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#### Abstract

Test results are presented for the Arizona Pupil Achievement Testing Program for fall 1991. In the 1991-92 school year, the state legislature mandated that only grades 4, 7, and 11 be tested. Although school districts could elect to test other grades, results in this report represent only tests for grades 4, 7, and 11 on either the Iowa Tests of Basic Skills (grades 4 and 7) or the Tests of Achievement and Proficiency (grade 11). A total of 133,652 students took these tests in reading, language, and mathematics, with 3,447 students of Limited English Proficiency exempted from testing. Arizona pupils collectively scored in the average range in reading, language, and mathematics; and, in general, they performed at about the same level of achievement as average pupils across the nation, using 1987-88 norms. Reading scores for females were higher than those for males at all grade levels, and mathematics scores for males were higher in grade 11, but not in grade 7 or 4. Whites and Asian/Pacific Islanders scored at or above the national average across all grade levels; and Blacks, Hispanic Americans, and American Indian/Alaskan Native groups scored below the national average in all subject areas at all grade levels. Six figures and 12 tables present test results. The separately bound associated appendix contains percentile ranks for reading, language, and mathematics for the 3 grades in 141 pages of tables by school district in appendixes $A, B$, and $C$. (SLD)


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## Statewide Report

For

# Arizona Pupil Achievement Testing 

June 1992

Arizona Department of Education
C. Diane Bishop, Superintendent

1535 West Jefferson
Phoenix, Arizona 85007

Arizona
Department of Education
C. DIANE BISHOP

Superintendent

July 1992

## MEMORANDUM

$\begin{array}{ll}\text { TO: } & \text { Members of the Forty-First Legislature } \\ \text { State Board of Education Members } \\ \text { County School Superintendents } \\ \text { Superintendents and Heads of Districts }\end{array}$
SUBJECT: Fall 1991 Arizona Pupil Achievement Testing Statewide Report

It is a pleasure to provide you with this copy of the Fall 1991 Arizona Pupil Achievement Testing Statewide Report. This test is mandated by Arizona Revised Statutes Section 15-741. Legislative Session Law mandated that only grades four, seven, and eleven be tested in the Fall of 1991. School district governing boards, however, could choose to administer the test to all their pupils in grades other than four, seven, or eleven. The results contained in thi.: report represent only grades four, seven and eleven.
mab726.bjf, 02/92

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## INTRODUCTION

This is the twelfth year of the Arizona Pupil Achievement Testing Program which is administered to fulfill the requirements of Arizona Revised Statutes Section 15-741 through Section 15-744. This legislation mandates that a nationally standardized norm-referenced achievement testing program in the subjects of reading, grammar, and mathematics be adopted and implemented for use in Arizona schools. The legislation exempts the testing of specified groups of handicapped pupils. A revision of the law passed in 1982 allows the governing board of a school district to exempt pupils who are nonEnglish monolingual or predominantly speakers of a language other than English for up to three years.

For the 199i-1992 school year, the Arizona State Board of Education adopted the Riverside Basic Skills Assessment Program which comprises the lowa Tests of Basic Skills (ITBS) for grades four and seven and the Tests of Achlevement and Proficiency (TAP) for grade $\epsilon_{i}$ even. These tests are published by the Riverside Publishing Company. For Arizona, pupil scores are reported by subject, subtest and skill at the pupil and classroom levels. Scores are then aggregated to the school, district, county and state levels.

A total of 133,652 Arizona pupils in grades four, seven, and eleven were tested during the period of September 30 through October 4, 1991. A total of 3,447 pupils in grades four, seven, and eleven who are non-English monolingual or predominantly speakers of a language other than English were exempted from testing. The statewide data reported herein are based on the performance of the tested pupils who were enrolled in 1,015 schools in 216 districts.

This report briefly describes the tests, test scores and reports that fulfill the requirements of the legislation as implemented by the Arizona Department of Education. It summarizes the fall 1991 Arizona statewide results across grades and within grade. Discussions of pupil actievement strengths and weaknesses and demographic characteristics are included.

## DESCRIPTION OF TESTS

The tests administered in the fall 1991 Arizona Pupil Achievement Testing Program (i.e., ITBS and TAP) are nationally standardized achievement tests. A standardized achievement test is one that has been administered using specific directions under specific conditions to a representative sample of students from across the nation. This is referred to as the standardization sample. Scores resulting from the standardization administration become the norms that permit test users to compare the performance of a particular pupil or group of pupils with that of pupils and groups of the same age and grade across the nation. The norms on which the 1991 scores are based represent national achievement performance during the 1987-88 school year.

Each test administration in the 1991 testing program is composed of numerous subtests. Specific sets of subtests are combined to form subjects or content domains (i.e., reading, language, mathematics, etc.). The subjects measured by these tests cover a broader base than just reading, language and mathematics. However, since the Arizona legislature has mandated testing of these subjects they will be the primary focus of this report.

The subjects of reading, language and mathematics are composed of the following subtests:

| Grades/Test | Series | Subject Areas | Subtests |
| :---: | :---: | :---: | :---: |
| Grades 4 and 7 | ITBS | Reading | Reading Comprehension ( R ) |
|  |  | Language | Spelling (L-1) <br> Capitalization (L-2) <br> Punctuation (L-3) <br> Usage and Expression (L-4) |
|  |  | Mathematics | Mathernatics Concepts ( $M-1$ ) <br> Mathematics Problem Solving (M-2) <br> Mathematics Computation (M-3) |
| Grade 11 | TAP | Reading <br> Language Mathematics | Feading Comprehension Written Expression Mathematics |

Separate scores are given for all subtests at all levels (e.g., L-1, L-2, M-3, etc.).
Tables 1 and 2 show the subtests, subjects and the number of items for each on the ITBS and the TAP respectively.

