | Parag. Meaning |
| Vocabulary | Science & Social Studies Concepts | | | |
| Spelling | Spelling | Spelling | Spelling | Spelling |
| Word Study Skills | Word Study Skills | Word Study Skills | | |
| | Language | Language | Language | Language |
| | Arithmetic Computation | Arithmetic Computation | Arithmetic Computation | Arithmetic Computation |
| Arithmetic | Arithmetic Concepts | Arithmetic Concepts | Arithmetic Concepts | Arithmetic Concepts |
| | | Arithmetic Applications | Arithmetic Applications | Arithmetic Applications |
| | | Social Studies | Social Studies | Social Studies |
| | | Science | Science | Science |

Stanford Test and their uses are the: *Stanford Achievement Test Technical Supplement;* and *Teachers' Guide for Interpretation and Use of Test Results.* The booklets are available from the test publishers, Harcourt, Brace & World, Inc.

## DESCRIPTION AND USES OF THE ITEM CONTENT OUTLINE

The Stanford Achievement Test authors claim that the tests have shown a high degree of curricular validity in measuring what students are actually being taught in *regular school* programs. Items were chosen to give a well balanced coverage of a list of topics selected on the basis of a thorough review of widely used textbooks, courses of study, and recent professional books and journals on curriculum and evaluation. The *Item Content Outline* presents a classification of the items in the tests according to the specific topic being measured.

The *Item Content Outlines* for the Stanford Achievement Tests were prepared through the combined efforts of the test authors and editors. Various individuals independently classified the items. Differences between classifications were then discussed until agreement was reached on the most appropriate category for each item. There are several uses for item content outlines. Most of the following suggestions are taken directly from the *Item Content Outline* guide published by the test department of Harcourt, Brace & World, Inc. They are presented here with their approval.

For research purposes and for the selection of tests, content outlines can be compared with the curriculum in a school. The correspondence between the contents of the test and the material taught in the school is of course, one of the main methods for evaluating the validity of the test. Naturally, the sub-test titles themselves serve as the broadest categorizations of material to be compared with the curriculum and the aspects of school achievement to be measured; but content outlines may be desirable for a more specific evaluation of what the tests cover.

For the individual teacher, content outlines can serve two basic purposes. First, the teacher, as well as the person selecting the test for an entire school, should make some judgment about the adequacy with which a test covers material taught in her classroom. In order to interpret test results meaningfully, the teacher must have a certain degree of confidence in the test's coverage of material. Secondly, the teacher may use content outlines to evaluate class performance. For example, if everyone in the class gets nearly all items in a particular category wrong, the teacher can be fairly certain the class is weak in the area; and so on with the other categories within the sub-test. Using as a guide the information contained in the item analyses report, a teacher can implement the instructional program through reviews, practice exercises, and other meaningful instructional aids. A summation of the number of students answering an item correctly yields information on the difficulty of the item for the class, building or system. Such information interpreted in light of item content may reveal strong and weak areas in the instructional program and should lead to better understanding of class performance.

### Cautions

The test authors warn that there are several risks or dangers involved in the use of content analyses of achievement tests. Anyone using such an analysis should be fully aware of these dangers. First, the teacher should not use the content analyses in diagnosing difficulties of individual pupils. Thus, to say that a student needs remedial instruction in working with percents because he got 3 out of 5 problems in this category wrong while generally doing well in Arithmetic Applications can be a misleading statement. The number of items in most categories is not sufficient for diagnosis of individual strengths and weaknesses. Such judgments, to be reliable in individual cases, should be based on a relatively more comprehensive sampling in the subject area.

A second caution to be kept in mind when using content outlines relates to comparing the school curriculum with the test content. The test should be judged suitable or unsuitable for a particular school to the extent that it corresponds with the school curriculum. *The curriculum is not to be appraised using the test contents as a standard.* Perhaps a related way of saying this is that the test is not an index of what should be taught, but of what actually is taught in the typical school. Finally, a word of caution should be added regarding the categories or classes used in *The Content Outline.* The guiding principle used in the classification was usefulness to the teacher. Thus, some of the items might be differently classified from a purely theoretical point of view. The categories then, should not be rigidly interpreted, nor should the items be expected to fit neatly and exclusively in a single category.

## DESCRIPTION AND USES OF THE ITEM ANALYSIS DATA

The item analysis reports the percent of the students answering each item in each test correctly. It is not based on the number of students who attempted the particular test item but the percent is based on the number of the students who took the sub-test. Again then, the item analysis is the percent of students who got the item correct based on the total number of students who attempted one or more questions of the sub-test. It is an indication of how hard an item is for a group determined by how many students in the group know the answer.

The item analysis data supplement the *Item Content Outline.* The schools and classes that participated in the Achievement Testing Program each received an item analysis based on the test performance of students from each class within the school, and an item analysis based on the school performance as a whole. This publication presents a similar item analysis based on an extensive nationwide sample.

The programs that have received an item analysis on their students can compare their school's performance to the data presented herein. This can provide some basis for understanding the extent to which the academic curriculum of their school compares with that of a broad spectrum of schools and classes for hearing impaired across the nation. In comparing the item analysis values obtained by their students to the national tabulations, patterns of convergence and divergence will emerge which will shed light on the curriculum emphasis of their school. Also, they will indicate strong and weak areas of their students' performances and may be useful in remedial and curriculum planning. The item analysis can be used also to determine how well students are achieving in the traditional and conventional academic areas taught in regular schools. It is particularly useful in determining the validity of the test for employment by a particular special educational program.

Item analyses also have broad research use in areas of test development and educational programming. When used with the *Item Content Outline*, particular academic and conceptual areas can be isolated. Then the relative facility or difficulty of learning and achievement in these areas can be evaluated. The reader himself must draw on his own experiences with curriculum and learning problems to find further research uses for these data.

## THE ITEM CONTENT OUTLINES AND ITEM ANALYSES

### Introduction

The *Item Content Outlines* and the Item Analyses data are presented by battery level proceeding from the Primary I through the Advanced batteries. For each battery, the content outlines are shown first and are followed by the item analysis data. The *Item Content Outlines* contain descriptions of the academic subject areas the test measures, and the identification of the items in the test booklets that reflect the particular subject matter. The teacher can determine the wording of a test question by using the item number to locate the question in the test booklet. Conversely, if she is interested in the results of a particular test question, she can use the question number to locate the item in the *Item Content Outlines* and in the Item Analyses Tables.

The content outlines in this report were prepared by and are reproduced with the permission of Harcourt, Brace & World, Inc. The outlines follow two basically different formats and were taken from two different sources. Content outlines for the reading sub-tests of the Primary I and II, and the Intermediate II batteries are contained in *A Design for Evaluating Ability to Read.*[1] Content outlines for sub-tests other than those related to the direct measurement of reading skills are available separately for the Intermediate I, II and Advanced batteries and are reproduced from *Item Content Outlines* to accompany Stanford Achievement Test.[2]

In the publication *A Design for Evaluating Ability to Read,* the authors begin by presenting in outline form, a section describing the overall design of the Reading sub-tests of the Stanford Achievement Test. This section is presented below. Further elaborations of the overall designs are given in the *Content Outlines* for the Primary I, Primary II and Intermediate II batteries.

### Overall Design of The Reading Sub-Tests

To understand the rationale of the Reading sub-tests of *Stanford Achievement Test* (SAT), one

---

[1]Adapted from *A Design for Evaluating Ability to Read,* to accompany the Stanford Achievement Test, published by Harcourt, Brace & World, Inc. Adapted by permission of the publisher.

[2]Reproduced from *Item Content Outlines,* to accompany the Stanford Achievement Test, published by Harcourt, Brace & World, Inc. Reproduced by permission of the publisher.

must first see the overall design. The initial step in the development of the Reading sub-tests was to analyze some 200 articles related to the evaluation of reading achievement. (See Lennon, R.T. "What Can Be Measured?" *The Reading Teacher,* March, 1962, pp. 326-337.) The study yielded these components of the ability to read:

1. Word study skills
2. Word recognition
3. Comprehension, explicit and implicit
4. Vocabulary
5. Speed, as an index of word recognition ability

The distinctness of some of these components varies with age or grade level. Based on these analyses, SAT sub-tests were developed as follows:

| | |
|---|---|
| Primary I | Word Study Skills<br>Vocabulary (dictated)<br>Word Reading<br>Paragraph Meaning |
| Primary II | Word Study Skills<br>Word Meaning<br>Paragraph Meaning |
| Intermediate II | Word Meaning<br>Paragraph Meaning |

## PRIMARY I BATTERY – FORM W

For the Primary I battery, content outlines were available for the Word Study Skills, Word Reading, Paragraph Meaning, and Vocabulary sub-tests. No outlines were prepared for the Spelling and Arithmetic sub-tests.

The item analysis data for the Primary I battery is given after *The Content Outline*. Summaries of the responses for each sub-test and major categories within a sub-test are given below. These summaries have been computed by adding the "percent correct" for each question in the sub-test, or part of a sub-test, and dividing by the number of questions in the sub-test or part of the sub-test.

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Word Reading - Total* | 65 |
| *Paragraph Meaning - Total* | 53 |
| Comprehension | 59 |
| Inference | 47 |
| Organization | 55 |
| *Vocabulary - Total* | 37 |

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Spelling - Total* | 55 |
| *Word Study Skills - Total* | 54 |
| Matching Initial Sounds | 60 |
| Matching Final Sounds | 47 |
| Matching Spoken Word with Printed Word | 59 |
| Rhyming Words | 51 |
| *Arithmetic - Total* | 49 |

## ITEM CONTENT OUTLINE – PRIMARY I BATTERY

### Word Study Skills

A primary consideration was to measure reading power and specific instruction. The test which most closely measures the detail of specific instruction is Word Study Skills. The types of items included are noted below with the item content outlines for each group of items:

a. 14 items – Selecting words that begin with an initial sound which is spoken. Thirteen initial sounds, involving 3 blends, are presented. All of these, excepting *pr,* are found in the grade 1 California State textbooks. In reading one series of texts, a pupil will encounter these 13 initial sounds in 96 different words. Most of them will be found in the other textbooks as well. The 96 individual words will be repeated many times.

**Items 1-14: Matching initial sounds.**

| | | | |
|---|---|---|---|
| 1. m | 5. cl | 9. wh | 13. s |
| 2. r | 6. wh | 10. sh | 14. e |
| 3. pr | 7. k | 11. br | |
| 4. a | 8. th | 12. n | |

b. 14 items – Matching endings. Each of the different endings used is found in one or more words in each textbook at grade 1.

**Items 15-28: Matching final sounds.**

| | | | |
|---|---|---|---|
| 15. ē | 19. ēz | 23. ėrn | 27. ād |
| 16. ōld | 20. īt | 24. ēk | 28. īm |
| 17. ing | 21. uch | 25. ēt | |
| 18. ack | 22. um | 26. ü | |

c. 14 items – Matching spoken words with written words. This part of the test is designed to measure ability to attack new words. However, we find that of the 14 words in this test area, 7 are in

each of the series in grade 1, either in whole or major part (as yell and yellow).

**Items 29-42: Matching spoken word with printed word.**

| | | | |
|---|---|---|---|
| 29. meat | 33. now | 37. knock | 41. crash |
| 30. become | 34. black | 38. thanks | 42. through |
| 31. out | 35. twin | 39. chop | |
| 32. yell | 36. broom | 40. snail | |

d. 14 items – Rhyming words. The rhyming portions of 11 of the words have been experienced in the texts at grade 1.

**Items 43-56: Selecting printed word that rhymes with spoken word.**

| | | | |
|---|---|---|---|
| 43. ang | 47. ade | 51. ix | 55. ele |
| 44. est | 48. ite | 52. et | 56. ation |
| 45. al | 49. ink | 53. iest | |
| 46. ave | 50. un | 54. o | |

### Word Reading Test

This test is designed to measure the application of Word Study Skills. It is not a measure of sight vocabulary, but a power test of the development of word analysis ability. To function in this manner, it must involve words that have not been memorized as sight vocabulary.

This item type necessitates the use of words not found in many first grade readers. Stone's Word List[1] was first consulted, then words were selected from readers published by Ginn, Winston, Scott Foresman, Allyn Bacon, Rowe Peterson, Laidlaw, and others. The Lorge-Thorndike Word List[2] and Rinsland's Writing Lists[3] were also checked. The final criterion for word inclusion in the Word Reading Test was percent of pupil success in the tryout edition. All reading tests were screened on California children before the national tryouts.

To score at grade 1.9 on this test requires 23 items correct. The essential clues necessary to the solution of nearly all 35 items have been experienced with the words read in the textbooks. The test measures the ability to use the clues in reading the various words presented.

[1]Stone, C. R. *A Graded Vocabulary for Primary Reading,* St. Louis, Missouri: Webster Publishing Company, 1936.

[2]Thorndike, E. L. and Lorge, I. *The Teacher's Word Book of 30,000 Words.* New York: Teachers College, Columbia University, 1944.

[3]Rinsland, H. D. *A Basic Vocabulary of Elementary School Children.* New York: The Macmillan Company, 1945.

| Item | | Chief Skill Needed | |
|---|---|---|---|
| 1. children | ch | vs. | t, g, k (the other options) |
| 2. window | w | vs. | h, f, d |
| 3. chair | ch | vs. | sh |
| 4. rain | -ain | vs. | -an |
| 5. ring | r | vs. | f, a, b |
| 6. drink | dr | vs. | ē, g, pl |
| 7. flag | -ag | vs. | -at |
| 8. candy | can- | vs. | car- |
| 9. school | sch- | vs. | l, t, l |
| 10. ship | sh | vs. | m, bl, l |
| 11. horse | -orse | vs. | -ouse |
| 12. ice | ice | vs. | is, eyes |
| 13. plant | -ant | vs. | -ace, -ease |
| 14. shoe | -oe | vs. | -ore |
| 15. write | -īte | vs. | -īde, -ain |
| 16. people | p | vs. | sch, t, ch |
| 17. music | m | vs. | o, b, pl |
| 18. break | br | vs. | b, eak vs. ead |
| 19. build | -ild | vs. | -ill, -uld |
| 20. sister | s | vs. | g, b, g-er |
| 21. cabin | cab- | vs. | cam- |
| 22. nose | -ose | vs. | -oise |
| 23. telephone | -phone | vs. | -vision |
| 24. rest | -est | vs. | -oof, -ock, -eally |
| 25. storm | -orm | vs. | -ong |
| 26. point | emphasis in picture | | |
| 27. corner | -orner | vs. | -over |
| 28. arm | ar | vs. | dr |
| 29. island | -and | vs. | -ant |
| 30. study | reach as decoy for read | | |
| 31. hair | -air | vs. | -er, -ear |
| 32. team | probable meaning | | |
| 33. ocean | weave | vs. | wave |
| 34. earth | earth | vs. | early |
| 35. ahead | probable meaning | | |

### Paragraph Meaning Test

Paragraph Meaning is still more complex in its demands than the two previously described tests. The pupil must know the word study skills and apply them or call upon his repertory of sight words; he then usually must relate the content of two or more sentences. One who depends, in the main, upon word recognition will tend to lose the relationship of the sentences.

The Paragraph Meaning Test was designed to measure three primary objectives as follows:

1. Comprehension of what is stated
2. Inference, or ability to think beyond the stated content

3. Personal organization; the central idea, main thought, or summation

These processes are very limited at grade 1 because of the necessity to decode the printed words.

The basic criterion used in writing the Paragraph Meaning Test was that there be such a relationship between the "stem" sentence and the preceding sentences to require an interpretation of them to answer the item.

In Item 8, a pupil who can hold in mind only the last two sentences may not give the correct answer:

I give light.
I make you hot.
You see me in the sky.
I am the ___8___.

8. sun rain air snow

This type of item has on one occasion been classified mistakenly as a riddle. Riddles are always open-ended. This item can very easily be brought to closure but not by the final two sentences. The solution requires the utilization of all four sentences.

