



Arkansas Comprehensive Testing, Assessment, and Accountability Program

# REPORT INTERPRETATION GUIDE

**THE IOWA TESTS<sup>®</sup>**  
**GRADES 1–2 AND 9**

**APRIL 2014 ADMINISTRATION**

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Arkansas Department of Education



**Riverside**

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# Interpretive Guide

## Introduction

The Arkansas Department of Education (ADE) in accordance with Act 35 of the Second Extraordinary Session of 2003 requires the administration, scoring, and reporting of a norm-referenced examination for grades K–9. The assessment assists the ADE in implementing those portions of Act 35 requiring the State Board of Education to develop a comprehensive testing and assessment program to serve as a complement to a major criterion-referenced testing (CRT) program that directly measures the state content standards and is the primary instrument for school accountability. The norm-referenced testing (NRT) program helps educators better understand students' academic strengths and weaknesses in order to improve instruction; chart longitudinal growth patterns for students and schools across time; evaluate educational programs; and show Arkansas's leaders, educators, and parents how their students' achievement compares with other students across the nation.

In spring 2014, all eligible students in grades 1 and 2 took the *Iowa Tests of Basic Skills*<sup>®</sup> (*ITBS*<sup>®</sup>); all eligible students in grade 9 took the *Iowa Tests of Educational Development*<sup>®</sup> (*ITED*<sup>®</sup>). Students in grades 1 and 2 took the Vocabulary, Reading, Language, Math Concepts, and Math Problems tests from a secure form of the Complete Battery of the *ITBS*. Students in grade 9 took the Vocabulary, Reading Comprehension, Language: Revising Written Materials, Mathematics: Concepts and Problem Solving, and Computation tests from a secure form of the *ITED*. The Iowa Tests<sup>®</sup> are published by Riverside<sup>®</sup> of Rolling Meadows, Illinois, and are in the traditional multiple-choice format.

This *Report Interpretation Guide* is designed to help teachers, counselors, and school administrators understand, explain, and use the results of The Iowa Tests. Students' scores are reported by test and skill area at the individual student level and

then aggregated to class/school, district, and state levels.

This guide specifies the tests used for the Arkansas Norm-Referenced Testing Program, describes the scores on the various reports so that proper interpretations can be made, and discusses the various individual, school, and district reports. Test results are one of several sources that provide teachers with an overall understanding of a student's educational development.

## The Tests

The Iowa Tests are a standardized achievement test battery. A standardized, norm-referenced test is a test that has been given, using specified directions and under specific conditions, to a group of students that was carefully selected to represent students nationwide. Scores derived from this "standardization" program are the *norms* that permit the test user to compare student performance with that of this larger representative group. Thus, the norms provide a method for comparing the achievement of specific groups of students in the same grade. Norms also provide a vehicle for comparing the performance of individual students with the performance of students in the national norm group. The spring norms window spans five weeks in April and May.

The scores for The Iowa Tests are interpolated to the week that includes April 8, 2005.

The descriptions that follow briefly summarize the content and skills measured by each test across Levels 7, 8, and 15. The item-skills classifications for each test at each level are provided in the Appendix.

### ***ITBS* Levels 7 and 8 (Grades 1 and 2)**

***Vocabulary.*** The Vocabulary test in Level 7 and Level 8 measures reading vocabulary. A pictorial or written stimulus is followed by a set of written responses. Approximately equal numbers of nouns, verbs, and modifiers are tested. The content focus

is on general vocabulary rather than the specialized vocabulary used in such areas as science or math.

**Reading.** The Level 7 and Level 8 Reading test presents students with a variety of reading tasks. The first part of the test presents pictures that tell a story. Students must complete sentences about the pictures by choosing a word to fill in a blank. The second part involves reading sentences. Students select a word that best completes each of several sentences. The remainder of the test consists of written stories followed by multiple-choice questions. The questions associated with both the picture stories and written stories often require more than literal comprehension. A number of the questions ask the students to make inferences or to generalize about what they have read.

**Language.** The Language test at these levels is intended to assess students' abilities to use some of the conventions of standard written English. The four test parts deal with spelling, capitalization, punctuation, and skill in usage and expression in writing. In all cases, both the question and the set of response choices are read orally by the teacher.

The Spelling test provides two functions. It furnishes a separate score for spelling, and it contributes to the score for Language. Errors in tested words are based on common substitutions and omissions.

**Math Concepts.** All questions on the Level 7 and Level 8 Math Concepts test are orally administered. The response options for each question are either pictures, numbers, or words. Students are required to demonstrate their understanding of, and ability to apply, a variety of concepts in these areas: number properties and operations, geometry, measurement, and number sentences.

**Math Problems.** The Level 7 and Level 8 Math Problems test is administered orally. For some questions, brief word problems are presented, students solve the problems, and then they record their answers according to the choices provided. One choice in each set is "N," meaning that the problem solution is not given among the choices presented. For some other questions, students select a number sentence that could be used to solve the problem. Finally, some questions involve the interpretation of data presented in graphs or

tables: students locate data, compare amounts, or develop generalizations.

The use of calculators for the grade 1 and grade 2 tests, during administration of the mathematics portions of the test, is not permitted. The mathematics test items were designed to minimize the amount of computational effort the students would need. Therefore, there should be no perceived disadvantage in not using calculators.

### **ITED Level 15 (Grade 9)**

**Vocabulary.** This test assesses general vocabulary development. The words tested represent a cross-section of vocabulary encountered in general communication: reading, writing, and listening. To avoid ambiguity and possible misinterpretation, each tested word is presented in the context of a short phrase or sentence that demonstrates the way the word functions grammatically. Students choose, from among five alternatives, the word or phrase closest in meaning to the tested word. The context does not provide "clues"; each of the answer choices is plausible for the context presented.

Technical words and vocabulary with specialized meanings in specific fields have been excluded from the test in order to provide more comprehensive coverage of general vocabulary.