## DEMOGRAPHIC INFORMATION

The following five variables were collected for each pupil during the test administration: 1) sex, 2) primary language, 3) limited English proficient (LEP) in programs by model 4) racia//ethnic background and 5) continuous number of years pupil has been enrolled in the district. The collection of this information makes possible the analysis of test results for specified groups of pupils.

Table 1
nUMBER OF ITEMS BY SUBTEST AND SUBJECT FOR GRADES FOUR AND SEVEN IOWA TESTS OF BASIC SKILLS

| Subtest/Subject | Grade | Level |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  | 1 | 2 | 3 | 6 |

## DESCRIPTION OF REPORTS

The results of the Arizona rupil Achievement Testing Program are reported at six levels: 1) pupil, 2) classroom, 3) school, 4) district, 5) county and 6) state.

Pupil. Two sets of reports are produced for each pupil. The Individual Performance Profile, designed for use by the classroom teacher, describes the individual pupil's performance by skill, subtest and subject.

The Pupil Home Report presents test results to parents and guardians. A narrative portion guides the parent in interpreting the numeric scores which follow. A graphic display aids the parent in identifying his or her child's strengths and weaknesses.

Classroom. Two reports are provided which list individual pupil scores in classroom groupings. The Classroom Report lists the pupils' subtes! and subject scores. This report can be used to compare pupil and total class performance with that of the norm group. Individual pupil and class strengths and weaknesses can be identified by using the information presented on the Classroom Report.

The Classroom Performance Profile refines the information presented on the Classroom Report by listing pupil performance on each of the skill areas that are measured within the subtests for each subject. Thus, areas of pupil strengths and weaknesses can be further delineated.

School. Three reports are produced for each school: 1) School Report, 2) Building Performance Profile and 3) Analysis by Variables Report. The School Report and Building Performance Profile are similar in concept, format and function to the classroom reports. These two reports list teachers within a school and the iverage scores earned by their classes. By comparison, the classroom reports list pupil performance.

The Analysis by Variables Report displays the test results schoolwide by grade for each of the five demographic variables: sex, primary language, limited English proficient (LEP) in programs by model, racial/ethnic background and continuous number of years pupil has been enrolled in the district. Scores are presented by subtest and subject. The response categories are as follows:

- Sex -male, female
- Primary language -English, Spanish, Spanish exclusively, Navajo, Navajo exclusively, Other, Other exclusively
- Limited English proficient (LEP) in programs by model -transitional bilingual K-6, secondary bilingual $7-12$, bilingual/bicultural $\mathrm{K}-12$, English as a second language (ESL), individual education program
- Racial/ethnic background -White (not of Hispanic origin), Black (not of Hispanic origin), Hispanic, American Indian or Alaskan Native, Asian or Pacific Islander
- Contiruous number of years pupil has been enrolled in the district -Less than 1 . 1 but less than 2, 2 but less than 4,4 but less than 6,6 but less than 8,8 but less than 10 , 10 to 12 , more than 12

District. Five reports are produced for each district: 1) District Report, 2) District Skills Report, 3) Analysis by Variables Report, 4) District Summary Report and 5) Frequency Distribution of Percentiles. The District Report and District Skills Report parallel those described in the previous sections except that score averages are listed by school. The Analysis by Variables Report provides a districtwide analysis of each variable by grade. The Frequency Distribution of Percentiles displays the cumulative percentage of Arizona pupils achieving at each national percentile rank.

The District Summary Report displays the district's score averages by subtest and subject together with the county, state and national averages.

County. Five reports are produced for each county. These are similar to those described in the District section above except that district data are aggregated to their respective county level.

State. Fiva reports are also produced for the state. Once again, these reports are similar to the district report descriptions given above but with district data aggregated to the state level.

## DESCRIPTION OF REPORTED SCORES

Four types of scores are used to report the test results presented in this Statewide Report: 1) scale score, 2) grade equivalent, 3) percentile rank and 4) stanine. Scale scores and grade equivalents are examples of developmental scores, while stanines and percentile ranks are examples of status scores.

Scale Scores. The Developmental Standard Scores (DSS) for ITBS and TAP generally range from approximately 1 to 300 . They are continuous across all levels and forms of a specific test. Since they are built on equal-interval scales, the magnitude of a given difference between two scores represents the same amount of difference in performance wherever it occurs on the scale (i.e., the difference between DSS scores of 50 and 55 represents the same amount of difference as between scale scores of 160 and 165). When using scale scores one should expect higher scores as well as greater variability among scores from grade to grade. It is important to point out that while DSS scores are equivalent across forms and levels of the same test or subtest they are not equivalent from one subject area to another. One may compare scale scores for Reading Comprehension from grade 9 to grade 10 but should not compare scale scores for Reading Comprehension to those for Written Expression. The DSS score for ITBS and TAP are linked to form continuous scales for grades K-12 as follows:

> ITBS Reading Comprehension (Levels 7-14) and TAP Reading Comprehension (Levels 15-18)
> ITBS Language Total (Levels 7-14) and TAP Written Expression (Levels 15-18)
> ITBS Mathematics Total (Levels 7-14) and TAP Mathematics (Levels 15-18)
> ITBS Work-Study Total (Levels 7-14) and TAP Using Sources of Information (Levels 15-18)
> ITBS Complete Composite (Levels 7-14) and TAP Basic Composite (Levels 15-18)

The major use of scales scores is for meas ing achievement growth from grade to grade or year to year.

Grade Equivalents. A grade equivalent (GE) represents the typical performance of students tested in a given month of the school year. For example, a grade equivalent of 53 represents the score achieved by the median pupil in fifth grade after three months of instruction. On the ITBS, GEs range from PO (prekindergarten) to 139. GEs on the TAP extend above 139. These extensions should be considered similar to a scale score, which permits growth comparisons to be made, rather than as representative of a median level of instruction.