The following classification of the primary objectives of the paragraphs was made at the time of their final selection:

| | Item |
|---|---|
| *Comprehension* (Essentials are in the material) | 1,2,3,4,5,8,9,15,17,19,22, 23,25,31,34,36 |
| *Inference* (Requires something beyond the material) | 6,7,11,12,13,14,18,20,21, 24,26,27,28,29,30,32,33, 35,37,38 |
| *Organization* (Main ideas, summarization) | 10,16 |

An effort was made to have pupils think as they read in a variety of interesting situations. The chief criterion, to repeat, was to require pupils to analyze a paragraph as a unit.

### Vocabulary Test

Vocabulary is designed to measure a pupil's verbal background to ascertain any unusual deviation between this score and those on the other tests. Its value is twofold: it is diagnostic for the individual, and it is useful at the class, school, or district level as a signal for further examination of the relationship between expectancy and achievement. The vocabulary words are not and should not be limited to the words of reading textbooks.

In this test, the teacher reads the items and the pupils show the words they know by marking the printed word or words which answer a question or complete a statement. In order to find words sufficiently difficult to be used in a dictated test, the authors found that vocabulary words formerly measured in a reading context could be moved from grades 4-6 to grades 2-3. A dictated vocabulary test at grade 1 was judged to be essential for use in evaluating an important aspect of reading ability and reading potential.

## PERCENT OF CORRECT ANSWERS[1] TO STANFORD ACHIEVEMENT TEST ITEMS: STUDENTS IN SCHOOLS AND CLASSES FOR THE HEARING IMPAIRED, SPRING 1969

### ITEM ANALYSIS – PRIMARY I BATTERY – FORM W

### SUB-TESTS

| WORD READING | | PARAGRAPH MEANING | | VOCABULARY | | SPELLING | | WORD STUDY SKILLS | | ARITHMETIC | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct |
| 1 | 83 | 1 | 74 | 1 | 67 | 1 | 83 | 1 | 86 | 1 | 60 |
| 2 | 90 | 2 | 62 | 2 | 52 | 2 | 56 | 2 | 74 | 2 | 44 |
| 3 | 93 | 3 | 72 | 3 | 53 | 3 | 79 | 3 | 74 | 3 | 33 |
| 4 | 89 | 4 | 69 | 4 | 55 | 4 | 62 | 4 | 65 | 4 | 46 |
| 5 | 90 | 5 | 47 | 5 | 58 | 5 | 65 | 5 | 56 | 5 | 34 |
| 6 | 84 | 6 | 59 | 6 | 41 | 6 | 72 | 6 | 68 | 6 | 52 |
| 7 | 93 | 7 | 45 | 7 | 42 | 7 | 49 | 7 | 64 | 7 | 35 |
| 8 | 88 | 8 | 69 | 8 | 35 | 8 | 76 | 8 | 64 | 8 | 50 |
| 9 | 80 | 9 | 80 | 9 | 32 | 9 | 56 | 9 | 55 | 9 | 67 |
| 10 | 72 | 10 | 58 | 10 | 35 | 10 | 51 | 10 | 52 | 10 | 38 |
| 11 | 79 | 11 | 65 | 11 | 45 | 11 | 30 | 11 | 54 | 11 | 45 |
| 12 | 83 | 12 | 76 | 12 | 34 | 12 | 56 | 12 | 53 | 12 | 47 |
| 13 | 60 | 13 | 42 | 13 | 50 | 13 | 42 | 13 | 33 | 13 | 10 |
| 14 | 87 | 14 | 65 | 14 | 46 | 14 | 40 | 14 | 43 | 14 | 60 |
| 15 | 77 | 15 | 63 | 15 | 25 | 15 | 49 | 15 | 53 | 15 | 56 |
| 16 | 61 | 16 | 52 | 16 | 35 | 16 | 52 | 16 | 68 | 16 | 44 |
| 17 | 78 | 17 | 75 | 17 | 32 | 17 | 45 | 17 | 62 | 17 | 34 |
| 18 | 61 | 18 | 59 | 18 | 34 | 18 | 22 | 18 | 58 | 18 | 33 |
| 19 | 49 | 19 | 52 | 19 | 31 | 19 | 60 | 19 | 50 | 19 | 48 |
| 20 | 74 | 20 | 55 | 20 | 45 | 20 | 52 | 20 | 30 | 20 | 49 |
| 21 | 42 | 21 | 59 | 21 | 30 | | | 21 | 55 | 21 | 53 |
| 22 | 80 | 22 | 45 | 22 | 32 | | | 22 | 38 | 22 | 30 |
| 23 | 81 | 23 | 61 | 23 | 38 | | | 23 | 56 | 23 | 18 |
| 24 | 36 | 24 | 46 | 24 | 25 | | | 24 | 38 | 24 | 50 |
| 25 | 37 | 25 | 54 | 25 | 32 | | | 25 | 34 | 25 | 45 |
| 26 | 29 | 26 | 49 | 26 | 36 | | | 26 | 45 | 26 | 27 |
| 27 | 34 | 27 | 23 | 27 | 35 | | | 27 | 28 | 27 | 27 |
| 28 | 54 | 28 | 57 | 28 | 36 | | | 28 | 40 | 28 | 23 |
| 29 | 43 | 29 | 50 | 29 | 41 | | | 29 | 74 | 29 | 27 |
| 30 | 36 | 30 | 28 | 30 | 32 | | | 30 | 68 | 30 | 34 |
| 31 | 78 | 31 | 45 | 31 | 32 | | | 31 | 77 | 31 | 18 |
| 32 | 33 | 32 | 18 | 32 | 34 | | | 32 | 56 | 32 | 77 |
| 33 | 37 | 33 | 33 | 33 | 29 | | | 33 | 65 | 33 | 87 |
| 34 | 53 | 34 | 44 | 34 | 28 | | | 34 | 77 | 34 | 51 |
| 35 | 25 | 35 | 25 | 35 | 28 | | | 35 | 60 | 35 | 39 |
| | | 36 | 37 | 36 | 24 | | | 36 | 58 | 36 | 29 |
| | | 37 | 53 | 37 | 29 | | | 37 | 54 | 37 | 44 |
| | | 38 | 36 | 38 | 30 | | | 38 | 71 | 38 | 55 |
| | | | | 39 | 27 | | | 39 | 30 | 39 | 42 |
| | | | | | | | | 40 | 49 | 40 | 53 |
| | | | | | | | | 41 | 41 | 41 | 44 |
| | | | | | | | | 42 | 50 | 42 | 39 |
| | | | | | | | | 43 | 65 | 43 | 18 |
| | | | | | | | | 44 | 52 | 44 | 83 |
| | | | | | | | | 45 | 69 | 45 | 74 |
| | | | | | | | | 46 | 69 | 46 | 71 |
| | | | | | | | | 47 | 57 | 47 | 75 |
| | | | | | | | | 48 | 37 | 48 | 72 |
| | | | | | | | | 49 | 48 | 49 | 67 |
| | | | | | | | | 50 | 39 | 50 | 76 |
| | | | | | | | | 51 | 64 | 51 | 70 |
| | | | | | | | | 52 | 50 | 52 | 70 |
| | | | | | | | | 53 | 47 | 53 | 65 |
| | | | | | | | | 54 | 38 | 54 | 67 |
| | | | | | | | | 55 | 36 | 55 | 59 |
| | | | | | | | | 56 | 44 | 56 | 73 |
| | | | | | | | | | | 57 | 49 |
| | | | | | | | | | | 58 | 53 |
| | | | | | | | | | | 59 | 51 |
| | | | | | | | | | | 60 | 66 |
| | | | | | | | | | | 61 | 61 |
| | | | | | | | | | | 62 | 57 |
| | | | | | | | | | | 63 | 38 |
| *N = 2527 | | *N = 2465 | | *N = 1819 | | *N = 1682 | | *N = 1561 | | *N = 2028 | |

*N = The number of students who answered one or more items in each sub-test.

[1]Percent Correct = The number of correct answers to each item or question divided by the total number of students (N) that answered one or more questions in a sub-test.

## PRIMARY II BATTERY – FORM W

Content Outlines for the Word Meaning, Paragraph Meaning and the Word Study Skills sub-tests were available for the Primary II battery. No Content Outlines are available for the Science and Social Studies, Spelling, Language, Arithmetic Computation and the Arithmetic Concepts sub-tests. For these sub-tests it will be necessary to examine the items in the test booklet to determine the specific academic subject matters they are intended to measure.

The Primary II battery item analysis follows *The Content Outline.* Summaries of the responses for the sub-test totals and major categories within some sub-tests are given below. Computational procedures for these summaries were described in the Primary I section.

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Word Meaning - Total* | *35* |
| Noun | 44 |
| Verb | 34 |
| Adjective or Adverb | 26 |
| *Paragraph Meaning - Total* | *42* |
| Comprehension - Literal | 47 |
| Comprehension - Inferential | 39 |
| Inference | 37 |
| *Science and Social Studies - Total* | *35* |
| *Spelling - Total* | *47* |
| *Word Study Skills - Total* | *40* |
| Matching Initial Sounds | 42 |
| Matching Final Sounds | 46 |
| Matching Graphemes and Phonemes | 37 |
| *Language - Total* | *48* |
| *Arithmetic Computations - Total* | *50* |
| *Arithmetic Concepts - Total* | *33* |

## ITEM CONTENT OUTLINE – PRIMARY II BATTERY

What has been said regarding Primary I SAT Reading Tests applies with certain obvious restrictions to later tests. Since success in progressing toward mature reading skill passes through various stages, especially in the early grades, the sub-test structure must change somewhat to reflect these various stages. The first and most obvious shift in structure from Primary I to Primary II battery is from a word reading test to a word meaning test. The emphasis of the Word Reading Test is in decoding, whereas the Word Meaning Test of Primary II, while requiring some decoding, also measures knowledge of meanings of words. In Primary I, word knowledge is kept to a minimum in the Word Reading Test, while it is emphasized (in dictated form) in the Vocabulary Test.

The item *Content Outlines* for Form W are presented for each sub-test following the sub-test description.

### Word Meaning Test

The primary source of the words in the Word Meaning Test was the Lorge-Thorndike List. The order of placement of words was determined by the percent of children answering each item correctly during tryout experimentation. The test is relatively easy. After norming, it was found that fifty percent of children at grade 2.9 knew 19 of the 36 items; at grade 3.9 they knew an estimated 27-28 of the 36 words.

Following is the item content analysis:

| Part of Speech | Category and Item |
|---|---|
| Noun | General Information<br>3,5,10,17,26<br>Humanities<br>4,13,35<br>Social Relations<br>1,11<br>Science<br>16,31<br>Social Studies<br>2 |
| Verb | 6,8,12,14,21,22,23,25,29 |
| Adjective or Adverb | 7,9,15,18,19,20,24,27,28,<br>30,32,33,34,36 |

### Paragraph Meaning Test

Since the measurement objective of this test is the understanding of the paragraph as the unit of discourse, it is written with words which are simpler and easier to decode than those in Word Meaning. Despite our effort to separate word meaning from paragraph structure, however, a correlation between

these two tests of .83 at both grades 2 and 3 has been reported.

The difficulty level of the Paragraph Meaning Test is similar to that of Word Meaning. At grade 2.9 pupils score 31-32 out of 60 and at 3.9 they score 43 out of 60. There should be no stress in coping with a test which is easier than the traditional and sound fifty percent level of difficulty.

The primary goal of Paragraph Meaning at grades 2.9 and 3.9 is comprehension, both explicit and implicit. The paragraphs, however, are longer and consequently involve a logical sequence. Content analyses in the area of paragraph meaning, as well as taxonomic classification of items, is extremely difficult; therefore, the following analyses are not to be thought of as rigorous. The three categories that have been used to classify the items are: Comprehension-literal, Comprehension-inferential, and Inference. The classification "Comprehension-literal" means that the essentials required for the answer are contained in the paragraph. "Comprehension-inferential" means that, while most of the essentials are found in the material, some conclusions must be drawn from the cues provided. "Inference" requires something beyond the material; the cues are not as obvious as those in the "Comprehension-inferential" category.

| Classification | Item |
|---|---|
| Comprehension-literal | 1,2,7,8,11,13,15,18,19, 20,22,26,27,28,29, 30, 31,32,41,42,45,46, 47, 48 |
| Comprehension-inferential | 3,4,14,16,17,21,25,33, 35,36,37,39,40,49, 51, 59 |
| Inference | 5,6,9,10,12,23, 24, 34, 38,43,44,50,52,53, 54, 55,56,57,58,60 |

### Word Study Skills

The Word Study Skills Test of Primary II requires the matching of beginning and ending sounds, both spoken by the examiner. Items 31-64 require the matching of graphemes which spell the same phonemes, the phonemes being produced by the pupil. The items of this test include most of the phonemes of English, not simply those which may appear in any specific reading series. Part B includes most of the more common variant spellings of the vowels and of those consonants which have common variants, such as f, k, j, s, and sh.

**Matching Initial Sounds**

| Item | Phoneme | Grapheme Stimulus | Answer |
|---|---|---|---|
| 1 | ûr | ear | ear |
| 2 | d | d | d |
| 3 | ôr | or | or |
| 4 | oi | oi | oy |
| 5 | fər | for | for |
| 6 | hw | wh | wh |
| 7 | i | i | i |
| 8 | tr | tr | tr |
| 9 | k | k | c |
| 10 | sûr | cir | ser |
| 11 | är | ar | ar |
| 12 | par | par | par |
| 13 | sh | ch | sh |
| 14 | ē | ea | ea |
| 15 | bə | ba | ba |

**Matching Final Sounds**

| Item | Phoneme | Grapheme Stimulus | Answer |
|---|---|---|---|
| 16 | rt | rt | rt |
| 17 | âr | air | air |
| 18 | ī | uy | igh |
| 19 | ü | ue | ough |
| 20 | lē | lly | ly |
| 21 | st | st | st |
| 22 | d | d | d |
| 23 | ər | er | er |
| 24 | j | g | dg |
| 25 | üt | oot | uit |
| 26 | ld | ld | led |
| 27 | f | f | gh |
| 28 | z | s | se |
| 29 | ənz | ence | ence |
| 30 | k | k | lk |

**Matching of Graphemes and Phonemes**

| Item | Phoneme | Grapheme Stimulus | Answer |
|---|---|---|---|
| 31 | ī | y | y |
| 32 | ī | i-e | i-e |
| 33 | o | o | o |
| 34 | oi | oi | oy |

## Matching of Graphemes and Phonemes

| Item | Phoneme | Grapheme Stimulus | Grapheme Answer |
|---|---|---|---|
| 35 | a | a | a |
| 36 | ə | a | a |
| 37 | yü | u-e | u |
| 38 | sh | sh | sh |
| 39 | ō | o | o |
| 40 | ē | ee | ea |
| 41 | ou | ou | ow |
| 42 | ō | oa | ow |
| 43 | e | e | e |
| 44 | ou | ou | ou |
| 45 | ûr | ir | ir |
| 46 | ô | aw | a |
| 47 | ē | e | e |
| 48 | ou | ow | ow |
| 49 | ē | y | y |

## Matching of Graphemes and Phonemes

| Item | Phoneme | Grapheme Stimulus | Grapheme Answer |
|---|---|---|---|
| 50 | t | d | t |
| 51 | j | j | g |
| 52 | ē | ie | ie |
| 53 | u | oo | wo |
| 54 | k | c | k |
| 55 | ā | ai | a-e |
| 56 | j | dg | j |
| 57 | u | ou | oo |
| 58 | u | u | u |
| 59 | o͞o | ew | ou |
| 60 | ē | ea | ee |
| 61 | u | u | o |
| 62 | s | c | s |
| 63 | f | gh | f |
| 64 | i | y | i |

## PERCENT OF CORRECT ANSWERS[1] TO STANFORD ACHIEVEMENT TEST ITEMS: STUDENTS IN SCHOOLS AND CLASSES FOR THE HEARING IMPAIRED, SPRING 1969