**Reading Comprehension.** This test provides information about the kinds of comprehension skills students are expected to continue to develop as they proceed through high school—skills they will use in reading texts across the curriculum, in engaging with literature, in reading and thinking about magazine and newspaper articles in and outside of school, and in extracting and evaluating ideas from a variety of sources in research projects and extracurricular reading. The passages comprising the Reading test are all taken from previously published materials and include: a fiction or narrative passage; an article about a social studies topic and one about a science topic; another nonfiction passage, which may be from a biography or memoir, from an essay, or from the general interest domain; and a poem. The prose passages range in length from 400 to 600 words. These passages represent a diverse assortment of well-regarded authors writing in a variety of styles and for a variety of purposes.

The questions associated with each passage require students to demonstrate understanding at each of the three process levels usually associated with reading comprehension: literal, or factual, understanding; inference and interpretation; and analysis and generalization. By far the greatest emphasis is on questions that address the higher-level objectives of inferring, analyzing, and generalizing, often described as critical thinking skills. Approximately two-thirds of the questions at Level 15 are classified in these categories.

**Language: Revising Written Materials.** This test, sometimes labeled “Revising Writing” on score reports, provides information about students’ skills in recognizing correct and effective use of standard American English in writing. In the context of a variety of written materials, students are asked to make revision choices concerning organization, diction and clarity, sentence structure, usage, mechanics, and spelling—much as they do in the editing of near-final drafts of their own writing.

The test questions are embedded in four complete texts patterned after student writing in content and style. These texts—in the form of letters, essays, articles for the school or local newspaper, personal accounts, and reports written for courses across the curriculum—range in length from 125 to 450 words. Every effort is made to incorporate a variety of topics that will be engaging to a broad range of high-school students.

The texts are presented as drafts in which certain portions have been underlined to indicate a possible need for revision. The corresponding questions present alternatives that may correct or improve the underlined portions. In some cases, there is a clear-cut error in mechanics or usage; sometimes the consideration is one of wordiness, lack of clarity, or appropriateness of style; and sometimes the relevance of certain pieces of information or the logic of transitions is at issue.

Most of the questions are of this “underlined portion” type. A second type of question involves making a rhetorical judgment about a place in the text identified by a number in a box. These questions may ask, for example, which of four sentences would make the best transition at a given point in the text or which would make the best opening sentence for a specific paragraph. This type of question may also ask students to judge the

most logical sequence of ideas or to address other aspects of the text’s organization.

**Mathematics: Concepts and Problem Solving.** The content and processes measured by this test closely follow the standards suggested by the National Council of Teachers of Mathematics (NCTM) in its publication *Principles and Standards for School Mathematics*. Just as the focus of the NCTM *Principles and Standards* is on fundamental concepts and reasoning skills, the primary intent of this test is to measure students’ ability to solve quantitative problems. The questions in this test present practical problems that require basic arithmetic and measurement, estimation, data interpretation, and logical thinking. A few questions test more abstract concepts such as precision in measurement, probability, and exponents. The test’s emphasis on probability and statistics is consistent with the special emphasis given these topics in the *Principles and Standards*.

Although this test has questions requiring complex quantitative reasoning, it avoids measurement of content that only students taking upper-level mathematics courses will have encountered. (It does not, for example, measure trigonometry or the conceptual underpinnings of calculus.) However, students taking advanced mathematics courses will be challenged by a significant number of the questions that address problem-solving skills in a general context.

The primary objective of this test is to measure students’ ability to use appropriate mathematical reasoning, not to test computational facility under pressure. To this end, the number of items requiring computation is minimal. Approximately 15 questions require computation. Of these, most involve round numbers or single-digit numbers. In addition, a number of the questions require students to analyze a problem and select the sequence of mathematical steps, or “set-up,” that, if carried out, would yield the correct solution; the computation itself is not required.

**Computation.** The questions included in this test were selected to represent the skills that are most directly related to the computational manipulations needed throughout the secondary-school mathematics curriculum. Thus, the Computation test includes not only questions that measure the ability to add, subtract,

multiply, and divide whole numbers, fractions, and percents, but also questions that measure the ability to manipulate variables and to evaluate expressions with exponents or with square roots.

Calculators are permitted in the Mathematics: Concepts and Problem Solving test but **not** in the Computation test.

### Norm-Referenced Test Scores

Scores from a norm-referenced test indicate how a given student’s knowledge or skill compares with that of others in the norm group. They do not tell what a student knows or does not know.

The scores reported for the Arkansas Norm-Referenced Testing Program identify a student’s relative strengths and weaknesses in the tested areas. Scores can be used to monitor year-to-year growth of students and groups of students in important academic areas.

The following scores are reported for the Arkansas program:

- Standard score (SS)
- National percentile rank (NPR)
- National stanine (NS)
- Normal curve equivalent (NCE)

The scores differ from one another in the kind of information they represent, the precision with which they describe achievement, and the purposes they can serve.

#### Standard Score

**Definition.** Standard scores (SSs) are produced from a single, equal-interval scale of scores that is continuous from kindergarten through grade 12. Standard scores on The Iowa Tests range from 80 for kindergarten through 400 for grade 12. The range of possible standard scores is different for each grade level.

**Uses.** The major use of the standard score is to measure achievement growth of students or groups of students from year to year. Within a school or district, successively higher standard scores from grade to grade would be expected.

**Limitations.** A standard score by itself has little meaning. It can be interpreted only when it is compared with some referent, such as the appropriate average standard score, as shown in the table that follows. The numbers indicate the standard scores that correspond to typical performance of grade groups on The Iowa Tests during the norming period in the spring of the year. For example, a second grader’s score of 168 on the *ITBS* Math Problems test means that the student’s math performance corresponds to the median SS of the typical second grade student during the same norming period.

**Average Standard Scores  
Complete Battery  
(Quartermonth of April 8, 2005)**

Grade	K	1	2	3	4
Median SS	130	149	168	184	199
Grade	5	6	7	8	9
Median SS	213	227	239	250	260

The scale above shows that average annual growth decreases as students move up from one grade to the next. For example, at the median, the average growth from grade 1 to grade 2 is 19 standard score points, but from grade 8 to grade 9 the average growth is only 10 points. Since it is widely believed that the rate of growth in most achievement areas decreases as grade level increases, the standard score scale reflects typical student development.

Norms for school averages are required to determine the relative status of standard score averages for a given school. The norms for school averages are based on weighted frequency distributions of school averages obtained in the national standardization program. An average standard score was computed for each test at each grade level for each building. The total distribution of these averages provided the basis for the norms for school averages.