The GE should be regarded as an estimate of where a pupil is along a developmental continuum but not where the pupil should be placed in the graded organization of the school. For example, a third grader taking a third-grade mathematics test might earn a GE of 59. This means that this third-grade pupil scored as well as an average pupil in the ninth month of the fifth grade would score on the third-grade iest. This score is above average for third grade but does not mean that the pupil can do fifth-grade work.

Percentile Ranks. A percentile rank (PR) indicates a pupil's status relative to other students in a defined norm group. They range from 1 to 99 and give the percentage of pupils in the norm group who achieve lower scores. Thus, if a pupil receives a PR of 63 it means that sixty-three percent of the pupils in the norm group scored lower than this particular pupil. PRs have no interpretative meaning in themselves. They must always be used in conjunction with the norm group (most often this is the group of pupils in a given grade that were part of the national standardization group). Percentile ranks are not built on equal interval scales and so the difference between PRs of 10 and 15 is not the same as the difference between PRs of 50 and 55 in terms of pupil ability. Another way of saying this is that the PR scale is nonlinear. For example, a DSS of 130 may be associated with a PR of 17 while a DSS of 140 on the same test may be associated with a PR of 20 ( 10 points difference on DSS $=3$ points difference on PR). Furthermore, a DSS of 120 may be associated with a PR of 63 while a DSS of 130 on the same test may be associated with a PR of 80 ( 10 points difference on $\mathrm{SS}=17$ poinis difference of PR).

Two types of percentile ranks are reported for grades 1-12 for the 1990 Arizona Pupil Achievement Testing Program. Individual percentile ranks were reported for individual pupils on class lists returned to the schools. They are also used for the group data (sex, primary language, racial/ethnic, etc.) reported for analyses by variables. Both individual and group percentile ranks were reported for class, building and district summaries returned to school districts. Group percentile ranks are used to report total state achievement summaries and comparisons with national averages.

Individual PRs are developed from the distribution of individual pupil scores in the standardization samples. Group PRs, as the name implies, are derived from the distributions of averages of schools in the standardization sample. While the interpretation of these types of PRs is the same they have different characteristics. This is due to the fact that distributions of averages are much less variable than distributions of individual scores.

Simply stated, this means that no building average is as low as the lowest scoring pupil nor as high as the highest scoring pupil. When individual PRs are used with building averages they will tend to range from 15 to 85 . However, when building PRs are used with building averages the range is from 1 to 99. The relationship between pupil and building percentile ranks is shown in the table that follows (data in table is based on Reading Comprehension, Grade 6, ITBS Spring Norms).

| Pupil or Average <br> GE Score | Pupil PR | Building PR |
| :---: | :---: | :---: |
| 103 | 97 | 99 |
| 83 | 79 | 93 |
| 73 | 60 | 65 |
| 68 | 50 | 43 |
| 63 | 40 | 23 |
| 53 | 22 | 4 |
| 43 | 8 | 1 |

Stanines. Stanines are normalized standard scores with a mean of 5 , a standard deviation of 2 and range from 1 to 9 . Stanines may be regarded as rather broad groupings of percentile ranks as shown in the table that follows.

| Percentile Ranks | Stanine |
| :---: | :---: |
| 96 and up | 9 |
| $89-95$ | 8 |
| $77-88$ | 7 |
| $60-76$ | 6 |
| $40-59$ | 5 |
| $23-39$ | 4 |
| $11-22$ | 3 |
| $4-10$ | $?$ |
| less than 4 | 1 |

Unlike PRs, stanines are approximately equal-interval scores. This means that the difference between stanines 2 and 4 represents about the same difference in ability as the difference between stanines 5 and 7. This property allows stanines to identify broad performance categories as follows: stanines 1 , 2 and 3 indicate below average performance; stanines 4, 5 and 6 indicate average performance; and stanines 7,8 and 9 represent above average performance.

## SUMMARY OF STATEWIDE PERFORMANCE ACROSS GRADES

The ITBS and TAP are used in the Arizona Pupil Achievement Testing Program. The ITBS is used fo: grades 4 and 7 and TAP is used in grade 11.

The norms for ITBS and TAP are based on national pupil performance in the 1987-88 school year.
The 1991 Comparlsons of Grades 4, 7, and 11 with National Norms. When comparing Arizona average scores with national norm group scores, remember that small score differences may not always indicate meaningful achievement level differences. For example, the degree of variability in the scores at any given grade levei has a large impact on the interpretation placed on small score differences observed within that grade.

Figures 1, 2 and 3 graphically compare Arizona statewide averages for fall 1991 with averagas obtaired by the national standardization group for the ITBS and TAP. The figures show the average grade equivalents by grade for the Arizona and national groups for Reading, Language and Mathematics skills

Arizona reading performance is shown to be slightly above the national average in all three grades. In the language area, Arizona pupils obtained average scores slightly below the national average in grade 4. but above the national average in grades 7 and 11. State average mathematics scores were below the national average in grade 4, but somewhat higher than the national average in grades 7 and 11. As suggested earlier, slight differences between state and national grade-equivalent averages should not be over-interpreted as indicators of strengths and weaknesses.

A review of Arizona's average stanines provides a broader measure of pupil performance within the state. A total of 37 stanine averages were obtained on tests, totals, and composites across the three grades tested. The distribution of stanine averages is shown below:

Stanine
Ajerage
4.0-4.4
4.5-4.9
5.0-5.4
5.5-5.9

Frequency
1
13
21
$\qquad$
37

Percent
3 \%
35\%
57\%
$5 \%$
$100 \%$

Figure 1.
Reading: Comparisons of Grade Equivalent Scores for Arizona Pupils and the ITBS Norni Group in Grades 4, 7, and 11


Figure 2.
Language: Comparisons of Grade Equivalent Scores for Arizona Pupils and the ITBS Norm Group in Grades 4, 7, and 11


Figure 3.