### ITEM ANALYSIS – PRIMARY II BATTERY – FORM W

### SUB-TESTS

| WORD MEANING | | PARAGRAPH MEANING | | SCIENCE AND SOCIAL STUDIES | | SPELLING | | WORD STUDY SKILLS | | LANGUAGE | | ARITHMETIC COMPUTATION | | ARITHMETIC CONCEPTS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct |
| 1 | 61 | 1 | 86 | 1 | 56 | 1 | 91 | 1 | 68 | 1 | 91 | 1 | 95 | 1 | 40 |
| 2 | 75 | 2 | 59 | 2 | 41 | 2 | 46 | 2 | 53 | 2 | 46 | 2 | 86 | 2 | 81 |
| 3 | 69 | 3 | 72 | 3 | 46 | 3 | 70 | 3 | 59 | 3 | 85 | 3 | 85 | 3 | 39 |
| 4 | 73 | 4 | 27 | 4 | 45 | 4 | 71 | 4 | 30 | 4 | 78 | 4 | 85 | 4 | 41 |
| 5 | 40 | 5 | 82 | 5 | 37 | 5 | 65 | 5 | 52 | 5 | 72 | 5 | 81 | 5 | 22 |
| 6 | 89 | 6 | 61 | 6 | 29 | 6 | 49 | 6 | 60 | 6 | 70 | 6 | 84 | 6 | 55 |
| 7 | 39 | 7 | 63 | 7 | 35 | 7 | 78 | 7 | 44 | 7 | 61 | 7 | 85 | 7 | 73 |
| 8 | 46 | 8 | 53 | 8 | 36 | 8 | 73 | 8 | 49 | 8 | 43 | 8 | 81 | 8 | 19 |
| 9 | 46 | 9 | 55 | 9 | 37 | 9 | 66 | 9 | 17 | 9 | 81 | 9 | 80 | 9 | 24 |
| 10 | 51 | 10 | 66 | 10 | 39 | 10 | 75 | 10 | 27 | 10 | 66 | 10 | 89 | 10 | 38 |
| 11 | 24 | 11 | 46 | 11 | 28 | 11 | 59 | 11 | 42 | 11 | 61 | 11 | 81 | 11 | 62 |
| 12 | 26 | 12 | 40 | 12 | 32 | 12 | 33 | 12 | 53 | 12 | 62 | 12 | 66 | 12 | 32 |
| 13 | 44 | 13 | 58 | 13 | 38 | 13 | 47 | 13 | 12 | 13 | 57 | 13 | 85 | 13 | 48 |
| 14 | 54 | 14 | 48 | 14 | 27 | 14 | 19 | 14 | 40 | 14 | 32 | 14 | 85 | 14 | 50 |
| 15 | 43 | 15 | 53 | 15 | 34 | 15 | 44 | 15 | 20 | 15 | 56 | 15 | 85 | 15 | 67 |
| 16 | 37 | 16 | 74 | 16 | 39 | 16 | 59 | 16 | 75 | 16 | 45 | 16 | 79 | 16 | 55 |
| 17 | 39 | 17 | 76 | 17 | 36 | 17 | 25 | 17 | 80 | 17 | 49 | 17 | 76 | 17 | 52 |
| 18 | 25 | 18 | 45 | 18 | 33 | 18 | 31 | 18 | 31 | 18 | 52 | 18 | 76 | 18 | 28 |
| 19 | 23 | 19 | 37 | 19 | 30 | 19 | 20 | 19 | 54 | 19 | 56 | 19 | 74 | 19 | 21 |
| 20 | 28 | 20 | 52 | 20 | 38 | 20 | 68 | 20 | 58 | 20 | 59 | 20 | 70 | 20 | 34 |
| 21 | 22 | 21 | 49 | 21 | 53 | 21 | 35 | 21 | 60 | 21 | 49 | 21 | 66 | 21 | 26 |
| 22 | 19 | 22 | 63 | 22 | 37 | 22 | 48 | 22 | 43 | 22 | 45 | 22 | 66 | 22 | 25 |
| 23 | 18 | 23 | 48 | 23 | 36 | 23 | 38 | 23 | 53 | 23 | 74 | 23 | 65 | 23 | 55 |
| 24 | 32 | 24 | 55 | 24 | 36 | 24 | 39 | 24 | 51 | 24 | 35 | 24 | 65 | 24 | 27 |
| 25 | 20 | 25 | 54 | 25 | 38 | 25 | 21 | 25 | 21 | 25 | 53 | 25 | 65 | 25 | 67 |
| 26 | 20 | 26 | 28 | 26 | 48 | 26 | 51 | 26 | 39 | 26 | 45 | 26 | 54 | 26 | 24 |
| 27 | 24 | 27 | 68 | 27 | 23 | 27 | 61 | 27 | 20 | 27 | 50 | 27 | 46 | 27 | 34 |
| 28 | 25 | 28 | 66 | 28 | 36 | 28 | 23 | 28 | 24 | 28 | 45 | 28 | 47 | 28 | 31 |
| 29 | 14 | 29 | 68 | 29 | 37 | 29 | 8 | 29 | 36 | 29 | 27 | 29 | 46 | 29 | 16 |
| 30 | 13 | 30 | 33 | 30 | 45 | 30 | 9 | 30 | 39 | 30 | 50 | 30 | 46 | 30 | 37 |
| 31 | 20 | 31 | 16 | 31 | 30 | | | 31 | 64 | 31 | 56 | 31 | 47 | 31 | 20 |
| 32 | 30 | 32 | 46 | 32 | 15 | | | 32 | 52 | 32 | 34 | 32 | 47 | 32 | 42 |
| 33 | 10 | 33 | 24 | 33 | 18 | | | 33 | 36 | 33 | 24 | 33 | 55 | 33 | 10 |
| 34 | 15 | 34 | 53 | 34 | 24 | | | 34 | 42 | 34 | 60 | 34 | 42 | 34 | 18 |
| 35 | 21 | 35 | 43 | 35 | 27 | | | 35 | 62 | 35 | 49 | 35 | 28 | 35 | 51 |
| 36 | 10 | 36 | 31 | 36 | 35 | | | 36 | 33 | 36 | 40 | 36 | 22 | 36 | 18 |
| | | 37 | 23 | 37 | 26 | | | 37 | 55 | 37 | 55 | 37 | 31 | 37 | 18 |
| | | 38 | 29 | 38 | 26 | | | 38 | 75 | 38 | 51 | 38 | 47 | 38 | 11 |
| | | 39 | 22 | | | | | 39 | 40 | 39 | 61 | 39 | 32 | 39 | 16 |
| | | 40 | 33 | | | | | 40 | 38 | 40 | 47 | 40 | 37 | 40 | 10 |
| | | 41 | 32 | | | | | 41 | 41 | 41 | 74 | 41 | 25 | 41 | 12 |
| | | 42 | 33 | | | | | 42 | 37 | 42 | 35 | 42 | 30 | 42 | 22 |
| | | 43 | 28 | | | | | 43 | 51 | 43 | 58 | 43 | 23 | 43 | 13 |
| | | 44 | 25 | | | | | 44 | 70 | 44 | 75 | 44 | 30 | 44 | 15 |
| | | 45 | 35 | | | | | 45 | 60 | 45 | 66 | 45 | 22 | 45 | 5 |
| | | 46 | 38 | | | | | 46 | 27 | 46 | 33 | 46 | 29 | 46 | 19 |
| | | 47 | 27 | | | | | 47 | 34 | 47 | 69 | 47 | 20 | | |
| | | 48 | 13 | | | | | 48 | 36 | 48 | 57 | 48 | 26 | | |
| | | 49 | 17 | | | | | 49 | 22 | 49 | 60 | 49 | 19 | | |
| | | 50 | 38 | | | | | 50 | 16 | 50 | 21 | 50 | 23 | | |
| | | 51 | 19 | | | | | 51 | 33 | 51 | 42 | 51 | 20 | | |
| | | 52 | 32 | | | | | 52 | 43 | 52 | 42 | 52 | 23 | | |
| | | 53 | 25 | | | | | 53 | 33 | 53 | 63 | 53 | 11 | | |
| | | 54 | 24 | | | | | 54 | 30 | 54 | 36 | 54 | 18 | | |
| | | 55 | 27 | | | | | 55 | 19 | 55 | 37 | 55 | 11 | | |
| | | 56 | 13 | | | | | 56 | 22 | 56 | 33 | 56 | 13 | | |
| | | 57 | 10 | | | | | 57 | 19 | 57 | 45 | 57 | 19 | | |
| | | 58 | 20 | | | | | 58 | 30 | 58 | 18 | 58 | 12 | | |
| | | 59 | 19 | | | | | 59 | 59 | 59 | 58 | 59 | 15 | | |
| | | 60 | 15 | | | | | 60 | 23 | 60 | 45 | 60 | 11 | | |
| | | | | | | | | 61 | 19 | 61 | 41 | | | | |
| | | | | | | | | 62 | 11 | 62 | 15 | | | | |
| | | | | | | | | 63 | 15 | 63 | 36 | | | | |
| | | | | | | | | 64 | 16 | 64 | 63 | | | | |
| | | | | | | | | | | 65 | 14 | | | | |
| | | | | | | | | | | 66 | 13 | | | | |
| | | | | | | | | | | 67 | 28 | | | | |
| | | | | | | | | | | 68 | 41 | | | | |
| | | | | | | | | | | 69 | 35 | | | | |
| | | | | | | | | | | 70 | 35 | | | | |
| | | | | | | | | | | 71 | 21 | | | | |
| | | | | | | | | | | 72 | 42 | | | | |
| | | | | | | | | | | 73 | 45 | | | | |
| | | | | | | | | | | 74 | 35 | | | | |
| | | | | | | | | | | 75 | 17 | | | | |
| *N = 2130 | | *N = 2125 | | *N = 1421 | | *N = 1339 | | *N = 1246 | | *N = 2090 | | *N = 2095 | | *N = 1825 | |

*N = The number of students who answered one or more items in each sub-test.

[1]Percent Correct = The number of correct answers to each item or question divided by the total number of students (N) that answered one or more questions in a sub-test.

## INTERMEDIATE I BATTERY -- FORM W

The *Item Content Outline* for the Intermediate I battery follows a different format than those presented earlier. It is reproduced here as prepared by the publishers, Harcourt, Brace & World, Inc. For the Intermediate I battery no content outlines were available for the Word Meaning, Paragraph Meaning, Spelling, and Word Study Skills sub-tests. For these sub-tests the teacher may wish to review the items in the test booklet to determine the specific academic skills they reflect. Item Outlines are given for the Language, Arithmetic Computation, Arithmetic Concepts, Arithmetic Application, Social Studies, and Science sub-tests.

Summaries for the sub-tests in this battery are given below. They were computed from the item analysis table for this battery which is presented following *The Content Outline.*

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Word Meaning - Total* | 30 |
| *Paragraph Meaning - Total* | 32 |
| *Spelling - Total* | 55 |
| *Word Study Skills - Total* | 33 |
| *Language Test - Total* | 49 |
| Usage | 36 |
| Punctuation | 42 |
| Capitalization | 70 |
| Dictionary Skills | 28 |
| Sentence Sense | 43 |
| *Arithmetic Computation - Total* | 52 |
| Whole Numbers | 54 |
| Fractions | 36 |
| *Arithmetic Concepts - Total* | 37 |
| *Arithmetic Applications - Total* | 32 |
| *Social Studies - Total* | 42 |
| Content | 38 |
| Study Skills | 47 |
| *Science Test - Total* | 38 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST INTERMEDIATE I BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE TEST -- 122 ITEMS** | |
| **PART A: USAGE** | |
| Verb | |
| Irregular verb forms | 1, 8, 9, 18, 29, 31, 33, 34, 35 |
| Tenses | 3, 16, 19, 23, 28, 37 |
| Agreement with subjects | 10, 17, 21, 26 |
| Word choice involving verbs | 15, 24 |
| Correct form of subjunctive mood | 2, 12 |
| Pronoun | |
| Nominative case | 22, 27, 36 |
| Objective case | 30 |
| Possessive pronouns | 13 |
| Correct form of pronouns | 7, 38 |
| Miscellaneous | |
| Word choice | — |
| Double negative | 5, 32 |

## ITEM CONTENT OUTLINE

## STANFORD ACHIEVEMENT TEST — INTERMEDIATE I BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE TEST — 122 ITEMS *(Continued)*** | |
| Article | — |
| Spelling | 14, 25 |
| Substandard corruption forms | 4, 6, 11, 20 |
| **PART B: PUNCTUATION** | |
| Comma | 40, 46, 48, 49, 53, 54 |
| Colon | 44 |
| Quotation Marks | 55, 57, 58 |
| Period | 47, 51, 56 |
| No punctuation needed | 39, 41, 42, 43, 45, 50, 52 |
| **PART C: CAPITALIZATION** | |
| Capital letter cases | 60, 61, 63, 66, 67, 68, 69, 70, 73, 74, 75, 80, 82, 84, 85, 86, 88, 90, 91, 93 |
| Small letter cases | 59, 62, 64, 65, 71, 72, 76, 77, 78, 79, 81, 83, 87, 89, 92, 94 |
| **PART D: DICTIONARY SKILLS** | |
| Choice of meaning | 95, 96, 100, 101 |
| Matching sound | 97, 104 |
| Interpreting a definition | 98, 99, 102 |
| Recognition of common word root | — |
| Guide words | 103 |
| Recognition of vowel diphthong | — |
| Syllabic division | — |
| **PART E: SENTENCE SENSE** | |
| One complete sentence | 108, 111, 116, 118, 122 |
| Run-together sentences | 107, 110, 115, 117, 120 |
| Sentence fragments | 105, 106, 109, 112, 113, 114, 119, 120, 121 |
| **ARITHMETIC COMPUTATION TEST — 39 ITEMS** | |
| Whole Numbers | |
| Addition | 1, 4, 6, 8, 13, 15, 16 |
| Subtraction | 2, 7, 9, 11, 19, 20, 25 |
| Multiplication | 3, 5, 10, 14, 24, 32, 35, 37, 39 |
| Division | 12, 18, 21, 27, 28, 29, 30, 31, 32, 33, 34 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — INTERMEDIATE I BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|

### ARITHMETIC COMPUTATION TEST — 39 ITEMS *(continued)*

| | |
|---|---|
| **Fraction (including mixed numbers)** | |
| Finding fraction of a whole number | 22, 23, 26, 38 |
| Money and Decimal | 17, 36 |

### ARITHMETIC CONCEPTS TEST — 32 ITEMS

| | |
|---|---|
| Place value | 1, 6, 10, 23 |
| Roman numeral | 2, 9 |
| Vocabulary | 3, 7 |
| Reading numerals | 16, 20 |
| Size of number | 14, 17, 21 |
| Time (A.M. thru P.M.) | 13 |
| Fraction concepts | 4, 12, 14, 15, 19, 21, 28 |
| Number sentence | 5, 11 |
| Extending number series | 8, 18 |
| Operational relationship | 22, 24, 26, 29 |
| Percent | 25 |
| Average | 30 |
| Directional number | 31 |
| Reasoning | 32 |
| Estimation | 27 |

### ARITHMETIC APPLICATIONS TEST — 33 ITEMS

| | |
|---|---|
| Addition problems (finding total) | 1, 5, 27 |
| Subtraction problems (find difference, how many left, how many more are needed) | 2, 3, 4, 15, 18 |
| Multiplication problems (including problem to find total with known average and N) | 20, 24, 27 |
| Division problems | 6, 19 |
| Fraction problems | 21, 22, 26 |
| Finding average | 13, 29 |
| Money | 1, 5, 14, 15, 16, 17, 18, 24, 25, 27, 28, 30 |
| Measurement | 6, 11, 12, 24 |
| Ratio problems | 11, 23, 25, 30 |
| Reading graph | 7, 8, 9, 10 |
| Two-step problems | 5, 28 |
| Three-step problems | 27 |
| Problem analyses | 31, 32, 33 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — INTERMEDIATE I BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|