Norms for school averages differ markedly from norms for student scores. To begin with, school averages are not as variable as individual student scores. Another difference between norms for school averages and norms for student scores is the median of their distributions. Distributions of student scores for all individual tests share a

common median at a given grade level, whereas the medians for the distributions of school averages tend to vary across tests within the same grade.

### **Percentile Rank**

**Definition.** A student's percentile rank shows the student's relative position or rank in a group of students who were in the same grade and who took the tests at the same time of year as the student. A student's national percentile rank (NPR) is the student's standing as compared to a large representative sample of students in the same grade from the entire nation.

**Uses.** The percentile rank, reported in units that range from 1 through 99, is perhaps the most useful and readily understood score for interpreting student achievement. It describes performance in small, fairly precise units. These units clearly state performance relative to the norm group. For example, if Kara earned a percentile rank score of 72 on the Math Concepts test, then she scored the same as or higher than 72 percent of the students in the norm group who were in the same grade and took the same test. Conversely, 28 percent of the students scored higher than Kara.

**Limitations.** The percentile rank magnifies small differences in the middle raw scores while reducing differences in very high and very low raw scores. This is because the percentile rank is based on the frequency with which each raw score occurred in the norm group and denotes the percentage of individual scores that fell at or below a selected point.

Generally, very high and very low scores are infrequent, while middle scores are frequent. Smaller differences in raw score points are therefore needed to move from one percentile rank to another for middle scores, while greater differences in raw score points are needed to move from one percentile rank to another for very high or very low scores. For example, a difference of only three raw score points might be necessary to move from a percentile rank of 50 to a percentile rank of 55, while a difference of seven raw score points might be necessary to move from a percentile rank of 10 to a percentile rank of 15, or from a percentile rank of 90 to a percentile rank of 95.

Averaging narrows the range of school percentage ranks; therefore, differences between school percentile ranks are very sensitive to relatively small differences from test to test. That is, a large difference in percentile ranks can be caused by small differences in the school averages themselves, especially in the primary grades. Student percentile ranks are less sensitive to minor differences. Substantial discrepancies in student percentile ranks across subject-area tests constitute more dependable evidence of genuine strengths and weaknesses than do more substantial discrepancies in the percentile ranks of school averages.

### **Stanine**

**Definition.** Stanines express test results in nine equal steps ranging from 1 (lowest) through 9 (highest). The average stanine is a score of 5. Stanines, which are similar to percentile ranks, are relatively easy to use because they are all one-digit numbers. The national stanine (NS) shows a student's standing within the group of students in the same grade who took the test at the same time of year during the national standardization.

In general, stanines 1, 2, and 3 are well below average; 4 is slightly below average; 5 is average; 6 is slightly above average; and 7, 8, and 9 are well above average.

**Uses.** Stanines for groups are useful for broadly identifying areas of curricular strengths and weaknesses that might be represented by a set of test scores. For example, if a stanine of the average standard score is 4 for Reading, the class as a whole is reading slightly below average. A visual display of nine stair steps can be a helpful interpretive aid during parent conferences or in classroom score interpretation sessions with students.

**Limitations.** Stanines are less precise than percentile rank (PR) scores. For example, percentile ranks of 24 and 40 both represent a stanine of 4. However, PRs of 23 and 24 are consecutive PRs that represent stanines of 3 and 4, respectively.

### **Normal Curve Equivalent**

**Definition.** Normal curve equivalents (NCEs), derived from national percentile ranks, are normalized standard scores with a mean of 50.

NCEs are equal-interval scores that result from dividing the normal curve into 99 equal units. This assures that the differences between NCE units at different positions on the scale are equal, unlike percentile ranks. For example, the difference in performance between NCEs of 50 and 55 is equal to the difference between NCEs of 10 and 15.

The NCE is a *within-grade* standard score that denotes individual or group status within a grade. The full range of NCEs, 1 through 99, may be earned in each grade level with the average NCE always at 50. By contrast, the standard score described on page 4 is an *across-grade* score that can be used to determine growth. Unlike NCEs, the range of possible standard scores is different for each grade level, and the average standard score increases as the grade levels move upward.

**Uses.** NCEs can be interpreted in much the same way as percentile ranks. NCEs may be averaged to describe group performance. For these reasons, NCEs are often used in evaluating results in Title I programs. NCEs used in Title I evaluation must be based on established norms for a particular grade and time of year. This requirement enhances the standardization and comparability of test reporting procedures.

NCEs can be averaged for most groups because of their equal-interval scaling. In this way they are unlike percentile ranks, which cannot be averaged because of their frequency-based scaling. NCEs may be thought of as roughly equivalent to stanines to one decimal place. For example, an NCE of 53 may be interpreted as a stanine of 5.3.

**Limitations.** Although reporting procedures for various test batteries have been standardized, the NCEs from different test batteries are not interchangeable.