Mathematics: Comparisons of Grade Equivalent Scores for Arizona Pupils and the ITBS Norm Group in Grades 4, 7, and 11


## EXEMPTIONS FROM STATEWIDE TESTING

Conditions under which pupils may be exempted from the statewide testing piogram are specified in Arizona Revised Statutes Section 15-744. Pupils who are limited-English proficient (LEP) may be exempted for up to three years. Second, students who are classified as handicapped may be exempted under the following classifications: trainable mentally handicapped, educable mentally handicapped, visually handicapped, hearing handicapped, multiple handicapped, or seriously emotionally handicapped. Third, learning disabled pupils may be exempted if their individual educational plans state parts or all of the testing requirement would be detrimental to the pupil. Finally, pupils not required to attend regular classes in a school as provided in the Arizona Statutes may be exempted.

In order to qualify pupils who classified limited-English proficient for second-year and/or third-year statewide testing exemption, the districts must submit to the Department of Education: 1) a description of the native language instructional program provided such pupils; 2) a copy of the alternative testing instrument (criterion-referenced or norm-referenced) and the degree to which it parallels skills tested in the state-mandated testing program; and 3) a summary report of test results achieved on the alternative test.

School districts shall annually report the number of pupils by category and by grade level which were exempt as provided in this section to the department of education. The department shall include this information in their annual report to the legislature pursuant to section 15-743.

At the request of a pupil's parent or guardian, the governing board of a school district shall administer any test required by this article to pupils exempted from the testing requirement pursuant to this section. Test results for these pupils shall not be included in the summary results of tests prescribed in Section 15-743, but individual results shall be sent to the school and to the parent or guardian.

In fall 1991, a total of 3,447 pupils who are classified LEP were exempted from the statewide testing program. The primary language of 94.1 percent of these pupils is Spanish.

For first-year exempted pupils, districts administered testing in compliance with R7-2-306 in addition to the district measurement adopted to assess the essential skills in Mathematics, in either English or the primary language to such students.

For second- and or third-year exempted pupils, districts administered measurements that have been adopted by the districts to assess the essential skills in Reading, Writing, and Mathematics in English; or, districts administered one or more of the following alternative assessment instruments: the Spanish version of the Comprehensive Tests of Basic Skills (CTBS Espanol); the La Prueba Riverside de Realizacion en Espanol; the Spanish Assessment of Basic Education (SABE); the Apprenda; or criterionreferenced tests. The skills objectives of the criterion-referenced tests used closely match the skills objectives of the state-mandated tests. The CTBS Espanol, La Prueba, and SABE, and Apprenda skills assessed also approximate those of the state-mandated tests.

The numbers of tiist, second and third year exempted pupils are provided in Table 3. Table 3 also lists the number of pupils in the other categories, by grade level, who were exempted from the testing requirement.
Table 3


## SUMMARY OF STATEWIDE ACHIEVEMENT BY GRADE

The sections that follow are grade-by-grade discussions of student performance for Arizona grades 4, 7 , and 11. These discussions are focused on strengths and weaknesses as indicated by scores based on norms for individual pupils for tests that were administered.

These discussions are augmented by the presentation of graphs and tables for each grade.
The graphs show comparisons of fall 1991 Arizona average percentile ranks compared to the averages for the national norms group.

The tables report:

- Average scores for the fall 1991 Arizona grade groups and the national norms group using national percentile ranks for individual pupils.
- Average scores for the fall 1991 Arizona grade groups and the national norms group using national percentile ranks for groups (schools).
- Analysis of scores by group variables: sex, primary language, and race/ethnicity.


## GRADE 4

Strengths and Weaknesses. Arizona fourth-grade pupils collectively scored above the national average in Vocabulary, Reading Comprehension, Capitalization, 'isual Materials, and Mathematics Problem Solving. Average grade equivalents ranged from 39.2 on Computation to 43.6 on Capitalization. National percentile ranks for the grade-equivalent averages were between 37 and 55. The average scores for Reading Comprehension, Capitalization, and Visual Materials were at or above the national medians.

## Figure 4.

Fall 1991 Strengths and Weaknesses for Grade 4



|  | NATIONAL NORMS |  |  | ARIZONA AVERAGES |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Grade Equivalent | $\begin{gathered} \hline \text { Percentile } \\ \text { Ranka } \end{gathered}$ | Stanine | $\begin{gathered} \text { Grade } \\ \text { Equivalent } \end{gathered}$ | $\begin{gathered} \text { Percentile } \\ \text { Rank }_{\mathrm{b}} \end{gathered}$ | Stanine |
| Vocabulary | 40.8 | 37 | 4 | 40.9 | 38 | 4 |
| Reading Comprehension | 41.5 | 40 | 5 | 42.0 | 43 | 5 |
| Spelling | 41.8 | 46 | 5 | 39.8 | 32 | 4 |
| Capitalization | 41.7 | 43 | 5 | 43.6 | 56 | 5 |
| Punctuation | 42.2 | 45 | 5 | 41.2 | 40 | 5 |
| Usage and Expression | 41.5 | 43 | 5 5 | 41.3 41.6 | 41 | 5 |
| Language Skills - Total | 41.8 | 42 | 5 | 41.6 | 4 | 5 |
| Visual Materials | 40.7 | 44 | 5 | 42.5 | 53 | 5 |
| Reference Materials | 41.0 | 42 | 5 | 39.7 | 34 44 | 4 5 |
| Work-Study Skills - Total | 40.7 | 11 | 5 | 41.1 | 44 | 5 |
| Mathematics Concepts | 41.5 | 43 | 5 | 40.1 | 33 | 4 |
| Mathematics Problem Solving | 40.7 | 41 | 5 | 40.9 | 42 | 5 |
| Mathematics Computation | 40.9 | 39 | 4 | 39.2 | 23 | 4 |
| Mathematics Skills - Total | 41.0 | 41 | 5 | 40.1 | 33 |  |
| Composite - Complete | 41.3 | 42 | 5 | 41.3 | 42 | 4 |