### SOCIAL STUDIES
### TEST — 40 ITEMS

**PART A: CONTENT**

| | |
|---|---|
| Economics | 2, 11, 20 |
| Geography | 1, 3, 13, 17, 19, 23, 24 |
| History | 4, 9, 15, 16, 22 |
| Occupations | 6 |
| Industry | 7, 10, 12 |
| Food | 8 |
| Sociology and civics | 14 |
| Communication | 18 |
| Clothing and shelter | 5, 21 |

**PART B: STUDY SKILLS**

| | |
|---|---|
| Reading a bar graph | 25-29 |
| Reading a pictograph | 30-34 |
| Using a globe | 35-39 |
| Reading map and legend | 40-49 |

### SCIENCE TEST — 56 ITEMS

| | |
|---|---|
| Air and weather | 7, 19, 26, 52, 56 |
| Astronomy | 4, 5, 22, 50 |
| Chemistry | 3, 34 |
| Electricity and magnetism | 21, 33 |
| Energy and machines | 11, 20, 45 |
| Light and heat | 2 |
| Sound | — |
| Earth science | 15, 28, 29, 36, 43, 46, 55 |
| Animals | 8, 16, 17, 27, 38, 41, 44, 48, 54 |
| Plants | 14, 39, 40, 42, 44, 51 |
| Conservation | 24 |
| Body, health, food, safety | 10, 12, 18, 35, 49 |
| Science in industry, everday living | 1, 6, 13, 23, 25, 37 |
| Scientific method | 9, 31, 32, 47, 53 |
| Famous scientist | 30 |

## PERCENT OF CORRECT ANSWERS[1] TO STANFORD ACHIEVEMENT TEST ITEMS: STUDENTS IN SCHOOLS AND CLASSES FOR THE HEARING IMPAIRED, SPRING 1969

### ITEM ANALYSIS – INTERMEDIATE I BATTERY – FORM W

### SUB-TESTS

| WORD MEANING | | PARAGRAPH MEANING | | SPELLING | | WORD STUDY SKILLS | | LANGUAGE | | | | ARITHMETIC COMPUTATION | | ARITHMETIC CONCEPTS | | ARITHMETIC APPLICATION | | SOCIAL STUDIES | | SCIENCE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct |
| 1 | 51 | 1 | 59 | 1 | 74 | 1 | 50 | 1 | 55 | 62 | 70 | 1 | 92 | 1 | 35 | 1 | 71 | 1 | 82 | 1 | 79 |
| 2 | 53 | 2 | 29 | 2 | 62 | 2 | 64 | 2 | 50 | 63 | 78 | 2 | 76 | 2 | 42 | 2 | 54 | 2 | 72 | 2 | 73 |
| 3 | 60 | 3 | 13 | 3 | 58 | 3 | 67 | 3 | 62 | 64 | 77 | 3 | 84 | 3 | 74 | 3 | 33 | 3 | 59 | 3 | 60 |
| 4 | 92 | 4 | 31 | 4 | 72 | 4 | 42 | 4 | 58 | 65 | 72 | 4 | 81 | 4 | 40 | 4 | 37 | 4 | 35 | 4 | 50 |
| 5 | 58 | 5 | 16 | 5 | 77 | 5 | 40 | 5 | 54 | 66 | 84 | 5 | 85 | 5 | 63 | 5 | 13 | 5 | 71 | 5 | 57 |
| 6 | 39 | 6 | 37 | 6 | 80 | 6 | 48 | 6 | 49 | 67 | 84 | 6 | 79 | 6 | 43 | 6 | 17 | 6 | 30 | 6 | 55 |
| 7 | 38 | 7 | 25 | 7 | 77 | 7 | 44 | 7 | 62 | 68 | 79 | 7 | 57 | 7 | 21 | 7 | 78 | 7 | 40 | 7 | 43 |
| 8 | 31 | 8 | 61 | 8 | 79 | 8 | 19 | 8 | 50 | 69 | 74 | 8 | 79 | 8 | 41 | 8 | 48 | 8 | 44 | 8 | 25 |
| 9 | 50 | 9 | 45 | 9 | 68 | 9 | 29 | 9 | 52 | 70 | 69 | 9 | 61 | 9 | 42 | 9 | 28 | 9 | 26 | 9 | 48 |
| 10 | 32 | 10 | 47 | 10 | 72 | 10 | 30 | 10 | 50 | 71 | 80 | 10 | 68 | 10 | 50 | 10 | 25 | 10 | 44 | 10 | 17 |
| 11 | 38 | 11 | 44 | 11 | 76 | 11 | 54 | 11 | 61 | 72 | 60 | 11 | 62 | 11 | 46 | 11 | 36 | 11 | 32 | 11 | 54 |
| 12 | 30 | 12 | 38 | 12 | 76 | 12 | 21 | 12 | 62 | 73 | 78 | 12 | 60 | 12 | 39 | 12 | 28 | 12 | 32 | 12 | 50 |
| 13 | 31 | 13 | 28 | 13 | 58 | 13 | 30 | 13 | 82 | 74 | 51 | 13 | 59 | 13 | 65 | 13 | 26 | 13 | 49 | 13 | 63 |
| 14 | 24 | 14 | 33 | 14 | 58 | 14 | 36 | 14 | 31 | 75 | 71 | 14 | 71 | 14 | 40 | 14 | 23 | 14 | 27 | 14 | 67 |
| 15 | 39 | 15 | 40 | 15 | 65 | 15 | 38 | 15 | 35 | 76 | 84 | 15 | 66 | 15 | 21 | 15 | 37 | 15 | 30 | 15 | 43 |
| 16 | 33 | 16 | 58 | 16 | 63 | 16 | 33 | 16 | 24 | 77 | 46 | 16 | 59 | 16 | 43 | 16 | 58 | 16 | 41 | 16 | 52 |
| 17 | 46 | 17 | 45 | 17 | 64 | 17 | 46 | 17 | 32 | 78 | 56 | 17 | 52 | 17 | 33 | 17 | 42 | 17 | 32 | 17 | 61 |
| 18 | 13 | 18 | 30 | 18 | 74 | 18 | 33 | 18 | 26 | 79 | 73 | 18 | 65 | 18 | 43 | 18 | 27 | 18 | 47 | 18 | 56 |
| 19 | 29 | 19 | 69 | 19 | 59 | 19 | 23 | 19 | 34 | 80 | 75 | 19 | 47 | 19 | 42 | 19 | 30 | 19 | 29 | 19 | 52 |
| 20 | 21 | 20 | 34 | 20 | 65 | 20 | 26 | 20 | 27 | 81 | 53 | 20 | 43 | 20 | 42 | 20 | 29 | 20 | 24 | 20 | 39 |
| 21 | 21 | 21 | 23 | 21 | 60 | 21 | 37 | 21 | 56 | 82 | 85 | 21 | 51 | 21 | 25 | 21 | 18 | 21 | 8 | 21 | 51 |
| 22 | 26 | 22 | 39 | 22 | 66 | 22 | 15 | 22 | 30 | 83 | 76 | 22 | 45 | 22 | 15 | 22 | 28 | 22 | 13 | 22 | 55 |
| 23 | 21 | 23 | 21 | 23 | 73 | 23 | 25 | 23 | 28 | 84 | 79 | 23 | 39 | 23 | 35 | 23 | 24 | 23 | 22 | 23 | 27 |
| 24 | 19 | 24 | 34 | 24 | 71 | 24 | 15 | 24 | 25 | 85 | 76 | 24 | 46 | 24 | 22 | 24 | 29 | 24 | 21 | 24 | 37 |
| 25 | 31 | 25 | 42 | 25 | 28 | 25 | 27 | 25 | 74 | 86 | 78 | 25 | 45 | 25 | 26 | 25 | 20 | 25 | 68 | 25 | 48 |
| 26 | 37 | 26 | 14 | 26 | 60 | 26 | 16 | 26 | 44 | 87 | 71 | 26 | 36 | 26 | 31 | 26 | 33 | 26 | 77 | 26 | 42 |
| 27 | 21 | 27 | 21 | 27 | 30 | 27 | 47 | 27 | 34 | 88 | 51 | 27 | 41 | 27 | 38 | 27 | 20 | 27 | 60 | 27 | 56 |
| 28 | 15 | 28 | 64 | 28 | 61 | 28 | 35 | 28 | 9 | 89 | 54 | 28 | 39 | 28 | 20 | 28 | 22 | 28 | 34 | 28 | 41 |
| 29 | 24 | 29 | 35 | 29 | 67 | 29 | 40 | 29 | 22 | 90 | 76 | 29 | 40 | 29 | 43 | 29 | 12 | 29 | 37 | 29 | 38 |
| 30 | 22 | 30 | 26 | 30 | 58 | 30 | 19 | 30 | 35 | 91 | 76 | 30 | 26 | 30 | 17 | 30 | 15 | 30 | 64 | 30 | 30 |
| 31 | 25 | 31 | 44 | 31 | 52 | 31 | 42 | 31 | 30 | 92 | 58 | 31 | 28 | 31 | 16 | 31 | 33 | 31 | 32 | 31 | 28 |
| 32 | 12 | 32 | 54 | 32 | 55 | 32 | 21 | 32 | 30 | 93 | 66 | 32 | 39 | 32 | 23 | 32 | 21 | 32 | 34 | 32 | 25 |
| 33 | 12 | 33 | 28 | 33 | 55 | 33 | 30 | 33 | 23 | 94 | 67 | 33 | 35 | | | 33 | 33 | 33 | 15 | 33 | 35 |
| 34 | 10 | 34 | 56 | 34 | 41 | 34 | 15 | 34 | 27 | 95 | 26 | 34 | 39 | | | | | 34 | 20 | 34 | 28 |
| 35 | 7 | 35 | 30 | 35 | 65 | 35 | 16 | 35 | 19 | 96 | 35 | 35 | 34 | | | | | 35 | 74 | 35 | 42 |
| 36 | 17 | 36 | 29 | 36 | 37 | 36 | 9 | 36 | 24 | 97 | 42 | 36 | 28 | | | | | 36 | 71 | 36 | 18 |
| 37 | 16 | 37 | 33 | 37 | 57 | 37 | 55 | 37 | 14 | 98 | 27 | 37 | 25 | | | | | 37 | 52 | 37 | 24 |
| 38 | 21 | 38 | 24 | 38 | 52 | 38 | 40 | 38 | 29 | 99 | 16 | 38 | 18 | | | | | 38 | 54 | 38 | 22 |
| | | 39 | 36 | 39 | 29 | 39 | 42 | 39 | 61 | 100 | 27 | 39 | 25 | | | | | 39 | 15 | 39 | 30 |
| | | 40 | 30 | 40 | 28 | 40 | 47 | 40 | 76 | 101 | 21 | | | | | | | 40 | 77 | 40 | 45 |
| | | 41 | 30 | 41 | 45 | 41 | 59 | 41 | 38 | 102 | 25 | | | | | | | 41 | 69 | 41 | 28 |
| | | 42 | 34 | 42 | 34 | 42 | 31 | 42 | 43 | 103 | 36 | | | | | | | 42 | 59 | 42 | 26 |
| | | 43 | 9 | 43 | 31 | 43 | 51 | 43 | 33 | 104 | 21 | | | | | | | 43 | 52 | 43 | 16 |
| | | 44 | 33 | 44 | 42 | 44 | 52 | 44 | 29 | 105 | 47 | | | | | | | 44 | 48 | 44 | 23 |
| | | 45 | 16 | 45 | 29 | 45 | 30 | 45 | 67 | 106 | 45 | | | | | | | 45 | 46 | 45 | 53 |
| | | 46 | 16 | 46 | 19 | 46 | 54 | 46 | 37 | 107 | 55 | | | | | | | 46 | 31 | 46 | 30 |
| | | 47 | 31 | 47 | 18 | 47 | 25 | 47 | 30 | 108 | 60 | | | | | | | 47 | 28 | 47 | 12 |
| | | 48 | 27 | 48 | 32 | 48 | 28 | 48 | 34 | 109 | 35 | | | | | | | 48 | 25 | 48 | 20 |
| | | 49 | 25 | 49 | 44 | 49 | 16 | 49 | 37 | 110 | 54 | | | | | | | 49 | 28 | 49 | 18 |
| | | 50 | 17 | 50 | 25 | 50 | 27 | 50 | 15 | 111 | 30 | | | | | | | | | 50 | 18 |
| | | 51 | 33 | | | 51 | 31 | 51 | 81 | 112 | 23 | | | | | | | | | 51 | 27 |
| | | 52 | 19 | | | 52 | 35 | 52 | 37 | 113 | 56 | | | | | | | | | 52 | 24 |
| | | 53 | 43 | | | 53 | 24 | 53 | 72 | 114 | 22 | | | | | | | | | 53 | 11 |
| | | 54 | 20 | | | 54 | 31 | 54 | 31 | 115 | 52 | | | | | | | | | 54 | 20 |
| | | 55 | 10 | | | 55 | 27 | 55 | 36 | 116 | 46 | | | | | | | | | 55 | 29 |
| | | 56 | 18 | | | 56 | 31 | 56 | 46 | 117 | 40 | | | | | | | | | 56 | 17 |
| | | 57 | 18 | | | 57 | 15 | 57 | 24 | 118 | 48 | | | | | | | | | | |
| | | 58 | 15 | | | 58 | 25 | 58 | 47 | 119 | 30 | | | | | | | | | | |
| | | 59 | 13 | | | 59 | 19 | 59 | 28 | 120 | 44 | | | | | | | | | | |
| | | 60 | 24 | | | 60 | 29 | 60 | 84 | 121 | 38 | | | | | | | | | | |
| | | | | | | 61 | 20 | 61 | 66 | 122 | 44 | | | | | | | | | | |
| *N = 1785 | | *N = 1790 | | *N = 1792 | | *N = 1375 | | *N = 1784 | | | | *N = 1770 | | *N = 1774 | | *N = 1766 | | *N = 1765 | | *N = 1762 | |

*N = The number of students who answered one or more items in each sub-test.

[1]Percent Correct = The number of correct answers to each item or question divided by the total number of students (N) that answered one or more questions in a sub-test.

## INTERMEDIATE II BATTERY – FORM W

The format of the Content Outlines for the Intermediate II battery varies. For the Word Meaning and Paragraph Meaning sub-tests, the outlines are given in text style. Outlines for the Language, Arithmetic Computation, Arithmetic Concepts, Arithmetic Application, Social Studies and Science sub-tests are presented in tabular form. A *Content Outline* for the Spelling sub-test was not prepared.

Summaries of the test responses for this battery follow. These were prepared from the item analysis table which is presented following the *Item Content Outline* for this battery.

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Word Meaning Test - Total* | *25* |
| Nouns | 29 |
| Verbs | 23 |
| Adjectives or Adverbs | 24 |
| *Paragraph Meaning - Total* | *32* |
| Comprehension - Literal | 36 |
| Comprehension - Inferential | 29 |
| Inference | 29 |
| *Spelling - Total* | *49* |
| *Language - Total* | *50* |
| Usage | 42 |
| Punctuation | 53 |
| Capitalization | 70 |
| Dictionary Skills | 30 |
| Sentence Sense | 50 |
| *Arithmetic Computation - Total* | *42* |
| Whole Numbers | 55 |
| Fractions | 27 |
| *Arithmetic Concepts - Total* | *31* |
| *Arithmetic Applications - Total* | *32* |
| *Social Studies - Total* | *40* |
| Content | 37 |
| Study Skills | 44 |
| *Science - Total* | *33* |

## ITEM CONTENT OUTLINE– INTERMEDIATE II BATTERY

The measurement of reading competence is complex inasmuch as the reading function is complex. The function is both cognitive and affective. The mature reader in the affective sense is one who is willing to use reading as a means of receiving information, one who is willing to respond to what he reads, willing to evaluate, interested in organizing, and one who uses what he reads to establish a set of values.

In the cognitive sense, the mature reader is one who interlines what he reads. He will bring a background of knowledge to his reading and will be more-or-less skilled in comprehending what is read. He will be able to discern what the passage states explicitly and what it implies. He will be more-or-less able to apply what he has read to his own situations and to bring varying content into a synthesis. Judgments will be made by utilizing what he has read and from this a personal course of action will be determined.