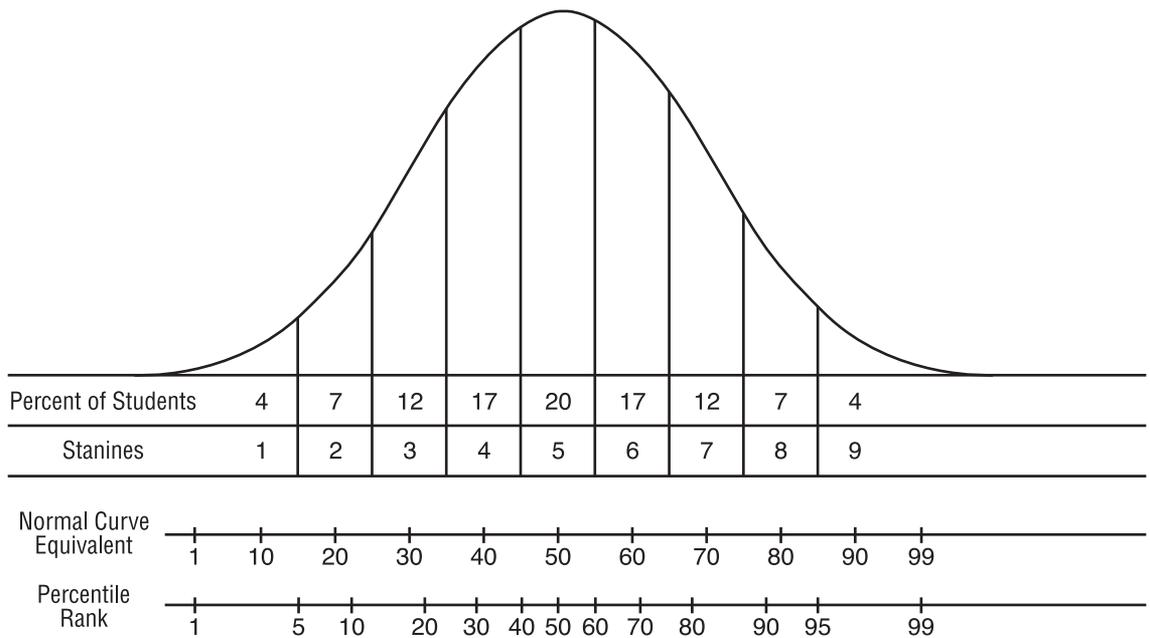
## Interpreting Scores: A Caution

There is a degree of measurement error in all scores. If it were possible to administer repeated independent testings, a student's score would not be the same every time but would fall within a range. This range is due to many factors other than knowledge of test content—such as motivation, how the student is feeling, and classroom conditions—that affect student performance on the test at each sitting.

The range within which the scores for these repeated testings would be expected to fall is called an accuracy (or confidence) band. This accuracy band is calculated through use of a statistic called the *standard error of measurement*, a statistical index that represents the reliability factor, or measurement error, in test scores.

Riverside has established a simple method for determining students' *relative* strengths and weaknesses by using a confidence range. This method takes into account the standard error of measurement. For NCE scores, this rule is 12 points and is applicable at all points along the score range because the NCE is an equal-interval scale. When NCEs are used to determine relative strengths and weaknesses, a difference of 12 points between the NCEs in test Totals is considered significant. For example, if Matthew has a Reading Total of 55 and a Mathematics Total of 43, he is considered to have a relative strength in reading.

## Relationship of Stanines, Percentile Ranks, and Normal Curve Equivalents



### NRT Scores

The graph above compares stanines, percentile ranks, and normal curve equivalents. These NRT scores are summarized on the following page.

### ITBS/ITED Comparison of NRT Scores

NRT SCORES	DEFINITION	SCORE RANGE	CHARACTERISTICS	USES	EXAMPLE	LIMITATIONS
Standard Score (SS)	Equal-interval scale of scores that is continuous from kindergarten to grade 12	80–400	<ul style="list-style-type: none"> <li>Shows year-to-year growth</li> <li>Median SS for each grade reflects typical student performance in that grade</li> </ul>	To measure achievement growth from year to year	Sam is in second grade. His Math Problems SS of 168 means that his math level is like that of the typical second grade student in spring.	For interpretation of the SS, a benchmark value associated with typical performance in each grade is needed.
National Percentile Rank (NPR)	Percent of students in the national norm group who earned raw scores the same as or lower than a particular raw score	1–99	<ul style="list-style-type: none"> <li>Shows a student's relative positioning in a group of students in the same grade tested at the same time of year</li> <li>Frequency-based scale</li> </ul>	<ul style="list-style-type: none"> <li>To describe student performance in small, fairly precise units relative to the norm group</li> <li>To describe areas of relative strength and weakness for an individual student, class, or grade group</li> </ul>	Lisa's NPR of 43 for Math Concepts means that 43 percent of the national norm group scored at or below Lisa's raw score and 57 percent scored higher.	NPRs cannot be averaged. Group averages must be reported in terms of other scores, such as the NPR of the average SS.
National Stanine (NS)	A grouping of percentile ranks	1–9	<ul style="list-style-type: none"> <li>A stanine of 5 is average; stanines 1–4 are below average; 6–9 are above average</li> <li>Equal-interval scale</li> </ul>	To broadly identify areas of strength and weakness	Lara's stanine of 3 for Reading means that she is in the below average stanine group.	NSs are less precise than percentile ranks.
Normal Curve Equivalent (NCE)	Equal-interval scores that result from dividing the normal curve into 99 equal units	1–99	<ul style="list-style-type: none"> <li>Equal-interval score</li> <li>Scores can be added, subtracted, and averaged</li> </ul>	<ul style="list-style-type: none"> <li>To compare tests in terms of strengths and weaknesses</li> <li>To compare groups of students</li> </ul>	If Tanya's Reading NCE is 46 and her Math Concepts NCE is 58, you can say that she has a relative weakness in reading and a relative strength in math.	NCEs from different test batteries (e.g., the <i>Stanford 9</i> and the <i>ITBS</i> ) cannot be interchanged.
Raw Scores (RS)	Number of test questions student answered correctly	Number of items varies per test	Can be used to calculate percent correct	Can be converted to other scores: SS, NS, NCE, NPR	If Jesse's raw score on a 40-item test is 30, he answered 30 of the 40 items correctly.	Meaning varies from test to test.

## The Reports

Districts will receive the following reports:

- Student Score Label
- Individual Performance Profile
- List of Student Scores
- School Coded Summary
- School Item Analysis (Disaggregated Data by Student Subgroups)

**SAMPLE REPORTS ARE INCLUDED ON THE FOLLOWING PAGES. THE REPORTS ARE LOCATED AS FOLLOWS:**

<b>Report</b>	<b>Page</b>
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Student Score Label

**STUDENT SCORE LABELS**  
Iowa Tests of Educational Development® (ITED®)



Class: Pierce  
School: Arkansas High School 99-99-999  
District: Arkansas School District 99-99  
Form: AR13  
Test Date: 04/2014  
Norms: 04/8 2005  
Order No.: 000502336  
Page: 3  
Grade: 9