Percentile ranks are for group averages. Percentile ranks for national values have been interpolated.
b Percentile ranks for state averages have been obtained by rounding average grade equivalents to the nearest whole number and converting

|  | READING COMPREHENSION |  |  |  | TOTAL LANGUAGE |  |  |  | TOTAL MATHEMATICS |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 24,948 | 49.5 | 41 | 48 | 24,422 | 49.5 | 40 | 44 | 24,461 | 49.5 | 40 | 45 |
| Female | 24,596 | 48.8 | 43 | 53 | 24,127 | 48.9 | 43 | 54 | 24,121 | 48.8 | 40 | 44 |
| No Response | 868 | 1.7 | 39 | 42 | 836 | 1.7 | 38 | 39 | 845 | 1.7 | 38 | 36 |
| Primary Language |  |  |  |  |  |  |  |  |  |  |  |  |
| English | 40,586 | 80.5 | 43 | 54 | 39,796 | 80.6 | 43 | 52 | 39,852 | 80.6 | 41 | 48 |
| Spanish | 4,172 | 8.3 | 34 | 27 | 4,094 | 8.3 | 35 | 29 | 4,101 | 8.3 | 36 | 27 |
| Spanish exclusively | 191 | 0.4 | 32 | 23 | 190 | 0.4 | 32 | 23 | 195 | 0.4 | 35 | 24 |
| Navajo | 788 | 1.6 | 32 | 23 | 781 | 1.6 | 34 | 27 | 783 | 1.6 | 34 | 20 |
| Navajo exclusively | 66 | 0.1 | 29 | 17 | 67 | 0.1 | 31 | 21 | 69 | 0.1 | 33 | 16 |
| Oine: | 654 | 1.3 | 37 | 36 | 644 | 1.3 | 39 | 41 | 643 | 1.3 | 39 | 39 |
| Otner exclusively | 52 | 0.1 | 35 | 29 | 48 | 0.1 | 35 | 30 | 48 | 0.1 | 36 | 28 |
| No Response | 3.903 | 7.7 | 40 | 44 | 3,765 | 7.8 | 40 | 43 | 3,736 | 7.6 | 39 | 39 |
| Raclal Ethnic |  |  |  |  |  |  |  |  |  |  |  |  |
| Wrice | 29.633 | 58.8 | 45 | 59 | 29,079 | 58.9 | 44 | 56 | 29,150 | 59.0 | 42 | 52 |
| Back | 2.021 | 4.0 | 37 | 34 | 1,983 | 4.0 | 38 | 38 | 1,968 | 4.0 | 36 | 29 |
| Hispanic | 10.979 | 21.8 | 37 | 35 | 10,795 | 21.9 | 37 | 37 | 10,807 | 21.9 | 37 | 33 |
| Americar indian o: Alaskan | 2.966 | 5.9 | 35 | 30 | 2.874 | 5.8 | 35 | 30 | 2,870 | 5.8 | 35 | 25 |
| Asidn or Pacilic |  |  |  |  |  |  |  |  |  |  |  |  |
| No Response | 4,080 | 8.1 | 40 | 45 | 3,930 | 8.0 | 40 | 43 | 3,908 | 7.9 | 39 | 40 |

## GRADE 7

Strengths and Weaknesses. As a group, Arizona seventh graders scored above the national average on all of the tests. Average grade-equivalent scores ranged from 70.6 on Vocabulary to 76.2 on Punctuation. National percentile ranks for these averages ranged from 47 to 58, with a median of 53. The average scores were above the national median on all but the Vocabulary, Mathematics Concepts, and Mathematics Computation tests.

Figure 5.
Fall 1991 Strengths and Weaknesses for Grade 7


## Table 7

COMPARISON OF 1988 NATIONAL NORMS AND 1991 ARIZONA AVERAGES GRADE SEVEN (INDIVIDUAL NORMS)

|  | NATIONAL NORMS |  |  | ARIZONA AVERAGES |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Grade Equivalent | Percentile Ranka | Stanine | Grade Equivalent | Percentile Rank ${ }_{b}$ | Stanine |
| Vocabulary | 70.0 | 46 | 5 | 70.6 | 47 | 5 |
| Reading Comprehension | 70.8 | 48 | 5 | 74.5 | 55 | 5 |
| Spelling | 70.7 | 47 | 5 | 71.8 | 50 | 5 |
| Capitalization | 71.2 | 48 | 5 | 75.5 | 56 | 5 |
| Punctuation | 70.5 | 47 | 5 | 76.2 | 58 | 5 |
| Usage and Expression | 70.4 | 48 | 5 | 74.2 | 53 | 5 |
| Language Skills - Total | 70.6 | 48 | 5 | 74.6 | 56 | 5 |
| Visual Materials | 69.7 | 46 | 5 | 75.1 | 57 | 5 |
| Reference Materials | 70.2 | 47 | 5 | 73.2 | 53 | 5 |
| Work-Study Skills - Total | 70.0 | 48 | 5 | 74.2 | 56 | 5 |
| Mathematics Concepts | 71.6 | 49 | 5 | 71.3 | 49 | 5 |
| Mathematics Problem Solving | 69.8 | 46 | 5 | 71.8 | 50 | 5 |
| Mathematics Computation | 70.0 | 47 | 5 | 71.1 | 48 | 5 |
| Mathematics Skills - Total | 70.2 | 48 | 5 | 71.5 | 52 | 5 |
| Composite - Complete | 70.3 | 49 | 5 | 73.4 | 56 | 5 |
|  |  |  |  |  |  |  |