The poor reader behaves in the same way, but is able to make little use of the printed medium. Usually he is a poor reader because he has not mastered the skill of decoding, not because of lack of participation in cognitive activities.

It is the position of the authors of the *Stanford Achievement Test* that a reading test must measure the degree of efficiency with the medium and also the cognitive behavior of the reader when the medium is in use.

Efficiency in decoding is an early concern. It is a primary objective of education in the early grades. Its measurement has been described earlier in the analyses of the Primary I and Primary II reading tests. As the medium becomes mastered, the emphasis in the evaluation of the ability to read gradually shifts to the measurement of word meaning and paragraph meaning.

A test of word meaning is a measure of the *knowledge* which is required in the thinking process. Its domain may be general or it may be highly specific for different people. A test of paragraph meaning has different objectives since, in teaching pupils to understand the paragraph, the process is often broken into parts for effective teaching, such as finding the central idea, reading for details, and drawing inferences. These parts are, however, ancillary to the main purpose of reading, namely, to internalize the discourse; that is, analysis must lead to assimilation.

### Word Meaning Test

The Word Meaning Test of the Intermediate II level is designed to measure a pupil's general know-

ledge on the assumption that mastery of vocabulary is a suitable index for this purpose. The items were administered in a tryout edition and through resulting analysis were graduated from easy to difficult. The degree of difficulty was, therefore, determined by the pupils themselves. Following is the item content analysis:

| Part of Speech | Category and Item |
|---|---|
| Noun | Science<br>6,9,27,38<br>Social Studies<br>5,8,22,48<br>Social Science<br>7,11,13,20<br>Geometry<br>15<br>Humanities<br>23<br>General Information<br>35 |
| Verb | 1,4,14,25,26,29,32,33,34,<br>39,44 |
| Adjective or Adverb | 2,3,10,12,16,17,18,19,21,<br>24,28,30,31,36,37,40,41,<br>42,43,45,46,47 |

**Paragraph Meaning Test**

The format of the Paragraph Meaning Test was designed to measure outcomes of the process of assimilation of discourse; in modern parlance – internalization.

An examination will show that the key words used in the Word Meaning Test are considerably more difficult than are the key words in the Paragraph Meaning Test. The aim here is to develop a functional paragraph meaning test without requiring that a high vocabulary level be brought to the task of understanding the paragraph. The correct options for Intermediate II, Form W contain fifteen items which are either proper names or are explained in the context of the paragraph. Of the remaining forty-nine items, thirty-six are classified by the Lorge-Thorndike Word List as falling in the reading level for grades 1-3, nine for grade 4, two for grades 5 and 6, and two for grades 7 and 8. Only thirty-five of these sixty-four items are required for a score of grade 6.1. It appears obvious that success with the Paragraph Meaning Test does not depend as much upon word knowledge which a pupil brings to the testing situation, as upon his ability to understand the structure of the paragraph and to organize it in his own thought pattern.

Although it is very difficult to classify items in terms of subject matter content, a rough classification of the Intermediate II Paragraph Meaning Test shows eight general items, seven in the social sciences, fifteen in the physical sciences, eleven in the humanities, thirteen in what might be called life science (although some of them might be classified as knowledge of environment), and the remaining ten concern geographical descriptions of two countries and could be classified as social sciences, natural sciences, or general. This broad range of content was included so that a pupil cannot do well simply because the test is heavily loaded with items which relate to an area in which he has done concentrated reading.

Following is the item content analysis:

| Classification | Item |
|---|---|
| Comprehension-literal | 3,4,5,6,8,9,10,11, 13,<br>14,15,16,21,22,24, 26,<br>28,34,42,44,47,49, 54,<br>57,59,61 |
| Comprehension-inferential | 1,2,7,20,23,25, 27, 29,<br>31,32,35,39,45,48, 50,<br>52,55,60,62,63,64 |
| Inference | 12,17,18,19,30,33,36,<br>37,38,40,41,43,46,51,<br>53,56,58 |

## ITEM CONTENT OUTLINE

## STANFORD ACHIEVEMENT TEST — INTERMEDIATE II BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE TEST — 134 ITEMS** | |
| **PART A: USAGE** | |
| **Verb** | |
| Irregular verb forms | 1, 5, 6, 8, 11, 12, 15, 22, 35 |
| Tenses | 2, 7, 13, 14, 17, 28, 31 |
| Agreement with subjects | 33, 34 |
| Word choice involving verbs | 18, 19, 20, 30 |
| Subjunctive mood | 32 |
| **Pronoun** | |
| Nominative case | — |
| Objective case | 3, 21, 23, 27, 38 |
| Possessive pronouns | — |
| Correct forms of pronouns | 9, 10 |
| **Miscellaneous** | |
| Adjective: comparative, superlative forms | 36, 37 |
| Word choice | 4 |
| Double negative | 24 |
| Article | 16 |
| Substandard corruption forms | 25, 26, 29 |
| **PART B: PUNCTUATION** | |
| Comma | 39, 41, 47, 49, 53, 54, 56 |
| Quotation mark | 40, 50 |
| Question mark | 40, 46, 48 |
| Period | 43, 51 |
| Exclamation mark | 45 |
| No punctuation | 42, 44, 52, 55 |
| **PART C: CAPITALIZATION** | |
| Capital letter cases | 59, 62, 63, 66, 67, 69, 70, 71, 75, 76, 80, 81, 83, 86, 87, 89, 90, 92 |
| Small letter cases | 57, 58, 60, 61, 64, 65, 68, 72, 73, 74, 77, 78, 79, 82, 84, 85, 88, 91 |
| **PART D: DICTIONARY SKILLS** | |
| Choice of meaning | 93, 94, 97, 98, 101, 102, 105, 106 |
| Recognition of root word | 95 |
| Guide words | — |
| Accent mark | 99, 114 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — INTERMEDIATE II BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE – 134 ITEMS *(continued)*** | |
| Part of speech | 108 |
| Spelling | – |
| Colloquialism | – |
| Syllabication | – |
| Pronunciation | 109, 116 |
| Interpreting a definition | 96, 103, 107 |
| Matching sounds in words | 110, 111, 113, 115 |
| Antonym | 100, 104 |
| Silent letter | 112 |
| **PART E: SENTENCE SENSE** | |
| One complete sentence | 117, 121, 123, 124, 132, 134 |
| Run-together sentences | 120, 126, 127, 128, 133 |
| Sentence fragment | 118, 119, 122, 125, 129, 130, 131 |
| **ARITHMETIC COMPUTATION TEST – 39 ITEMS** | |
| Whole numbers | |
| Addition | 2, 4, 11, 12 |
| Subtraction | 5, 6, 10 |
| Multiplication | 7, 8, 14, 20 |
| Division | 1, 9, 13, 15, 18, 19, 21, 38 |
| Denominate numbers | |
| Addition | 27 |
| Subtraction | – |
| Multiplication | 35 |
| Money and decimals | |
| Subtraction | 3 |
| Multiplication | 25, 28, 34 |
| Division | 33, 36 |
| Fractions (including mixed numbers) | |
| Addition | 16, 22 |
| Subtraction | 23, 29 |
| Multiplication | 24, 26, 35 |
| Division | 30, 32 |
| Average | 17, 31 |
| Percent | 37, 39 |

## ITEM CONTENT OUTLINE

## STANFORD ACHIEVEMENT TEST — INTERMEDIATE II BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **ARITHMETIC CONCEPTS TEST – 32 ITEMS** | |
| Reading numerals | 3 |
| Place value | 5, 12, 14, 16 |
| Number property and operational relationship | 18, 25 |
| Vocabulary | — |
| Time | 20 |
| Fractions | 2, 6, 15, 17, 19, 23, 27 |
| Average | 7 |
| Set | 1 |
| Reasoning in number series | 13 |
| Rounding | 22, 26 |
| Number sentence | 8, 9, 11 |
| Roman numeral | 21 |
| Prime number (divisibility) | 29 |
| Geometry | 10 |
| Percent | 24, 30 |
| Estimation | 4, 31, 32 |
| Directed number | 28 |
| **ARITHMETIC APPLICATIONS TEST – 39 ITEMS** | |
| Rate problems (including ratio in ordered pairs) | 2, 19, 23, 24 |
| Problem analysis | 15, 17, 37 |
| Finding total | 3, 6, 7, 9, 21 |
| Finding difference | 8, 10, 27 |
| Money | 2, 3, 5, 6, 7, 8, 9, 25, 26, 27, 28, 29, 33, 36 |
| Division problems | 26 |
| Fractions | 11, 22, 25 |
| Average | 1 |
| Measurement | 4, 10, 20, 38, 39 |
| Percent | 16, 21, 35 |
| Reading graph and table | 12, 13, 14, 30, 31, 32 |
| Mathematical sentence | 34 |
| Two-step problems | 5, 18, 20, 27, 28, 33 |
| Three-step problems | 3, 6, 9, 29 |
| Sales tax | 28, 36 |

## ITEM CONTENT OUTLINE

## STANFORD ACHIEVEMENT TEST — INTERMEDIATE II BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **SOCIAL STUDIES TEST — 74 ITEMS** | |
| **PART A: CONTENT** | |
| Economics | 18, 25, 37 |
| Industry | 3, 6, 9, 11, 14, 23, 27, 39 |
| Geography | 7, 10, 13, 16, 24, 28, 31, 32, 34, 35, 38, 42, 43, 44, 45 |
| History | 2, 4, 8, 15, 20, 26, 29, 30, 33, 40, 41 |
| Sociology and civics | 1, 5, 12, 17, 19, 21, 22, 25, 36 |
| **PART B: STUDY SKILLS** | |
| Reading a table | 46-50 |
| Reading line graph | 51-55 |
| Reading poster | 56-59 |
| Reading map and legend | 60-74 |
| **SCIENCE TEST — 58 ITEMS** | |
| Air and weather | 9, 32, 46, 53, 58 |
| Astronomy | 30, 39, 43, 54 |
| Chemistry | 16, 20, 23 |
| Electricity and magnetism | 14, 34, 37 |
| Energy and machines | 12, 17 |
| Sound | 40 |
| Earth science | 31, 44, 48, 55 |
| Animals | 3, 18, 22, 29, 41, 51 |
| Plants | 15, 19, 21, 24, 52, 56 |
| Conservation | 10, 11 |
| Body, health, food, safety | 2, 5, 8, 13, 27, 28, 42, 45, 49, 50, 57 |
| Scientific method | 1, 7, 25, 33, 35, 36 |
| Light and heat | 47 |
| Science in industry, everyday living | 4, 6, 26 |
| Famous scientist | 38 |

## PERCENT OF CORRECT ANSWERS[1] TO STANFORD ACHIEVEMENT TEST ITEMS: STUDENTS IN SCHOOLS AND CLASSES FOR THE HEARING IMPAIRED, SPRING 1969