Johnson, Amber		ID Number	DOB	Grade	Level	Form	Test Date	Norms	Calc.	F-1	F-2	F-3	Code	A B C D E F G H I J K L M N O P Z Program												Iowa Tests of Educational Development
Scores Reported		111111111	02/99	9	15	AR13	04/14	04/8 2005						* = Not included in Totals or Composite												
SS NS NCE NPR	READING		LANGUAGE		MATHEMATICS														Total							
	Vocab-ulary	Compre-hension	Spelling	Revising Writing	Concepts & Prob. Solv.																					
	232	242	237	253	216	270													270							
	3	4	4	5	3	6													6							
	34	43	39	47	32	55													55							
	22	37	31	44	19	60													60							

Jones, Kyanna		ID Number	DOB	Grade	Level	Form	Test Date	Norms	Calc.	F-1	F-2	F-3	Code	A B C D E F G H I J K L M N O P Z Program												Iowa Tests of Educational Development
Scores Reported		222222222	02/99	9	15	AR13	04/14	04/8 2005						* = Not included in Totals or Composite												
SS NS NCE NPR	READING		LANGUAGE		MATHEMATICS														Total							
	Vocab-ulary	Compre-hension	Spelling	Revising Writing	Concepts & Prob. Solv.																					
	319	317	318	281	297	278													278							
	9	8	9	6	7	6													6							
	91	77	87	62	66	59													59							
	97	90	96	71	78	66													66							

Smith, Hannah		ID Number	DOB	Grade	Level	Form	Test Date	Norms	Calc.	F-1	F-2	F-3	Code	A B C D E F G H I J K L M N O P Z Program												Iowa Tests of Educational Development
Scores Reported		333333333	06/99	9	15	AR13	04/14	04/8 2005						* = Not included in Totals or Composite												
SS NS NCE NPR	READING		LANGUAGE		MATHEMATICS														Total							
	Vocab-ulary	Compre-hension	Spelling	Revising Writing	Concepts & Prob. Solv.																					
	276	298	287	322	305	311													311							
	6	7	7	8	7	8													8							
	62	68	67	84	70	78													78							
	71	81	79	95	83	91													91							

### **Student Score Label**

The student score label contains the same information about the student that would be found on the *List of Student Scores*. A press-on label from each year of testing can be affixed to a designated area of a student's file, enabling a cumulative record to be kept of a student's *ITBS/ITED* scores.

Up to eight scores can be printed on the label, but one of these must always be the national percentile rank (NPR). Others that could be selected include: standard scores, grade equivalents, national stanines, local percentile ranks, local stanines, normal curve equivalents, and raw scores.

Separate labels are provided for the *ITBS* and *ITED*. The labels for Amber Johnson, Kyanna Jones, and Hannah Smith, who took the *ITED*, are shown.

# Individual Performance Profile

Student: Baker, Tony  
 Class: Pierce  
 School: Arkansas Elem School 99-99-999  
 District: Arkansas School District 99-99

## PERFORMANCE PROFILE FOR TONY BAKER Iowa Tests of Basic Skills® (ITBS®)

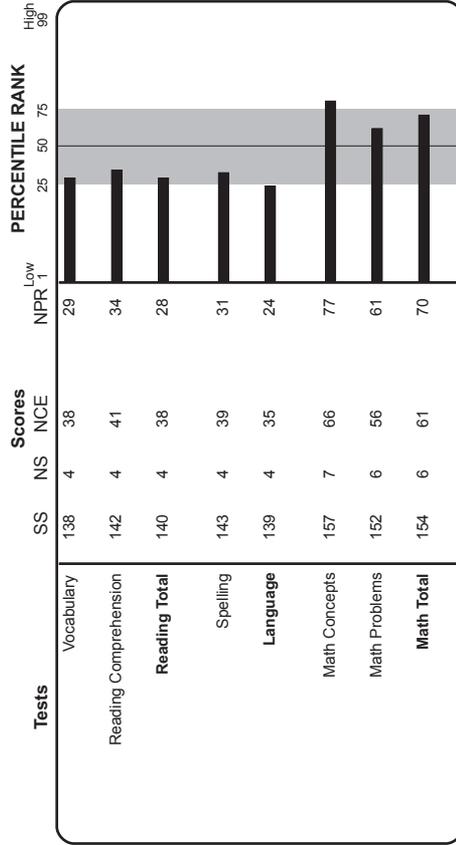


FormLevel: AR13  
 Test Date: 04/20/14  
 Norms: 04/8, 2005  
 Order No.: 000502336  
 Page: 18  
 Grade: 1

In the upper left part of this report, scores are printed for the tests, totals, and, if available, the composite. Several types of scores are reported, including the national percentile rank (NPR), which is the percent of students in this grade in the nation with a lower score on that test, total, or composite.

The graph to the right of the scores provides a visual display of the student's performance on each test relative to the other test areas. The NPR for the various scores are displayed as horizontal bars. The varying lengths of these bars permit identification of the student's stronger and weaker areas of achievement.

The lower part of the report provides detailed information about skills in each test. The number of items for each skill, the number attempted, the percent correct for the student, and the percent correct for students in this grade in the nation are reported. The difference between the student's percent correct and the percent correct for students in the nation is displayed as a horizontal bar. These bars permit identification of skills that stand out as high or low when compared with students in the nation.



SS = Standard Score, NS = Natl Stanline, NCE = Normal Curve Equiv., NPR = Natl Percentile Rank

Tests and Skills	Total Items	No. Att.	%C	%C Stu.	Natl. Diff.	Differences*
<b>Vocabulary</b>	30	30	50	68	-18	
<b>Reading Comprehension</b>	6	6	33	67	-34	
Sentence Comprehension	28	28	43	58	-15	
Story Comprehension	10	10	40	68	-28	
<b>Spelling</b>	10	10	60	70	-10	
Vowels	3	3	33	55	-22	
Consonants	11	11	27	75	-48	
V/C Combinations and Affixes	5	5	60	63	-3	
<b>Language</b>	13	13	54	61	-7	
Spelling in Context	12	12	75	71	4	
Capitalization in Context	6	6	83	71	12	
Punctuation in Context	5	5	100	82	18	
Usage and Expression	6	6	67	59	8	
<b>Math Concepts</b>	17	17	82	62	20	
Number Properties and Operations	11	11	82	64	18	
Algebraic Concepts	2	2	50	46	4	
Geometry	4	4	100	64	36	
Measurement	11	11	27	51	-24	
<b>Math Problems</b>	3	3	33	58	-25	
Problem Solving	5	5	20	53	-33	
Single-step	17	17	82	62	20	
Multiple-step	2	2	50	46	4	
Approaches and Procedures	4	4	100	64	36	
Data Interpretation	11	11	27	51	-24	
Read Amounts	3	3	33	58	-25	
Compare Quantities	5	5	20	53	-33	

\*A plus (+) or minus (-) sign in the difference graph indicates that the bar extends beyond +/- 20. No. Att. = Number Attempted %C = Percent Correct \* = 1 and 2 item skills are not graphed

### **Individual Performance Profile**

This profile report focuses on content and is especially useful for explaining test results in parent conferences. It contains normative data for each content area and indicates the student's performance on the skills assessed in each content area. The bar graphs illustrate the student's strengths and weaknesses. Together with portfolios and other work samples, this report can be used to describe student performance. Separate reports are provided for the *ITBS* and *ITED*. The report for Tony Baker, who took the *ITBS*, is shown.