Table 8
ARIZONA AVERAGES GRADE SEVEN (GROUP NORMS) COMPARISON OF 1988 NATIONAL NORMS

|  | NATIONAL NORMS |  |  | ARIZONA AVERAGES |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Grade Equivalent | Percentile Ranka | Stanine | Grade Equivalent | Percentlle Rank $_{b}$ | Stanine |
| Vocabulary | 70.0 | 37 | 4 | 70.6 | 39 | 4 |
| Reading Comprehension | 70.8 | 39 | 4 | 74.5 | 56 | 5 |
| Spelling | 70.7 | 42 | 5 | 71.8 | 48 | 5 |
| Capitalization | 71.2 | 41 | 5 | 75.5 | 59 | 5 |
| Punctuation | 70.5 | 40 | 5 | 76.2 | 64 | 6 |
| Usage and Expression | 70.4 | 40 | 5 | 74.2 | 54 | 5 |
| Language Skills - Total | 70.6 | 38 | 4 | 74.6 | 56 | 5 |
| Visual Materials | 69.7 | 42 | 5 | 75.1 | 61 | 6 |
| Reference Materials | 70.2 | 41 | 5 | 73.2 | 54 | 5 |
| Work-Study Skills - Total | 70.0 | 41 | 5 | 74.2 | 59 | 5 |
| Mathematics Concepts | 71.6 | 45 | 5 | 71.3 | 44 | 5 |
| Mathematics Problem Solving | 69.8 | 43 | 5 | 71.8 | 52 | 5 |
| Mathematics Computation | 70.0 | 38 | 4 | 71.1 | 46 | 5 |
| Mathematics Skills - Total | 70.2 | 41 | 5 | 71.5 | 49 | 5 |
| Composite - Complete | 70.3 | 39 | 5 | 73.4 | 54 | 5 |

a Percentile ranks are for group averages. Percentile ranks for national values have been interpolated.
b Percentile ranks for state averages have been obtained by rounding average grade equivalents to the nearest whole nurnber and converting
$\stackrel{\infty}{\infty}$

|  | READING COMPREHENSION |  |  |  | TOTAL LANGUAGE |  |  |  | TOTAL MATHEMATICS |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ t \\| e^{a} \end{gathered}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tllea } \end{gathered}$ |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 23,093 | 49.7 | 73 | 52 | 22,499 | 49.7 | 71 | 50 | 22,509 | 49.6 | 71 | 51 |
| Female | 22,603 | 48.6 | 76 | 59 | 22,068 | 48.7 | 78 | 63 | 22,091 | 48.7 | 72 | 52 |
| No Response | 775 | 1.7 | 70 | 46 | 740 | 1.6 | 70 | 46 | 766 | 1.7 | 67 | 40 |
| Primary Language |  |  |  |  |  |  |  |  |  |  |  |  |
| English | 37,784 | 81.3 | 76 | 59 | 36,838 | 81.3 | 76 | 59 | 36,879 | 81.3 | 73 | 55 |
| Spanish | 3,445 | 7.4 | 64 | 36 | 3,360 | 7.4 | 65 | 38 | 3,359 | 7.4 | 65 | 34 |
| Spanish exclusively | 150 | 0.3 | 61 | 29 | 150 | 0.3 | 63 | 35 | 148 | 0.3 | 63 | 30 |
| Navajo | 682 | 1.5 | 61 | 29 | 671 | 1.5 | 62 | 33 | 676 | 1.5 | 62 | 26 |
| Navajo exclusively | 60 | 0.1 | 59 | 26 | 58 | 0.1 | 60 | 29 | 57 | 0.1 | 61 | 23 |
| Other | 500 | 1.1 | 71 | 48 | 491 | i. 1 | 72 | 51 | 489 | 1.1 | 71 | 51 |
| Other exclusively | 47 | 0.1 | 67 | 41 | 46 | 0.1 | 66 | 40 | 45 | 0.1 | 68 | 41 |
| No Response | 3,803 | 8.2 | 72 | 50 | 3.693 | 8.2 | 71 | 50 | 3,713 | 8.2 | 70 | 46 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| White | 26.515 | 57.1 | 79 | 64 | 25,938 | 57.2 | 78 | 63 | 25,968 | 57.2 | 75 | 60 |
| Black | 1,730 | 3.7 | 68 | 42 | 1,681 | 3.7 | 70 | 47 | 1,686 | 3.7 | 66 | 36 |
| Hispanic | 10,574 | 22.8 | 68 | 43 | 10,268 | 22.7 | 69 | 46 | 10.290 | 22.7 | 67 | 39 |
| American Indian or Alaskan | 2,917 | 6.3 | 65 | 37 | 2,828 | 6.2 | 66 | 33 | 2,810 | 6.2 | 64 | 32 |
| Asian or Pacific Islander | 642 | 1.4 | 81 | 67 | 630 | 1.4 | 83 | 72 | 632 | 1.4 | 79 | 71 |
| No Response | 4,093 | 8.8 | 72 | 50 | 3,962 | 8.7 | 72 | 50 | 3.980 | 8.8 | 70 | 47 |

## GRADE 11

Strengths and Weaknesses. The group of Arizona eleventh graders scored at or above the national average on Reading Comprehension, Mathematics, Written Expression and Using Sources of Information tests. Average grade-equivalent scores ranged from 116.2 on Written Expression to 121.9 on Using Sources of Information. National percentile ranks for average scores ranged from 50 to 55 with a median of 53.5. The eleventh graders exceeded the national median on Reading Comprehension, Written Expression and Using Sources of Information.