### ITEM ANALYSIS -- INTERMEDIATE II BATTERY -- FORM W

### SUB-TESTS

| WORD MEANING | | PARAGRAPH MEANING | | SPELLING | | LANGUAGE | | | | ARITHMETIC COMPUTATION | | ARITHMETIC CONCEPTS | | ARITHMETIC APPLICATION | | SOCIAL STUDIES | | SCIENCE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct |
| 1 | 35 | 1 | 37 | 1 | 47 | 1 | 72 | 75 | 84 | 1 | 69 | 1 | 39 | 1 | 47 | 1 | 70 | 1 | 37 |
| 2 | 43 | 2 | 17 | 2 | 85 | 2 | 41 | 76 | 79 | 2 | 69 | 2 | 38 | 2 | 39 | 2 | 61 | 2 | 48 |
| 3 | 45 | 3 | 27 | 3 | 79 | 3 | 77 | 77 | 67 | 3 | 64 | 3 | 55 | 3 | 48 | 3 | 38 | 3 | 51 |
| 4 | 37 | 4 | 73 | 4 | 85 | 4 | 52 | 78 | 79 | 4 | 73 | 4 | 61 | 4 | 24 | 4 | 44 | 4 | 38 |
| 5 | 42 | 5 | 66 | 5 | 86 | 5 | 49 | 79 | 80 | 5 | 63 | 5 | 24 | 5 | 50 | 5 | 55 | 5 | 49 |
| 6 | 64 | 6 | 51 | 6 | 81 | 6 | 56 | 80 | 85 | 6 | 67 | 6 | 32 | 6 | 45 | 6 | 50 | 6 | 54 |
| 7 | 28 | 7 | 36 | 7 | 79 | 7 | 32 | 81 | 75 | 7 | 64 | 7 | 28 | 7 | 44 | 7 | 79 | 7 | 59 |
| 8 | 43 | 8 | 22 | 8 | 62 | 8 | 54 | 82 | 49 | 8 | 62 | 8 | 56 | 8 | 36 | 8 | 52 | 8 | 64 |
| 9 | 42 | 9 | 46 | 9 | 72 | 9 | 26 | 83 | 83 | 9 | 48 | 9 | 49 | 9 | 33 | 9 | 51 | 9 | 60 |
| 10 | 46 | 10 | 51 | 10 | 63 | 10 | 79 | 84 | 43 | 10 | 63 | 10 | 44 | 10 | 46 | 10 | 71 | 10 | 37 |
| 11 | 21 | 11 | 45 | 11 | 67 | 11 | 57 | 85 | 55 | 11 | 68 | 11 | 58 | 11 | 31 | 11 | 57 | 11 | 38 |
| 12 | 28 | 12 | 24 | 12 | 67 | 12 | 65 | 86 | 82 | 12 | 69 | 12 | 25 | 12 | 17 | 12 | 46 | 12 | 62 |
| 13 | 25 | 13 | 50 | 13 | 55 | 13 | 29 | 87 | 79 | 13 | 56 | 13 | 35 | 13 | 60 | 13 | 31 | 13 | 27 |
| 14 | 30 | 14 | 35 | 14 | 63 | 14 | 32 | 88 | 77 | 14 | 58 | 14 | 29 | 14 | 43 | 14 | 36 | 14 | 55 |
| 15 | 43 | 15 | 38 | 15 | 73 | 15 | 63 | 89 | 85 | 15 | 52 | 15 | 28 | 15 | 31 | 15 | 25 | 15 | 42 |
| 16 | 30 | 16 | 45 | 16 | 77 | 16 | 77 | 90 | 85 | 16 | 34 | 16 | 48 | 16 | 33 | 16 | 39 | 16 | 46 |
| 17 | 22 | 17 | 32 | 17 | 62 | 17 | 58 | 91 | 70 | 17 | 31 | 17 | 30 | 17 | 38 | 17 | 40 | 17 | 35 |
| 18 | 38 | 18 | 54 | 18 | 58 | 18 | 32 | 92 | 44 | 18 | 38 | 18 | 29 | 18 | 29 | 18 | 21 | 18 | 26 |
| 19 | 18 | 19 | 30 | 19 | 71 | 19 | 39 | 93 | 61 | 19 | 37 | 19 | 36 | 19 | 25 | 19 | 13 | 19 | 29 |
| 20 | 18 | 20 | 40 | 20 | 49 | 20 | 22 | 94 | 36 | 20 | 46 | 20 | 32 | 20 | 12 | 20 | 21 | 20 | 36 |
| 21 | 34 | 21 | 34 | 21 | 50 | 21 | 51 | 95 | 29 | 21 | 33 | 21 | 24 | 21 | 31 | 21 | 31 | 21 | 37 |
| 22 | 25 | 22 | 49 | 22 | 38 | 22 | 35 | 96 | 35 | 22 | 42 | 22 | 29 | 22 | 36 | 22 | 38 | 22 | 25 |
| 23 | 23 | 23 | 34 | 23 | 58 | 23 | 55 | 97 | 33 | 23 | 42 | 23 | 17 | 23 | 27 | 23 | 41 | 23 | 27 |
| 24 | 34 | 24 | 32 | 24 | 68 | 24 | 43 | 98 | 19 | 24 | 34 | 24 | 10 | 24 | 24 | 24 | 54 | 24 | 24 |
| 25 | 24 | 25 | 38 | 25 | 45 | 25 | 17 | 99 | 25 | 25 | 63 | 25 | 18 | 25 | 34 | 25 | 48 | 25 | 26 |
| 26 | 21 | 26 | 27 | 26 | 41 | 26 | 40 | 100 | 29 | 26 | 33 | 26 | 17 | 26 | 38 | 26 | 32 | 26 | 38 |
| 27 | 30 | 27 | 27 | 27 | 53 | 27 | 48 | 101 | 38 | 27 | 22 | 27 | 7 | 27 | 24 | 27 | 41 | 27 | 31 |
| 28 | 25 | 28 | 25 | 28 | 40 | 28 | 25 | 102 | 21 | 28 | 42 | 28 | 28 | 28 | 22 | 28 | 34 | 28 | 25 |
| 29 | 12 | 29 | 23 | 29 | 25 | 29 | 33 | 103 | 24 | 29 | 26 | 29 | 16 | 29 | 18 | 29 | 30 | 29 | 36 |
| 30 | 18 | 30 | 14 | 30 | 47 | 30 | 25 | 104 | 27 | 30 | 28 | 30 | 15 | 30 | 31 | 30 | 19 | 30 | 31 |
| 31 | 19 | 31 | 39 | 31 | 46 | 31 | 17 | 105 | 25 | 31 | 23 | 31 | 24 | 31 | 33 | 31 | 30 | 31 | 24 |
| 32 | 29 | 32 | 36 | 32 | 48 | 32 | 24 | 106 | 21 | 32 | 27 | 32 | 15 | 32 | 24 | 32 | 33 | 32 | 25 |
| 33 | 13 | 33 | 32 | 33 | 59 | 33 | 28 | 107 | 23 | 33 | 26 | | | 33 | 12 | 33 | 32 | 33 | 25 |
| 34 | 22 | 34 | 35 | 34 | 26 | 34 | 26 | 108 | 31 | 34 | 25 | | | 34 | 43 | 34 | 40 | 34 | 48 |
| 35 | 18 | 35 | 20 | 35 | 52 | 35 | 23 | 109 | 36 | 35 | 14 | | | 35 | 14 | 35 | 40 | 35 | 36 |
| 36 | 14 | 36 | 28 | 36 | 46 | 36 | 22 | 110 | 45 | 36 | 9 | | | 36 | 31 | 36 | 24 | 36 | 23 |
| 37 | 14 | 37 | 43 | 37 | 39 | 37 | 41 | 111 | 29 | 37 | 14 | | | 37 | 22 | 37 | 26 | 37 | 19 |
| 38 | 14 | 38 | 31 | 38 | 28 | 38 | 16 | 112 | 16 | 38 | 11 | | | 38 | 9 | 38 | 23 | 38 | 27 |
| 39 | 14 | 39 | 41 | 39 | 30 | 39 | 71 | 113 | 20 | 39 | 7 | | | 39 | 25 | 39 | 23 | 39 | 23 |
| 40 | 11 | 40 | 40 | 40 | 36 | 40 | 43 | 114 | 34 | | | | | | | 40 | 22 | 40 | 27 |
| 41 | 14 | 41 | 40 | 41 | 47 | 41 | 35 | 115 | 35 | | | | | | | 41 | 23 | 41 | 25 |
| 42 | 21 | 42 | 29 | 42 | 40 | 42 | 45 | 116 | 21 | | | | | | | 42 | 17 | 42 | 17 |
| 43 | 15 | 43 | 14 | 43 | 33 | 43 | 55 | 117 | 80 | | | | | | | 43 | 19 | 43 | 29 |
| 44 | 15 | 44 | 25 | 44 | 35 | 44 | 45 | 118 | 38 | | | | | | | 44 | 10 | 44 | 22 |
| 45 | 10 | 45 | 29 | 45 | 27 | 45 | 63 | 119 | 53 | | | | | | | 45 | 10 | 45 | 31 |
| 46 | 13 | 46 | 17 | 46 | 24 | 46 | 70 | 120 | 67 | | | | | | | 46 | 71 | 46 | 31 |
| 47 | 11 | 47 | 17 | 47 | 39 | 47 | 63 | 121 | 70 | | | | | | | 47 | 69 | 47 | 27 |
| 48 | 6 | 48 | 20 | 48 | 35 | 48 | 32 | 122 | 48 | | | | | | | 48 | 55 | 48 | 19 |
| | | 49 | 37 | 49 | 37 | 49 | 61 | 123 | 42 | | | | | | | 49 | 34 | 49 | 23 |
| | | 50 | 44 | 50 | 23 | 50 | 65 | 124 | 71 | | | | | | | 50 | 33 | 50 | 30 |
| | | 51 | 23 | 51 | 23 | 51 | 43 | 125 | 23 | | | | | | | 51 | 52 | 51 | 36 |
| | | 52 | 33 | 52 | 23 | 52 | 71 | 126 | 53 | | | | | | | 52 | 64 | 52 | 24 |
| | | 53 | 24 | 53 | 23 | 53 | 60 | 127 | 39 | | | | | | | 53 | 19 | 53 | 16 |
| | | 54 | 29 | 54 | 16 | 54 | 42 | 128 | 60 | | | | | | | 54 | 33 | 54 | 22 |
| | | 55 | 16 | 55 | 21 | 55 | 70 | 129 | 21 | | | | | | | 55 | 31 | 55 | 12 |
| | | 56 | 15 | 56 | 31 | 56 | 27 | 130 | 60 | | | | | | | 56 | 50 | 56 | 19 |
| | | 57 | 14 | | | 57 | 49 | 131 | 39 | | | | | | | 57 | 40 | 57 | 23 |
| | | 58 | 32 | | | 58 | 47 | 132 | 64 | | | | | | | 58 | 29 | 58 | 14 |
| | | 59 | 23 | | | 59 | 82 | 133 | 49 | | | | | | | 59 | 35 | | |
| | | 60 | 33 | | | 60 | 57 | 134 | 26 | | | | | | | 60 | 61 | | |
| | | 61 | 21 | | | 61 | 61 | | | | | | | | | 61 | 59 | | |
| | | 62 | 15 | | | 62 | 86 | | | | | | | | | 62 | 67 | | |
| | | 63 | 19 | | | 63 | 82 | | | | | | | | | 63 | 50 | | |
| | | 64 | 22 | | | 64 | 78 | | | | | | | | | 64 | 52 | | |
| | | | | | | 65 | 76 | | | | | | | | | 65 | 41 | | |
| | | | | | | 66 | 73 | | | | | | | | | 66 | 50 | | |
| | | | | | | 67 | 73 | | | | | | | | | 67 | 52 | | |
| | | | | | | 68 | 82 | | | | | | | | | 68 | 56 | | |
| | | | | | | 69 | 89 | | | | | | | | | 69 | 29 | | |
| | | | | | | 70 | 89 | | | | | | | | | 70 | 42 | | |
| | | | | | | 71 | 82 | | | | | | | | | 71 | 35 | | |
| | | | | | | 72 | 32 | | | | | | | | | 72 | 30 | | |
| | | | | | | 73 | 82 | | | | | | | | | 73 | 21 | | |
| | | | | | | 74 | 13 | | | | | | | | | 74 | 19 | | |
| *N = 1710 | | *N = 1713 | | *N = 1713 | | *N = 1714 | | | | *N = 1707 | | *N = 1695 | | *N = 1688 | | *N = 1685 | | *N = 1684 | |

*N = The number of students who answered one or more items in each sub-test.

[1]Percent Correct = The number of correct answers to each item or question divided by the total number of students (N) that answered one or more questions in a sub-test.

## ADVANCED BATTERY – FORM W

For the Advanced battery, the Content Outlines are presented in tabular form. No item content breakdowns were available for the Paragraph Meaning and the Spelling sub-tests. The Outlines are given for all the other sub-tests in this battery. It will be noted that the content analyses are presented in greater detail for the sub-tests in this battery than for the sub-tests in the lower level batteries.

The Item Analysis Table for the Advanced battery appears immediately following the *Item Content Outline.*

Summaries of the percent of correct answers to the questions in major sections of this battery follow.

| TOPIC MEASURED | PERCENT OF CORRECT ANSWERS |
|---|---|
| *Paragraph Meaning - Total* | *34* |
| *Spelling - Total* | *47* |
| *Language - Total* | *53* |
| Usage | 38 |
| Punctuation | 47 |
| Capitalization | 78 |
| Dictionary Skills | 36 |
| Sentence Sense | 49 |
| *Arithmetic Computations - Total* | *44* |
| Whole Numbers | 56 |
| Fractions | 36 |
| *Arithmetic Concepts - Total* | *38* |
| *Arithmetic Applications - Total* | *29* |
| *Social Studies - Total* | *35* |
| Content | 33 |
| Study Skills | 38 |
| *Science - Total* | *38* |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — ADVANCED BATTERY

**Topic Measured** — **Item Numbers Form W**

### LANGUAGE TEST – 145 ITEMS

#### PART A: USAGE

**Verb**

| | |
|---|---|
| Irregular verb forms | 2, 3, 7, 24, 28, 31 |
| Tenses | 6, 11, 14, 21, 22 |
| Agreement with subjects | 1, 27, 36 |
| Word choice involving verbs | 10, 16, 17, 18, 25, 38 |
| Correct form of subjunctive mood | – |

**Pronoun**

| | |
|---|---|
| Nominative case | 33 |
| Objective case | 9, 12, 13, 19, 37 |
| Possessive pronouns | 8, 23 |
| Agreement with subject | – |

**Miscellaneous**

| | |
|---|---|
| Adjective – comparative, superlative forms | 30 |
| Word choice | 5, 20, 29 |
| Double negative | 26 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — ADVANCED BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE TEST — 145 ITEMS *(Continued)*** | |
| Idiomatic use of preposition | 4 |
| Substandard corruption forms | 34, 35 |
| Spelling | 15, 32, 38 |
| **PART B: PUNCTUATION** | |
| Comma | 39, 40, 41, 42, 43, 46, 50, 53, 54 |
| Colon | — |
| Quotation marks | 47, 49, 52, 55, 57, 58 |
| Period | 48 |
| Punctuation optional | 51, 56 |
| No punctuation needed | 44, 45 |
| **PART C: CAPITALIZATION** | |
| Capital letter cases | |
| Geographical items | 59 |
| Organization, institution | 61, 62, 71, 73, 82, 83, 86, 87,88,89,94 |
| Members of national, political, racial, regional, or religious groups | 96, 97, 98 |
| Name, title of a person | 69, 90 |
| Title of composition, newspaper | 91, 100, 101 |
| Specific streets, buildings | 77, 78, 81 |
| Calendar items, special events | 65, 66 |
| First word of a sentence | 102 |
| Small letter cases | 60, 63, 64, 67, 68, 70, 72, 74, 75, 76, 79, 80, 84, 85, 92, 93, 95, 99, 103 |
| **PART D: DICTIONARY SKILLS** | |
| Choice of meaning | 104, 105, 108, 109, 112, 113, 116, 117, 119 |
| Recognition of root word | 106 |
| Guide words | 107, 111 |
| Accent mark | 110, 115 |
| Part of speech | 114 |
| Spelling | 118 |
| Syllabication | — |
| Pronunciation | 120, 121, 122, 123, 124, 125, 126, 127 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — ADVANCED BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **LANGUAGE TEST — 145 ITEMS *(Continued)*** | |
| **PART E: SENTENCE SENSE** | |
| One complete sentence | 130, 134, 140, 145 |
| Run-together sentences | 131, 133, 136, 138, 141, 142, 144 |
| Sentence fragment | 128, 129, 132, 135, 137, 139, 143 |
| **ARITHMETIC COMPUTATION TEST — 41 ITEMS** | |
| Whole numbers | |
| Addition | 11, 17 |
| Subtraction | 2, 7 |
| Multiplication | 6, 16, 18 |
| Division | 1, 3, 29 |
| Directed numbers | 34, 37 |
| Decimals and money (including mixed numbers) | |
| Addition | 13 |
| Subtraction | — |
| Multiplication | 15, 23 |
| Division | 5, 8, 25, 27 |
| Fractions (including mixed numbers) | |
| Addition | 4, 14 |
| Subtraction | 9, 19 |
| Multiplication | 10, 21 |
| Division | 12 |
| Directed numbers | 39 |
| Equations | 22, 28, 30, 31, 36, 38, 40 |
| Root, exponent | 41 |
| Percents | 20, 24, 26, 32, 33, 35 |
| Rounding | 13, 15, 23 |
| **ARITHMETIC CONCEPTS TEST — 40 ITEMS** | |
| Rounding | 2, 8 |
| Fraction concepts | 1, 6, 14, 31 |
| Roman numerals | 3 |
| Non-decimal numbers | 38, 40 |
| Formula | 12, 35 |

## ITEM CONTENT OUTLINE

## STANFORD ACHIEVEMENT TEST — ADVANCED BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|
| **ARITHMETIC CONCEPTS TEST—40 ITEMS** *(Continued)* | |
| Percents | 11, 24 |
| Equation | 4, 21, 35 |
| Directed number | 19 |
| Roots and powers | 17, 18, 39 |
| Estimation | 9, 26, 32 |
| Number property and operational relationship | 5, 7, 10, 13, 15, 16, 23, 25, 28, 29, 30, 36 |
| Probability | — |
| Measurement | 20 |
| Prime number | 37 |
| Set | 33, 34 |
| Number series | 22 |
| Vocabularly | 27 |
| **ARITHMETIC APPLICATIONS TEST — 36 ITEMS** | |
| Measurement | 2, 11, 17, 19 |
| Rate, proportion, ordered pairs | 1, 12, 13, 18, 29, 31 |
| Reading & operating with information on graphs and tables | 3, 4, 5, 6, 7, 8, 9, 10, 26, 27, 28 |
| Multiplication problems | — |
| Division problems | 14 |
| Fraction problems | — |
| Problem analyses | 15, 16, 21 |
| Statistics (average, median, probability) | 35 |
| Geometry | 30, 32, 36 |
| Logical reasoning | 34 |
| Interest, commission, discount | 23, 24, 25, 33 |
| Multiple-step problems | 20, 22 |
| **SOCIAL STUDIES TEST — 92 ITEMS** | |
| **PART A: CONTENT** | |
| Economics, industry | 8, 15, 21, 22, 31, 41, 43, 49 |
| Geography | 4, 16, 17, 20, 23, 24, 25, 42, 47, 48 |
| History | 2, 6, 11, 18, 29, 32, 35, 36, 40, 46 |

## ITEM CONTENT OUTLINE
## STANFORD ACHIEVEMENT TEST — ADVANCED BATTERY

| Topic Measured | Item Numbers Form W |
|---|---|

### SOCIAL STUDIES
### TEST – 92 ITEMS *(Continued)*

| | |
|---|---|
| Civics, government, and democracy | 5, 7, 9, 12, 13, 19, 27, 28, 30, 33, 45, 50, 51, 52 |
| Vocation | 10 |
| Sociology; social organization and social relationship | 1, 3, 14, 26, 34, 37, 38, 39, 44 |

**PART B: STUDY SKILLS**

| | |
|---|---|
| Reading and using the information on | |
| double bar or line graph | 53-58 |
| globe | 77-87 |
| political poster | 88-92 |
| library card | 71-76 |
| bibliography | 65-70 |
| Using references | 59-64 |

### SCIENCE TEST — 60 ITEMS

| | |
|---|---|
| Air and weather | 23, 30, 50 |
| Astronomy | 18, 41, 43, 60 |
| Chemistry | 9, 19 |
| Electricity and magnetism | 4, 8, 23, 34, 46 |
| Energy and machines | 6, 7, 49, 51, 58 |
| Light and heat | 36, 42, 54 |
| Sound | 27 |
| Earth science | 11, 16, 29, 38, 39, 40, 48, 52, 59 |
| Animals | 12, 13, 21, 22, 32, 33, 45 |
| Plants | 1, 13, 22, 24, 35, 37, 44, 47, 56 |
| Conservation | 2, 5 |
| Body, health, food, safety | 10, 15, 20, 25, 26, 31, 53, 55, 57 |
| Science in industry, everyday living | 17 |
| Scientific method | 3, 14, 28, 46 |