Student identification information is reported in the upper right-hand corner. This report is for Tony Baker, who is in first grade at Arkansas Elementary School in Arkansas School District. This student took Level 7 of the *ITBS* Form AR13 in April of 2014, and the norms being used to report the scores are interpolated to the week of April 8, 2005.

The score profile section in the upper left-hand corner lists the tests included in this student's profile. The standard score (SS), national stanine (NS), normal curve equivalent (NCE), and the national percentile rank (NPR) are reported for each test. The NPRs are graphed for each test in the area to the right. The Low range encompasses national percentile ranks 1 through 25; the Middle range, 26 through 74; and the High range, 75 through 99. Tony's NPRs range from 77 for Math Concepts to 28 for Reading Total.

To the right of the bar graph display, there is interpretive information about how to use the scores and graphs from the tests. Below the interpretive paragraphs is a legend that shows the meanings of the abbreviations used for the scores in the profile section.

In the bottom portion of the report, performance in each skill area is described and graphed. The total number of items in the skill area ("Total Items"), the number of items the student attempted ("No. Att."), the percent of questions the student answered correctly on a skill ("%/C Stu."), and the percent correct score of a typical student in the nation in the same grade at the same time of year ("%/C Nat.") are reported. The last column shows the difference between the student's score and the national average. A bar graph illustrates the student's performance compared with the national average on the skills assessed in each content area. If a difference is larger than 20, positive or negative, a "+" or "-" will print on the end of the bar graph.

The items on The Iowa Tests were classified on the basis of content and process requirements as part of the test development process. After the tests were developed, each item was classified further in terms of the critical thinking demands it requires of students who answer it correctly. The performance in each critical thinking skill area is described at the bottom of the report. Arkansas students did not take the Social Studies, Science, or Sources of Information tests; therefore, no data will be reported for these tests.

Those items in the Reading Comprehension test that ask students to go beyond what is directly stated in the text and to "read between the lines" were classified as critical thinking items. In the Math tests, items were classified as measuring critical thinking if they demand responses that are more thoughtful than practiced.

# List of Student Scores

## LIST OF STUDENT SCORES Iowa Tests of Educational Development® (ITED)®



Class: Pierce  
 School: Arkansas High School 99-99-999  
 District: Arkansas School District 99-99  
 Form/Level: AR13  
 Test Date: 04/2014  
 Norms: 04/8 2005  
 Order No.: 000502336  
 Page: 1  
 Grade: 9

STUDENT NAME I.D. Number F-1 F-2 F-3 Code A B C D E F G H I J K L M N O P Z	Birth Date Age Form	Level (Gender)	READING			MATHEMATICS			TOTAL
			Vocabulary	Comprehension	TOTAL	Revising Written Materials	Concepts & Prob. Solv.	Computation	
<b>Johnson, Mikel</b> 111111111	09/98	15 (M)	267	288	278	257	288	275	284
	15-07	AR13	6	6	6	5	6	6	6
	0 0 0 0 0		55	63	61	49	63	57	63
			60	74	70	48	74	64	73
<b>Jones, Lauren</b> 222222222	03/99	15 (F)	285	280	282	301	299	275	291
	15-01	AR13	7	6	6	7	7	6	7
	0 0 0 0 0		68	59	64	68	70	57	67
			81	67	74	81	83	64	79

SS=Standard Score, NS=National Stanine, NCE=Normal Curve Equivalent, NPR=National Percentile Rank

For further information on the interpretation of this report, please visit [www.riversidepublishing.com](http://www.riversidepublishing.com) or refer to the Interpretive Guide.

### List of Student Scores

The *List of Student Scores* lists students alphabetically with their scores for each test. Students are grouped by class and by grade within each school. This report is for the ninth-grade class at Arkansas High School in Arkansas School District.

Individual scores are provided for all students who took the tests. Class, school, and norms information is provided in the upper right-hand corner of the report. Student names and other identifying information are provided on the left side of the report. The first row of information for the first student, Mikel Johnson, shows that Mikel was born in September 1998; he took Level 15 of the *ITED*; and he is male. The second line shows that his ID number is 111111111; he was fifteen years and seven months old when he took the test; and he took Form AR13 of the *ITED*. Any program codes would be listed on the third line in the “Program” position. A key for all program codes used in this report is provided below. Any ESI codes and accommodations would be listed on the last line in the “G” and “H” positions. Keys for the ESI codes and accommodations are provided to the right.

The scores reported are standard score (SS), national stanine (NS), normal curve equivalent (NCE), and national percentile rank (NPR).