Figure 6.
Fall 1991 Strengths and Weaknesses for Grade 11


## Table 10 AN <br> 991 ARIZONA AVERAGES GRADE ELEVEN (INDIVIDUAL NORMS) <br> COMPARISON OF


Table 11
COMPARISON OF 1988 NATIONAL NORMS AND 1991 ARIZONA AVERAGES
GRADE ELEVEN (GROUP NORMS)

|  | NATIONAL NORMS ${ }_{\text {a }}$ |  |  | ARIZONA AVERAGES ${ }_{\text {a }}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Grade Equivalent | $\begin{gathered} \text { Percentile } \\ \text { Rank }_{b} \end{gathered}$ | $\operatorname{Stanine}_{\mathrm{b}}$ | $\begin{gathered} \text { Grade } \\ \text { Equivalent } \end{gathered}$ | $\begin{gathered} \text { Percentile } \\ \text { Rank }_{b} \end{gathered}$ | $\operatorname{Stanine}_{b}$ |
| Reading Comprehension | 114.0 | 46 | 5 | 118.7 | 50 | 5 |
| Mathematics | 114.8 | 43 | 5 | 116.6 | 48 | 5 |
| Written Expression | 109.0 | 40 | 5 | 116.2 | 61 | 6 |
| Using Sources of Information | 115.4 | 57 | 5 | 121.9 | 59 | 5 |
| Composite - Basic | 113.4 | 49 | 5 | 120.3 | 56 | 5 |

a Derived from mean scaled score.
Based on group norms.
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Table 12
ANALYSIS BY VARIABLES GRADE ELEVEN

|  | READING |  |  |  | LANGUAGE |  |  |  | MATHEMATICS |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Number | \% | Grade Equiv. | Percentile ${ }^{\text {a }}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ | Number | \% | Grade Equiv. | $\begin{gathered} \text { Percen- } \\ \text { tile } \end{gathered}$ |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |
| Male | 16,334 | 48.8 | 117 | 52 | 16,211 | 48.8 | 111 | 50 | 16.350 | 48.9 | 119 | 51 |
| Female | 16,293 | 48.7 | 121 | 55 | 16,150 | 48.6 | 122 | 62 | 16,268 | 48.6 | 115 | 49 |
| No Response | 844 | 2.5 | 102 | 35 | 837 | 2.5 | 101 | 39 | 848 | $\therefore .5$ | 100 | 31 |
| Primary Language |  |  |  |  |  |  |  |  |  |  |  |  |
| English | 25,314 | 78.6 | 123 | 57 | 26,099 | 78.6 | 120 | 59 | 26.347 | 78.7 | 120 | 52 |
| Spanish | 2,322 | 6.9 | 92 | 26 | 2.289 | 6.9 | 98 | 36 | 2,313 | 6.9 | 96 | 28 |
| Spanish exclusively | 153 | 0.5 | 85 | 20 | 151 | 0.5 | 89 | 28 | 154 | 0.5 | 94 | 27 |
| Navajo | 330 | 1.0 | 85 | 20 | 332 | 1.0 | 95 | 33 | 332 | 1.0 | 89 | 20 |
| Navajo exclusively | 68 | 0.2 | 109 | 41 | 67 | 0.2 | 110 | 49 | 68 | 0.2 | 111 | 44 |
| Other | 402 | 1.2 | 101 | 34 | 405 | 1.2 | 106 | 45 | 404 | 1.2 | 119 | 51 |
| Oiner exclusively | 60 | 0.2 | 103 | 36 | 60 | 0.2 | 112 | 51 | 59 | 0.2 | 129 | 62 |
| No Response | 3,822 | 11.4 | 110 | 43 | 3,795 | 11.4 | 109 | 48 | 3.789 | 11.3 | 110 | 43 |
| Racial/Ethnic |  |  |  |  |  |  |  |  |  |  |  |  |
| Wh:te | 18,614 | 55.6 | 130 | 64 | 18.511 | 55.8 | 124 | 63 | 18,628 | 55.7 | 126 | 59 |
| Biack | 1.111 | 3.3 | 102 | 35 | 1.102 | 3.3 | 104 | 43 | 1,125 | 3.4 | 98 | 29 |
| Hsoanic | 7.059 | 21.1 | 103 | 36 | 6,968 | 21.0 | 105 | 44 | 7,051 | 21.1 | 101 | 33 |
| American Indian or Alaskan | 1.927 | 5.8 | 96 | 30 | 1.883 | 5.7 | 101 | 40 | 1,939 | 5.8 | 97 | 29 |
| Asan or Pacific Isiander | 713 | 2.1 | 124 | 57 | 710 | 2.1 | 124 | 64 | 708 | 2.1 | 135 | 69 |
| No Response | 4.047 | 12.1 | 112 | 45 | 4.024 | 12.1 | 110 | 49 | 4,015 | 12.0 | 111 | 43 |

## GENERAL SUMMARY OF FINDINGS

Arizona pupils collectively scored in the average range in Reading, Language, and Mathematics across all three grades. In general, they performed at about the same level of achievement as average pupils in the same grades across the nation, based on 1987-88 national norms.

Gender. Average Reading scores for females were higher than those for males at all grade levels. The differences ranged from 2 months at grade 4 to 3 months at grade 7 and 4 months at grade 11. A similar pattern was observed for Language, except that the differences were larger at the higher two grade levels. In Mathematics, the female group outscored the male group by one month in grade 7, but the male group outscored the female group by 4 months in grade 11. There was no difference in grade 4.