## PERCENT OF CORRECT ANSWERS[1] TO STANFORD ACHIEVEMENT TEST ITEMS: STUDENTS IN SCHOOLS AND CLASSES FOR THE HEARING IMPAIRED, SPRING 1969

### ITEM ANALYSIS -- ADVANCED BATTERY -- FORM W

### SUB-TESTS

| PARAGRAPH MEANING | | SPELLING | | LANGUAGE | | | | ARITHMETIC COMPUTATION | | ARITHMETIC CONCEPTS | | ARITHMETIC APPLICATION | | SOCIAL STUDIES | | | | SCIENCE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct | Item Number | Percent Correct |
| 1 | 40 | 1 | 83 | 1 | 66 | 73 | 85 | 1 | 57 | 1 | 59 | 1 | 49 | 1 | 59 | 73 | 22 | 1 | 79 |
| 2 | 37 | 2 | 63 | 2 | 74 | 74 | 79 | 2 | 74 | 2 | 42 | 2 | 53 | 2 | 53 | 74 | 31 | 2 | 51 |
| 3 | 44 | 3 | 86 | 3 | 74 | 75 | 67 | 3 | 75 | 3 | 61 | 3 | 21 | 3 | 24 | 75 | 20 | 3 | 70 |
| 4 | 61 | 4 | 75 | 4 | 56 | 76 | 71 | 4 | 54 | 4 | 71 | 4 | 44 | 4 | 35 | 76 | 55 | 4 | 65 |
| 5 | 50 | 5 | 84 | 5 | 32 | 77 | 62 | 5 | 63 | 5 | 52 | 5 | 36 | 5 | 46 | 77 | 75 | 5 | 59 |
| 6 | 29 | 6 | 69 | 6 | 42 | 78 | 78 | 6 | 58 | 6 | 39 | 6 | 38 | 6 | 33 | 78 | 47 | 6 | 50 |
| 7 | 59 | 7 | 52 | 7 | 56 | 79 | 90 | 7 | 67 | 7 | 52 | 7 | 35 | 7 | 41 | 79 | 69 | 7 | 70 |
| 8 | 47 | 8 | 52 | 8 | 55 | 80 | 79 | 8 | 77 | 8 | 31 | 8 | 26 | 8 | 29 | 80 | 57 | 8 | 68 |
| 9 | 65 | 9 | 68 | 9 | 72 | 81 | 81 | 9 | 56 | 9 | 33 | 9 | 73 | 9 | 34 | 81 | 42 | 9 | 48 |
| 10 | 37 | 10 | 69 | 10 | 38 | 82 | 92 | 10 | 61 | 10 | 61 | 10 | 46 | 10 | 44 | 82 | 38 | 10 | 51 |
| 11 | 54 | 11 | 37 | 11 | 31 | 83 | 87 | 11 | 67 | 11 | 28 | 11 | 33 | 11 | 54 | 83 | 39 | 11 | 34 |
| 12 | 37 | 12 | 52 | 12 | 49 | 84 | 87 | 12 | 50 | 12 | 46 | 12 | 30 | 12 | 34 | 84 | 49 | 12 | 37 |
| 13 | 41 | 13 | 47 | 13 | 59 | 85 | 78 | 13 | 25 | 13 | 34 | 13 | 44 | 13 | 39 | 85 | 49 | 13 | 28 |
| 14 | 28 | 14 | 57 | 14 | 44 | 86 | 93 | 14 | 58 | 14 | 29 | 14 | 54 | 14 | 39 | 86 | 33 | 14 | 33 |
| 15 | 17 | 15 | 49 | 15 | 61 | 87 | 94 | 15 | 48 | 15 | 17 | 15 | 36 | 15 | 35 | 87 | 34 | 15 | 42 |
| 16 | 50 | 16 | 48 | 16 | 35 | 88 | 91 | 16 | 57 | 16 | 44 | 16 | 9 | 16 | 43 | 88 | 39 | 16 | 32 |
| 17 | 33 | 17 | 63 | 17 | 42 | 89 | 89 | 17 | 60 | 17 | 30 | 17 | 35 | 17 | 55 | 89 | 21 | 17 | 55 |
| 18 | 34 | 18 | 34 | 18 | 20 | 90 | 64 | 18 | 43 | 18 | 43 | 18 | 33 | 18 | 41 | 90 | 20 | 18 | 45 |
| 19 | 24 | 19 | 56 | 19 | 36 | 91 | 78 | 19 | 41 | 19 | 49 | 19 | 20 | 19 | 40 | 91 | 39 | 19 | 70 |
| 20 | 52 | 20 | 53 | 20 | 21 | 92 | 87 | 20 | 40 | 20 | 55 | 20 | 17 | 20 | 47 | 92 | 24 | 20 | 49 |
| 21 | 34 | 21 | 51 | 21 | 17 | 93 | 73 | 21 | 36 | 21 | 41 | 21 | 35 | 21 | 19 | | | 21 | 44 |
| 22 | 58 | 22 | 55 | 22 | 32 | 94 | 64 | 22 | 43 | 22 | 31 | 22 | 13 | 22 | 21 | | | 22 | 58 |
| 23 | 40 | 23 | 32 | 23 | 56 | 95 | 45 | 23 | 35 | 23 | 37 | 23 | 12 | 23 | 35 | | | 23 | 32 |
| 24 | 50 | 24 | 45 | 24 | 33 | 96 | 85 | 24 | 20 | 24 | 36 | 24 | 17 | 24 | 47 | | | 24 | 56 |
| 25 | 49 | 25 | 59 | 25 | 29 | 97 | 88 | 25 | 44 | 25 | 33 | 25 | 33 | 25 | 33 | | | 25 | 35 |
| 26 | 28 | 26 | 48 | 26 | 21 | 98 | 80 | 26 | 30 | 26 | 33 | 26 | 27 | 26 | 39 | | | 26 | 30 |
| 27 | 19 | 27 | 51 | 27 | 47 | 99 | 74 | 27 | 39 | 27 | 44 | 27 | 13 | 27 | 35 | | | 27 | 38 |
| 28 | 41 | 28 | 62 | 28 | 39 | 100 | 94 | 28 | 54 | 28 | 29 | 28 | 32 | 28 | 23 | | | 28 | 40 |
| 29 | 47 | 29 | 32 | 29 | 41 | 101 | 90 | 29 | 25 | 29 | 46 | 29 | 13 | 29 | 33 | | | 29 | 54 |
| 30 | 30 | 30 | 49 | 30 | 29 | 102 | 88 | 30 | 37 | 30 | 24 | 30 | 29 | 30 | 21 | | | 30 | 36 |
| 31 | 30 | 31 | 44 | 31 | 18 | 103 | 66 | 31 | 36 | 31 | 31 | 31 | 12 | 31 | 33 | | | 31 | 49 |
| 32 | 32 | 32 | 34 | 32 | 21 | 104 | 65 | 32 | 18 | 32 | 38 | 32 | 14 | 32 | 23 | | | 32 | 54 |
| 33 | 62 | 33 | 47 | 33 | 15 | 105 | 41 | 33 | 19 | 33 | 38 | 33 | 15 | 33 | 46 | | | 33 | 52 |
| 34 | 29 | 34 | 59 | 34 | 35 | 106 | 34 | 34 | 50 | 34 | 37 | 34 | 11 | 34 | 27 | | | 34 | 33 |
| 35 | 26 | 35 | 54 | 35 | 11 | 107 | 49 | 35 | 17 | 35 | 27 | 35 | 10 | 35 | 20 | | | 35 | 29 |
| 36 | 25 | 36 | 68 | 36 | 32 | 108 | 56 | 36 | 19 | 36 | 24 | 36 | 12 | 36 | 23 | | | 36 | 22 |
| 37 | 17 | 37 | 50 | 37 | 21 | 109 | 26 | 37 | 37 | 37 | 36 | | | 37 | 24 | | | 37 | 36 |
| 38 | 39 | 38 | 46 | 38 | 17 | 110 | 34 | 38 | 28 | 38 | 32 | | | 38 | 21 | | | 38 | 46 |
| 39 | 39 | 39 | 41 | 39 | 46 | 111 | 38 | 39 | 39 | 39 | 7 | | | 39 | 28 | | | 39 | 45 |
| 40 | 38 | 40 | 43 | 40 | 73 | 112 | 41 | 40 | 21 | 40 | 12 | | | 40 | 33 | | | 40 | 24 |
| 41 | 22 | 41 | 42 | 41 | 36 | 113 | 23 | 41 | 23 | | | | | 41 | 29 | | | 41 | 31 |
| 42 | 46 | 42 | 27 | 42 | 32 | 114 | 50 | | | | | | | 42 | 33 | | | 42 | 35 |
| 43 | 60 | 43 | 35 | 43 | 50 | 115 | 29 | | | | | | | 43 | 29 | | | 43 | 23 |
| 44 | 12 | 44 | 44 | 44 | 45 | 116 | 19 | | | | | | | 44 | 34 | | | 44 | 25 |
| 45 | 22 | 45 | 33 | 45 | 65 | 117 | 42 | | | | | | | 45 | 28 | | | 45 | 26 |
| 46 | 22 | 46 | 50 | 46 | 38 | 118 | 29 | | | | | | | 46 | 32 | | | 46 | 34 |
| 47 | 25 | 47 | 28 | 47 | 49 | 119 | 27 | | | | | | | 47 | 25 | | | 47 | 26 |
| 48 | 15 | 48 | 24 | 48 | 68 | 120 | 64 | | | | | | | 48 | 13 | | | 48 | 26 |
| 49 | 22 | 49 | 44 | 49 | 37 | 121 | 33 | | | | | | | 49 | 12 | | | 49 | 30 |
| 50 | 41 | 50 | 35 | 50 | 45 | 122 | 35 | | | | | | | 50 | 16 | | | 50 | 21 |
| 51 | 26 | 51 | 18 | 51 | 20 | 123 | 44 | | | | | | | 51 | 16 | | | 51 | 30 |
| 52 | 29 | 52 | 27 | 52 | 65 | 124 | 33 | | | | | | | 52 | 19 | | | 52 | 16 |
| 53 | 23 | 53 | 25 | 53 | 45 | 125 | 20 | | | | | | | 53 | 35 | | | 53 | 18 |
| 54 | 26 | 54 | 29 | 54 | 60 | 126 | 11 | | | | | | | 54 | 35 | | | 54 | 21 |
| 55 | 18 | 55 | 32 | 55 | 50 | 127 | 21 | | | | | | | 55 | 31 | | | 55 | 17 |
| 56 | 11 | 56 | 8 | 56 | 20 | 128 | 57 | | | | | | | 56 | 40 | | | 56 | 14 |
| 57 | 24 | 57 | 27 | 57 | 49 | 129 | 36 | | | | | | | 57 | 40 | | | 57 | 16 |
| 58 | 21 | 58 | 33 | 58 | 47 | 130 | 66 | | | | | | | 58 | 35 | | | 58 | 21 |
| 59 | 16 | | | 59 | 95 | 131 | 45 | | | | | | | 59 | 23 | | | 59 | 9 |
| 60 | 17 | | | 60 | 76 | 132 | 41 | | | | | | | 60 | 38 | | | 60 | 15 |
| | | | | 61 | 97 | 133 | 63 | | | | | | | 61 | 51 | | | | |
| | | | | 62 | 77 | 134 | 62 | | | | | | | 62 | 21 | | | | |
| | | | | 63 | 38 | 135 | 54 | | | | | | | 63 | 38 | | | | |
| | | | | 64 | 44 | 136 | 41 | | | | | | | 64 | 33 | | | | |
| | | | | 65 | 51 | 137 | 18 | | | | | | | 65 | 56 | | | | |
| | | | | 66 | 88 | 138 | 64 | | | | | | | 66 | 44 | | | | |
| | | | | 67 | 83 | 139 | 57 | | | | | | | 67 | 42 | | | | |
| | | | | 68 | 76 | 140 | 36 | | | | | | | 68 | 34 | | | | |
| | | | | 69 | 35 | 141 | 52 | | | | | | | 69 | 21 | | | | |
| | | | | 70 | 83 | 142 | 58 | | | | | | | 70 | 27 | | | | |
| | | | | 71 | 78 | 143 | 28 | | | | | | | 71 | 40 | | | | |
| | | | | 72 | 88 | 144 | 58 | | | | | | | 72 | 38 | | | | |
| | | | | | | 145 | 53 | | | | | | | | | | | | |
| *N = 1993 | | *N = 1990 | | *N = 1994 | | | | *N = 1978 | | *N = 1983 | | *N = 1971 | | *N = 1975 | | | | *N = 1973 | |

*N = The number of students who answered one or more items in each sub-test.

[1]Percent Correct = The number of correct answers to each item or question divided by the total number of students (N) that answered one or more questions in a sub-test.

## SUMMARY

This report contains an item analysis of the Stanford Achievement Test performance of 12,000 students in schools and classes for the hearing impaired. The tests were administered as part of an achievement testing program conducted in the Spring of 1969 by the Annual Survey of Hearing Impaired Children and Youth. The item analysis gives a measure of how difficult or easy each test question was for this population. This measure is expressed in terms of the percent of correct answers given to each question. The numerator used in computing the percentages was the total number of students who correctly answered a question. The denominator used was the total number of students who answered one or more questions in a sub-test (not the number of students who gave answers to each question).

Item content outlines have been presented for each sub-test for which they were available. These outlines were prepared by and produced here with the permission of Harcourt, Brace & World, Inc., publishers of the Stanford Achievement Test series. The Item Content Outlines summarize the academic subject areas that a question or group of questions was designed to measure.

In addition to the tables showing the percent of correct answers to each question, a summary of the responses for each sub-test and major categories within some sub-tests have been presented in the text.

The general qualifications and limitations of the data have been given. In addition, problems concerning the reliability and validity of the test results have been discussed. These problems occur because the Stanford Achievement Tests were developed for use by hearing students.

Suggestions for use of the data by teachers and school administrators have been given. These data can be used to further understanding of the learning strengths and weaknesses of groups of students. The tests or sections of the tests can be judged suitable or unsuitable for a particular school on the basis of the correspondence between the test content and the school curriculum. It was emphasized that the tests should not be used to judge the school curriculum.

In addition to the suggestions given for uses of the data, it is hoped that the report will encourage further research in test validation and the learning problems of the hearing impaired.

Sincere appreciation is extended to all the school programs that have participated in the Annual Survey, thereby making possible the publication of this report.

## APPENDIX I

# The Annual Survey of Hearing Impaired Children and Youth

### BACKGROUND AND POLICIES

The Annual Survey of Hearing Impaired Children and Youth began its activities in May, 1968. The program was established as a permanent organization to collect, process and disseminate data on hearing impaired individuals through college age in the United States. Two preceding years of pilot and developmental work in a five state area determined its operational feasibility and crystallized its methodology. The Division of Research, Bureau of Education for the Handicapped, Office of Education, Department of Health, Education and Welfare initiated the Annual Survey and provides the major share of its funding. The program is conducted by the Office of Demographic Studies of Gallaudet College.

The long range goal of the Annual Survey is to collect data on the entire hearing impaired population through college age in the United States. For operational reasons the hearing impaired population has been divided into three groups:

**GROUP A –** Hearing impaired individuals who are receiving special educational services related to their hearing loss.

**GROUP B –** Individuals who have been diagnosed as being hearing impaired but who are not receiving any special educational services.

**GROUP C –** Individuals in the general population who, in fact, are hearing impaired but their hearing loss has not been diagnosed at a given point in time.

Some of the major policies and principles that guide the operations and activities of the Annual Survey are given here. First, it is of paramount importance that participating institutions be assured that the data collected will be held in strictest confidence. Only staff members of the Office of Demographic Studies will have access to the records and then only for the purpose of preparing statistical summaries and for analyses of the data. Individual student identification may be established by code numbers assigned and known only by the reporting institution. Each school will receive data on its own students, but no information permitting identification of any individual student or school will be published or made available for any purpose. Independent researchers will have access only to summary statistics and will not know the identity of the schools from which the data were compiled.