### Definition of Program Codes

MG	Migrant
GT	Gifted/Talented
LEP	Limited-English Proficient
O1	Highly Mobile
F/RL	Free and/or Reduced Lunch
MFLEP1	Monitored Former LEP Year 1
MFLEP2	Monitored Former LEP Year 2

### Definition of ESI Codes (Column G)

1	Autism
2	Deaf-Blindness
3	Hearing Impairment
4	Mental Retardation (both TMR and EMR)
5	Multiple Disabilities
6	Orthopedic Impairment
7	Other Health Impairment
8	Emotional Disturbance
9	Specific Learning Disability
10	Speech/Language Impairment
11	Traumatic Brain Injury
12	Visual Impairment

### Accommodations (Column H)

1	Transferred Answers
2	Recorded Responses
3	Directions Signed
4	Preferential Seating
5	Small Group Testing
6	Individual Testing
7	Read Aloud Math or Writing
8	Magnifying Device
9	Noise Buffers
10	Student Scheduled Individually and Given Extended Time
11	Extended Time
12	Large Print Test Booklet
13	Braille
14	Abacus



## School Coded Summary

### SCHOOL CODED SUMMARY Iowa Tests of Basic Skills® (ITBS®) Accommodations

Form: ARI13  
School: Arkansas Elem School 99-99-999 Test Date: 04/2014  
District: Arkansas School District 99-99 Norms: 04/8 2005  
Order No.: 000502336 Page: 1 Grade: 2

	READING			LANGUAGE			MATHEMATICS		
	Vocabulary	Reading Comprehension	TOTAL	Spelling	TOTAL	Math Concepts	Math Problems	TOTAL	
<b>Small Group Testing</b>									
Number of Students Included	2	2	2	2	2	2	2	2	
Average Standard Score (SS)	139.0	151.5	145.0	148.5	155.0	167.5	174.5	171.0	
Normal Curve Equivalent of Average SS	21	32	24	25	35	53	60	56	
Standard Deviation of SS	11.0	0.5	5.0	19.5	5.0	16.5	11.5	14.0	
Percentile Rank of Average SS: National Student Norms	8	19	11	12	24	55	68	62	
Number of Students in National Percentile Rank 75-99	0	0	0	0	0	1	1	1	
50-74	0	0	0	1	0	0	0	0	
25-49	0	0	0	0	1	0	1	1	
1-24	2	2	2	1	1	1	0	0	
Percent of Students in National Percentile Rank 75-99	0.0	0.0	0.0	0.0	0.0	50.0	50.0	50.0	
50-74	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	
25-49	0.0	0.0	0.0	0.0	50.0	0.0	50.0	50.0	
1-24	100.0	100.0	100.0	50.0	50.0	50.0	0.0	0.0	
Number of Students Tested = 2									
<b>Total</b>									
Number of Students Included	2	2	2	2	2	2	2	2	
Average Standard Score (SS)	139.0	151.5	145.0	148.5	155.0	167.5	174.5	171.0	
Normal Curve Equivalent of Average SS	21	32	24	25	35	53	60	56	
Standard Deviation of SS	11.0	0.5	5.0	19.5	5.0	16.5	11.5	14.0	
Percentile Rank of Average SS: National Student Norms	8	19	11	12	24	55	68	62	
Number of Students in National Percentile Rank 75-99	0	0	0	0	0	1	1	1	
50-74	0	0	0	1	0	0	0	0	
25-49	0	0	0	0	1	0	1	1	
1-24	2	2	2	1	1	1	0	0	
Percent of Students in National Percentile Rank 75-99	0.0	0.0	0.0	0.0	0.0	50.0	50.0	50.0	
50-74	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	
25-49	0.0	0.0	0.0	0.0	50.0	0.0	50.0	50.0	
1-24	100.0	100.0	100.0	50.0	50.0	50.0	0.0	0.0	
Number of Students Tested = 2									

For further information on the interpretation of this report, please visit [www.riversidepublishing.com](http://www.riversidepublishing.com) or refer to the Interpretive Guide.

### **School Coded Summary**

#### **(Disaggregated Data by Student Subgroups)**

This report enables districts to obtain disaggregation of student scores for subgroup analysis. The *Coded Summaries* report provides subgroup and total-group statistics on each of the tests taken.

For each subgroup and for the overall group, the following information is reported for each test score: the number of students included, the average standard score (SS), the normal curve equivalent of the average SS, the standard deviation of the average SS, and the national percentile rank of the average SS using standard scores. This report also shows the number and percent of students in the subgroup who scored within each of the NPR ranges printed. The number of students tested is printed as the last line.

The sample report on the preceding page is a building report for Arkansas Elementary's grade 2 students. Norms were used for reporting the scores from an administration of Form AR13 of the *ITBS* in April 2014. The title at the top center of this report shows that the subgroups reported are based on the accommodations coded on the students' answer documents.

The first rectangular box shows the scores for those students who used the "Small Group Testing" Accommodation. The last box reports the combined group totals.

## School Item Analysis

### SCHOOL ITEM ANALYSIS Iowa Tests of Basic Skills® (ITBS®)

School: Arkansas Elem School 95-99-999  
 District: Arkansas School District 99-99  
 FormLevel: AR13  
 Test Date: 04/2014  
 Norms: 04/8 2005  
 Order No.: 000502355

Page: 2 Grade: 1

Item No.	Spelling	N = Item Count	Bldg. %C	Sys. %C	Nat. %C	Diff.	Difference (School - Nat.) (+/- 10% are suppressed)
<b>Vowels</b>							
1	Vowels	10	62	66	68		
3	Vowels		90	93	88		
8	Vowels		48	61	78	-30	-
9	Vowels		67	74	74		
11	Vowels		76	61	57	19	+
14	Vowels		57	63	70	-13	-
16	Vowels		86	83	79		
20	Vowels		29	37	48	-19	-
21	Vowels		76	80	76		
23	Vowels		62	59	57		
23	Vowels		29	52	49	-20	-
<b>Consonants</b>							
2	Consonants	10	61	65	70		
4	Consonants		76	83	85		
5	Consonants		62	70	79	-17	-
6	Consonants		62	63	83	-21	-
7	Consonants		76	74	73		
10	Consonants		52	63	74	-22	-
12	Consonants		67	70	63		
13	Consonants		48	41	51		
18	Consonants		71	72	77		
19	Consonants		48	57	50		
19	Consonants		52	61	66	-14	-
<b>V/C Combinations and Affixes</b>							
15	Vowel/consonant combinations	3	60	61	55		
17	Affixes		62	59	62		
22	Affixes		57	61	51		
			62	63	53		

\*A plus sign (+) or a minus sign (-) in the Difference graph indicates that the bar extends beyond +/- 20.