Raclal/Ethnic. The racial/ethnic classifications used were White, Black, Hispanic, American Indian/Alaskan Native and Asian/Pacific Islander. The White group comprised approximately $57 \%$ of the total number of pupils tested; the Black group accounted for approximately $4 \%$ of the total; the Hispanic group approximately 22\%; the American Irdian/Alaskan Native group approximately $6 \%$ and the Asian/Pacific Islander approximately $2 \%$ of Arizona pupils tested. No racial/ethnic background was indicated for approximately $9 \%$ of the pupils tested.

The White and Asian/Pacific Islander groups scored at or above the national average across all grade levels. The White group scored as high or higher than the Asian/Pacific Islander group in Reading Comprehension in grades 4 and 11, but lower in grade 7. The Asian/Pacific Islander group scored as well or better than the White group at all grade levels in Language and Mathematics.

The Black, Hispanic, and American Indian/Alaskan Native Groups scored below the national average in all subject areas at all grade levels. The Hispanic group tended to score slightly higher than the Black group in Reading. In Language, the Black group scored slightly higher than the Hispanic group except in grade 11. The Hispanic group scored higher than the Black group in Mathematics at all three grade levels. Both of these groups scored higher than the American Indian/Alaskan Native group in all three areas.

In summary, the data in this report show:

- Arizona Pupils scored in the average stanine range in all subject areas at all three grade levels.
- Reading performance was above the national average in all three grades.
- Language performance was at or above the national average in grades 4 and 7 , but slightly below average in grade 4.
- Average scores in Mathematics were above the national average in grades 7 and 11, and below the national average in grade 4.
- Famales tended to outscore males in Reading and Language. Gender differences were smaller in Mathematics, where the male group outperformed the female group in grade 11.
- The White and Asian/Pacific Islander groups scored at or above the national averages for Reading Comprehension, Language, and Mathematics at all grade levels. The Black, Hispanic, and American Indian/Alaskan Native groups tended to score below the national average.


## Appendix to the Statewide Report

For
Arizona Pupil Achievement Testing


Arizona Department of Education
C. Diane Bishop, Superiniendent

## 1535 West Jefferson

Phoenix, Arizona 85007

# Appendix to the Statewide Report 

For

# Arizona Pupil Achievement Testing 

June 1992

Arizona Department of Education C. Diane Bishop, Superintendent

1535 West Jefferson Phoenix, Arizona 85007

## CONTENTS

Appendix A Fall 1992 Percentile Ranks* for Individuals for Reading 1A-47A Reading on the lowa Tests of Basic Skills (Grades 4 and 7) and the Tests of Achievement and Proficiency (Grade 11)

Appendix B Fall 1992 Percentile Ranks* for Individuals for Language 1B-47B Language on the lowa Tests of Basic Skills (Grades 4 and 7) and the Tests of Achievement and Proficiency (Grade 11)

Appendix C Fall 1992 Percentile Ranks* for individuals for 1C-47C Mathematics Mathematics on the lowa Tests of Basic Skills (Grades 4 and 7) and the Tests of Achievement and Proficiency (Grade 11)

* Percentile ranks (PR) for individuals are developed from the distribution of individual pupils scores. On the ITBS, PRs for individuals are derived from the mean Grade Equivalent (GE). On the TAP, the PRs for individuals are derived from the mean Developmental Standard Score (DSS).

The subjects or reading, language and mathematics for the fall 1992 Arizona Pupil Achievement Program are composed of the following subtests:

| Grades/Test | Series | Subject | Areas |
| :--- | :--- | :--- | :--- |
| Grades 4 and 7 | ITBS | Reading | Subtests |
|  |  | Language | Reading Comprehension (R) |
|  |  | Spelling (L-1) <br> Capitalization (L-2) <br> Punctuation (L-3) <br> Usage and Expression (L-4) |  |
|  |  | Mathematics <br> Grade 11 | Mathematics Concepts (M-1) <br>  <br> $\quad$ TAP Mathematics Problem Solving (M-2) |
|  |  | Mathematics Computation (M-3) <br> Language <br> Mathematics | Reading Comprehension <br> Written Expression <br> Mathematics |

## Appendix A

Fall 1992 Percentile Ranks for Individuals for Reading on the

- Iowa Tests of Basic Skills (Grades 4 and 7)
- Tests of Achievement and Proficiency (Grade 11)

















































## Appendix B

Fall 1992 Percentile Ranks for Individuals for Language on the

- lowa Tests of Basic Skills (Grades 4 and 7)
- Tests of Achievement and Proficiency (Grade 11)
















ARIZONA PUPIL ACHIEVEMENT TESTING
NATIONAL INDIVIDUAL PERCENTILE RANK OCTOBER 1991

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## Appendix C

Fall 1992 Percentile Ranks for Individuals for Mathematics on the

- lowa Tests of Basic Skills (Grades 4 and 7)
- Tests of Achievement and Proficiency (Grade 11)

NATIONAL INDIVIDUAL PERCENTILE RANK OCTOBER 1991


| COWNTY oistrict SCHOOL |
| :---: |
| matrowal <br> statemide <br> sanders untfied dist <br> sanders elekentary SANDERS JNIOR HIEH Valley hieh school <br> St Jowns unified dis <br> ST JOHNS HIGH SCHOOL ST JOHNS MIDDLE SCHO <br> VERNOW ELEMENTARY DI <br> VERAON SCHOOL <br> hindow rock untifed <br> FT DEFINCE SCHOOL TSO HO TSO MIDDLE SC hINDOW ROCK HIEH SCH WINDOH ROCK SCHOOL |



















## NATIONAL INDIVIDUAL PERCENTILE RANK

 OCTOBER 1991












ARIZONA PUPIL ACHIEVEMENT TESTING
MATHEMATICS
NATIONAL INDIVIDUAL PERCENTILE RANK
grade



















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