The accuracy and quality of all data collected are of fundamental concern and importance to the Annual Survey. This program expends a substantial part of its resources in data evaluation procedures to enhance the reliability and validity of collected data and to describe any of its limitations. Towards this goal, the necessity of developing standard measuring instruments arises. During the first year of the program, our efforts were directed towards the area of academic achievement testing. As a first step in a long range plan of achievement test validation, it was decided to conduct a national achievement testing program. Approximately 12,000 Stanford Achievement Tests were administered to students in schools and classes for the hearing impaired during the 1968-69 school year. Achievement test scores for hearing impaired students based on the results of that national program were published and distributed in the Fall of 1969. Detailed information on the methodologies and findings of the achievement testing program can be found in the Annual Survey publication entitled *Academic Achievement Test Performance of Students in Schools and Classes for the Hearing Impaired: United States, Spring 1969.*

Finally, but also of great importance, is the fact that policies and direction of the Annual Survey are determined by a committee representing all areas of services to hearing impaired individuals. The committee is formally called the National Advisory Committee to the Annual Survey of Hearing Impaired Children and Youth. Its membership has broad width and depth in technical and executive expertise. In addition, a full range of consultants are called upon for advice and direction as special situations occur. Suggestions and comments also come from discussions with teachers, audiologists, psychologists and other professionals who work directly with hearing

impaired individuals. To be effective, the program must assist these persons in solving problems with which they struggle day after day.

## DATA COLLECTION

In consideration of the resources available to the program and the different methodological procedures required to collect data on the various components of the target population, at the present time full scale data collection activities are directed at hearing impaired students enrolled in special educational programs (referred to earlier as Group A). Concurrently, pilot studies and other activities are in progress to develop and improve the methodology for collecting data on the other segments of the hearing impaired population.

During the first year of operation, records were sought from all schools and approximately fifteen percent of the day class programs for the hearing impaired. As a result of these efforts, records were obtained on slightly more than 25,000 hearing impaired students. During the 1969-70 school year, the Annual Survey is extending its coverage of reporting sources. Efforts are being made to reach students in all special classes for the hearing impaired as well as in all the schools. Base-line information similar to that collected during the 1968-69 school year (See Appendix II) is being obtained for all new students. In addition to the types of data collected during the first year, specific details regarding educational services students are receiving and information about the history of the hearing impairment are being collected on all students.

Present projections are that the Survey will obtain record forms on 35,000 students by the termination of the 1969-70 school year.

## PUBLICATION OF THE DATA AND PROGRAM SERVICES

The program rapidly is accumulating a large volume of statistical data. The processing and dissemination of this data holds wide implications and potential benefits for educational, audiological, medical, psychological and other services to the hearing impaired. Towards the goal of fully utilizing the data, the program will make data available to independent investigators for research purposes. Masters' theses, doctoral dissertations, institutional level research programs, private studies, etc., are solicited. The Annual Survey also plans to produce at least six major publications per year not including those that may be prepared by independent researchers using data collected by this program.

Each participating school or program will receive distributions of the characteristics of their own students. The participating programs also may obtain a set of punch cards containing the information submitted on each of their students. Further, the Annual Survey office is available to provide consultation services to particular schools or school systems that are concerned with gathering and processing data on their students.

Participation in the Survey has led many of the institutions to examine their current forms and record keeping procedures. This led to requests that the Survey develop a uniform record form to keep student information for use in schools and classes throughout the country. A draft of such a form has been developed and comments on its contents and utility have been solicited from various types of school programs. A finalized record form may be available for use on an experimental basis in the 1970-71 school year.

The initial success of the Annual Survey can be measured only in terms of the levels of participation and interest expressed by many individuals. The ultimate success will be measured not in terms of volume of data that will be collected and published, but in terms of its contributions to improving educational and other opportunities for hearing impaired children and youth. In this regard, it appears that progress is being made. For the first time a vast body of statistical information is becoming available for research and planning purposes.

# APPENDIX II

GALLAUDET COLLEGE
WASHINGTON, D.C.

## ANNUAL CENSUS OF HEARING IMPAIRED CHILDREN
## 1968-69 School Year

FORM ACHIC-1

### I. GENERAL INFORMATION

A. 1. Name _____ (Last) _____ (First) _____ (Middle) Date of Birth _____ (Mo., Day, Yr.) Sex ☐ M ☐ F

2. Address _____ (Number and Street) _____ (City) _____ (County) _____ (State & ZIP Code)

3. Present School _____ (Name)

4. Location _____ (Number and Street) _____ (City) _____ (County) _____ (State & ZIP Code)

B. Probable Age At Onset of Hearing Loss: ☐ At Birth _____ Years of Age

C. Additional Handicapping Conditions: (Check all educationally significant handicapping conditions.)

☐ None
☐ Cleft Lip or Palate
☐ Severe Visual
☐ Mental Retardation
☐ Emotional Problems
☐ Behavioral Problems
☐ Perceptual-Motor Disorders
☐ Cerebral Palsy
☐ Other (describe) _____

### II. EDUCATIONAL HISTORY

A. 1. Student Now Attends:

☐ Regular Classes Only
☐ Regular Classes Plus Special Training
Number of hours special training per week _____
☐ Fulltime Classes for Hearing Impaired
School For The Deaf
☐ Public ☐ Residential Student
☐ Private ☐ Day Student

☐ Other (describe) _____

2. Total Full Years Attended This School Since Age Six _____

B. Attendance at Other Schools Since Age Six: (Mark all that apply) If None Check Here ☐

Regular Classes Only- _____ Years | Regular Classes Plus Special Training- _____ Years | Fulltime Classes for Hearing Impaired- _____ Years | Schools for the Deaf- _____ Years | Other- _____ Years

C. Formal Education Prior to Age Six: If None Check Here ☐ If Unknown Check Here ☐

1. Age Started _____
2. Type (describe) _____

### III. ACHIEVEMENT AND INTELLIGENCE TESTS

A. Most Recent Achievement Test

| Description of Test | | | Grade Scores | | |
|---|---|---|---|---|---|
| Name | Form No. | Level | Reading Level | Battery Median | Date Tested (Month, Yr.) |
| | | | | | |

B. Most Recent Intelligence Test

| Description of Test | | I.Q. Scores | | |
|---|---|---|---|---|
| Name | Form | Verbal | Nonverbal | Date Tested (Month, Yr.) |
| | | | | |

### IV. RECOMMENDED EDUCATIONAL TRAINING

A. If facilities were available, would you recommend a different kind of educational training for the student than he presently is receiving? ☐ Yes ☐ No

B. If Yes, what type of program would you recommend?

☐ Special School for Hearing Impaired
☐ Special Program for Multiple Handicapped
☐ Fulltime Classes for Hearing Impaired
☐ Regular Classes Plus Special Training
☐ Regular Classes
☐ Other (specify) _____

**FOR OFFICE USE:**

| 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 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## V. AUDIOLOGICAL FINDINGS

A. Standard Used for Testing: ☐ ISO ☐ ASA

B. Air Conduction

| | RIGHT EAR | | | | | | | | LEFT EAR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 |
| Hearing Level | | | | | | | | | | | | | | | | |
| For Office Use | | | | | | | | | | | | | | | | |

C. Unaided Speech Threshold

Test Used: ☐ SAT ☐ SRT ☐ Not Tested

| Right | Left | Right | Left |
|---|---|---|---|
| ☐ 0-15 dB | ☐ | ☐ 45-59 dB | ☐ |
| ☐ 16-29 dB | ☐ | ☐ 60-79 dB | ☐ |
| ☐ 30-44 dB | ☐ | ☐ 80 dB & Over | ☐ |

D. Examiner Identification

Name of Clinic or Place Conducting Audiological Examination

_____ Date _____

Address _____
(Number and Street) (City) (State & ZIP Code)

Profession of Examiner: ☐ Audiologist ☐ Otologist ☐ Other M.D.

Other (specify) _____

## VI. HEARING AID USE

A. Does Student Use a Personal Aid? ☐ Yes ☐ No

If Yes, is Aid: ☐ Monaural ☐ Binaural

B. Speech Awareness Threshold With Aid is _____ dB.

C. Speech Reception Threshold With Aid is _____ dB.

## VII. ABILITY TO COMMUNICATE

A. Receptive

1. If student uses a personal hearing aid, indicate ability to hear and understand both **with and without** a hearing aid. If student does not use a hearing aid, only record ability to hear and understand without a hearing aid.

| With Hearing Aid | | Without Hearing Aid |
|---|---|---|
| ☐ | Can hear and understand most speech | ☐ |
| ☐ | Can hear and understand some speech | ☐ |
| ☐ | Cannot hear and understand any speech | ☐ |

2. Lipreading Ability: ☐ Good ☐ Fair ☐ None

3. Reading Ability: ☐ Good ☐ Fair ☐ None

B. Expressive

1. Speaking Ability: ☐ Others can understand most of his speech
☐ Others can understand only a little of his speech
☐ Others cannot understand his speech

2. Methods Used to Communicate to Others: (Check all that apply)
☐ Speech ☐ Writing ☐ Manual Alphabet ☐ Sign Language ☐ Gestures

Other (describe) _____

**FOR OFFICE USE:**

| 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 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## APPENDIX III

# Participants in the Annual Survey of Hearing Impaired Children and Youth 1968-69 School Year

**ALABAMA**
*Alabama Institute for Deaf & Blind
*Birmingham Public Schools

**ALASKA**
Anchorage Borough School District

**ARIZONA**
*Arizona State School for the Deaf & the Blind
Samuel Gompers Memorial Rehabilitation Center, Inc.
*Phoenix Elementary Oral Day Classes

**CALIFORNIA**
*Anaheim Union High School District
*California School for the Deaf, Riverside
*Richmond Unified School District
San Francisco Unified School District
*San Mateo County Schools

**COLORADO**
*Colorado School for the Deaf & Blind
*Colorado State College – Bishop Lehr Laboratory
*Jefferson County Public Schools R-1

**CONNECTICUT**
*Mystic Oral School for the Deaf

**DELAWARE**
*Margaret S. Sterck School for Hearing Impaired

**DISTRICT OF COLUMBIA**
*Department of Special Education
Kendall School for the Deaf
*Speech and Hearing Center, Public Schools of the District of Columbia

**FLORIDA**
*Dade County Day Classes for Deaf
*Florida School for the Deaf & the Blind

**GEORGIA**
*Atlanta Speech School, Inc.
*Georgia School for the Deaf

**HAWAII**
*Diamond Head School for Deaf

**IDAHO**
*Idaho School for the Deaf & the Blind

**ILLINOIS**
*Elim Christian School for the Exceptional Child
Ray Graham School of Special Education
*Illinois School for the Deaf
*Oliver H. Perry Elementary School
*South Metropolitan Association for Low-Incidence Handicapped

**INDIANA**
*Indiana School for the Deaf

**IOWA**
*Iowa School for the Deaf
*Smouse Opportunity School

**KANSAS**
Institute of Logopedics, Inc.
*Kansas School for the Deaf
University of Kansas Medical Center
Wichita Public Schools

**KENTUCKY**
- *Kentucky School for the Deaf
- *Lexington Deaf Oral School
- Louisville Deaf Oral Institute
- *Louisville Public Schools

**LOUISIANA**
- Louisiana School for the Deaf
- *State School for the Deaf – Southern Branch
- *Werner Park Elementary School

**MAINE**
- *Governor Baxter State School for the Deaf

**MARYLAND**
- William S. Baer School No. 301
- *Maryland School for the Deaf
- *Montgomery County Public Schools

**MASSACHUSETTS**
- *Beverly School for the Deaf
- *Boston School for the Deaf
- *Peter Bulkeley School
- *Clarke School for the Deaf
- Sarah Fuller Foundation
- Perkins School for Blind
- *Upsala Street School

**MICHIGAN**
- *Ann J. Kellogg School
- Lapeer State Home & Training School
- *Lutheran School for the Deaf
- Michigan School for Blind
- Traverse City Public Schools
- Tri-County Center, Inc.

**MINNESOTA**
- Minneapolis Public Schools
- *Minnesota School for Deaf

**MISSISSIPPI**
- *Magnolia Speech School

**MISSOURI**
- *St. Louis County, Special School District for the Handicapped, (Litzsinger School)
- *Missouri School for the Deaf
- *Troost School

**MONTANA**
- *Montana State School for the Deaf & Blind

**NEBRASKA**
- Nebraska School for the Deaf
- *Prescott School -- Acoustically Handicapped Unit

**NEVADA**
- *Ruby S. Thomas Elementary School

**NEW HAMPSHIRE**
- *Crotched Mountain School for the Deaf

**NEW JERSEY**
- *Bruce Street School
- *Marie H. Katzenbach School for the Deaf

**NEW MEXICO**
- *New Mexico School for the Deaf

**NEW YORK**
- *Catholic Charities Day Classes for Deaf Children
- *Hebrew Institute for the Deaf
- Junior High 47 – School for the Deaf, Manhattan
- New York Institute for the Education of the Blind
- *New York School for the Deaf, White Plains
- New York State School for the Deaf, Rome
- *Public School # 20, Albany
- *Rochester School for the Deaf
- *St. Joseph's School for the Deaf
- *St. Mary's School for the Deaf
- School for Language & Hearing Impaired Children
- *Suffolk School for Deaf Children

**NORTH CAROLINA**
- *Eastern North Carolina School for the Deaf
- *The Governor Morehead School
- *North Carolina School for the Deaf

**NORTH DAKOTA**
- Longfellow School
- *North Dakota School for Deaf

**OHIO**
- *Alexander Graham Bell School
- *Cincinnati Educational Center
- Hearing and Speech Center of Columbus and Central Ohio
- *Betty Jane Oral School
- Kennedy School for the Deaf
- *Melridge School
- *Ohio School for the Deaf
- *St. Rita School for the Deaf
- *Zanesville Classes for the Deaf

**OKLAHOMA**
- Jane Brooks Foundation
- *Oklahoma School for the Deaf

**OREGON**
- *Oregon State School for the Deaf
- Portland Center for Hearing & Speech, Inc.
- Portland Public Schools
- Tucker-Maxon Oral School

**PENNSYLVANIA**
- *Archbishop Ryan Memorial Institute for the Deaf
- *DePaul Institute
- Friends of the Deaf Nursery School
- *Willis and Elizabeth Martin School
- *Pennsylvania School for the Deaf
- *Pennsylvania State Oral School for the Deaf
- Programs for Speech & Hearing Handicapped, State Department of Education
- *Western Pennsylvania School for the Deaf

**RHODE ISLAND**
*Rhode Island School for the Deaf
*Windmill Hearing Therapy School

**SOUTH CAROLINA**
*South Carolina School for the Deaf & Blind

**SOUTH DAKOTA**
*South Dakota School for the Deaf

**TENNESSEE**
*Knox County Public Schools
Memphis Speech & Hearing Center
*Tennessee School for the Deaf
*Bill Wilkerson Hearing & Speech Center

**TEXAS**
*Callier Hearing & Speech Center
Dallas Independent School District
*Houston School for Deaf Children
*School of Listening Eyes
*Sunshine Cottage School for Deaf Children
*Texas School for the Deaf

**UTAH**
*Utah Schools for the Deaf & the Blind

**VERMONT**
*The Austine School for the Deaf

**VIRGINIA**
*Arlington County Public Schools
St. Paul's Oral School
*Virginia School for the Deaf & the Blind
*Virginia State School for the Deaf at Hampton

**WASHINGTON**
*Birney School
*Edna E. Davis Elementary School
*Seattle Public Schools
Seattle Speech & Hearing Center
Washington State School for the Deaf

**WEST VIRGINIA**
*West Virginia School for the Deaf & the Blind

**WISCONSIN**
Cooper Day School for the Deaf
*Madison Public School System
Milwaukee Hearing Society
*E. H. Wadewitz School
*Wisconsin School for the Deaf

**WYOMING**
*Wyoming School for the Deaf

---

***Schools and Classes that participated in the Achievement Testing Program**