Item No.	Language	N = Item Count	Bldg. %C	Sys. %C	Nat. %C	Diff.	Difference (School - Nat.) (+/- 10% are suppressed)
<b>Spelling in Context</b>							
1	Vowels	11	67	70	75		
2	Consonants		90	93	88		
3	Vowels		76	83	85		
4	Consonants		48	61	78	-30	-
5	Consonants		62	70	79	-17	-
6	Consonants		62	63	83	-21	-
7	Consonants		76	74	73		
8	Consonants		52	63	74	-22	-
9	Vowels		67	74	74		
10	Consonants		76	61	57	19	+
11	Consonants		67	70	63		
11	Consonants		57	63	70	-13	-
<b>Capitalization in Context</b>							
24	Writing conventions	5	46	57	63	-17	-
25	Name/title		52	59	58		
26	Writing conventions		52	61	75	-23	-
27	Name/title		67	70	71		
28	Date/holiday		29	46	51	-22	-
28	Date/holiday		29	48	59	-30	-
<b>Punctuation in Context</b>							
29	End punctuation	5	42	57	53	-11	-
30	End punctuation		52	54	57		
31	End punctuation		14	52	50	-36	-
32	End punctuation		67	83	70		
33	Comma		38	52	56	-18	-
33	Comma		38	46	32		
<b>Usage and Expression</b>							
34	Verb	13	39	47	61	-22	-
35	Verb		29	35	67	-38	-
36	Pronoun		48	41	52		
37	Pronoun		43	57	67	-24	-
38	Pronoun		38	50	63	-25	-
39	Verb		19	35	45	-26	-
40	Complete sentence		43	50	62	-19	-
41	Verb		33	46	63	-30	-
42	Verb		43	59	72	-29	-
43	Noun		33	41	56	-23	-
44	Modifier		57	59	67		
45	Verb		33	33	48	-15	-
46	Modifier		52	61	75	-23	-
46	Modifier		38	46	60	-22	-

%C = Percent Correct

### **School Item Analysis**

The *School Item Analysis* contains information for each school and district. A page dealing with the Spelling and Language tests from the report for Arkansas Elementary School is shown on page 18. For each test, the main skills are listed and the test questions measuring each skill are identified.

In Spelling, the first skill—Vowels—is measured by 10 items. The average percent-correct score for those 10 items in Arkansas Elementary School's first-grade class of 21 students is 62. For all 46 first-grade students in Arkansas School District, the corresponding average was 66 percent correct. The average for all first-grade students in the nation is 68. The last column shows the difference between the school average and the national average. Differences less than 10 will not be printed. Each difference is plotted as a bar graph. If a difference is larger than 20, positive or negative, a “+” or “-” will print on the end of the bar graph.

Directly under each skill is a listing of item numbers and descriptions of subskills that comprise the skill. For example, under the skill “V/C Combinations and Affixes” there are two subskills—vowel/consonant combinations and affixes. Only one item measures the first subskill (15) and two items measure the second (17, 22). The numbers to the right of each of the subskill labels should be read like those described above for the skills.

The *School Item Analysis* report is especially useful for diagnosing skills that need improvement. Subskill analysis can provide even more detailed information when the number of items in the subskills is large enough to warrant such close examination. The bar graphs are a convenient visual tool for identifying skills that should be given closer attention, either because of the need for improvement in the skills, or because of the potential positive influence these skills could have on instruction in other skill areas.

## Suggestions for Improving Achievement

After teachers have reviewed the test results for individual students or groups of students, they may want to focus some attention on the relatively weak skill or test areas of their students. In this section, a few suggestions are provided for each major test area that may prove useful in helping students improve their achievement across grade levels.

### Vocabulary

Students' abilities to communicate effectively and to learn new ideas are heavily dependent upon the extent of their vocabulary development. Teachers can foster this development by providing (a) systematic instruction in new words and their meanings, (b) spontaneous instruction whenever the opportunity arises, (c) experiences such as field trips that provide natural occasions for learning new words, and (d) enjoyable opportunities to listen to stories, videos, and tapes in which new words can be heard and learned. Particularly in kindergarten and first grade, students' vocabularies grow almost exclusively through listening.

Because students need opportunities to hear or read new words and then to use those words themselves, vocabularies develop relatively slowly. Consequently, instruction in vocabulary should be continuous and should be integrated into all academic activities. The following suggestions might be incorporated into your planned vocabulary instruction.

- Keep the emphasis on meaning rather than on mechanical pronunciation of words.
- Teach words in context rather than in isolation.
- Encourage students to ask about any unusual or confusing words as they encounter them.
- After field trips or other such activities, make lists on the board of words that were "discovered." Discuss their meanings and, as appropriate, their spellings.
- Encourage students to use new words in sentences, both orally and in writing. They will probably be more interested in trying to incorporate newly learned words into their vocabularies if the teacher uses the new words also.

- When words are misused, compare the misused word to the appropriate word. ("That jacket is mind." versus "That jacket is mine.")
- Encourage children of different language backgrounds to share interesting words, concepts, and idioms.

### Reading

Students' growth as readers is influenced by many factors such as their personal interests and motivation, the opportunities for reading that are available to them in school and at home, and their language, vocabulary, and concept development. The general suggestions below offer ideas for increasing students' engagement and motivation and for encouraging frequent reading. More specific suggestions for promoting comprehension are also given. These ideas are intended to help students become reflective and thoughtful readers who monitor their own comprehension as they read.

### *Suggestions for Improving Reading Comprehension*

- Offer students plenty of opportunities to express themselves through writing and drawing. This is one way they can share their ideas with others. Writing words and sentences can also help young children learn to listen for the sounds that make up words.
- Provide a classroom environment that is rich in print. Label classroom objects. Hang posters and signs that feature words. Post sight words or word families on the wall and make these words the focus of learning activities.
- Daily independent reading in books and materials of their own choice is important for young readers. Help students learn to select books wisely, both those that are relatively easy, for building fluency, and those that are well matched to their reading level and interests. Make available a wide variety of fiction and nonfiction so that children will be able to find reading materials they enjoy.
- Direct instruction in matching print to sound is helpful for most beginning readers. However, skills instruction and word identification should not become ends in themselves. Even for the youngest readers, meaning should be at the center of reading instruction.

- At the beginning of a book or reading assignment, read a portion of the text aloud to build momentum and interest. Occasionally interrupt to pose focusing questions. Reading aloud is a good way to build students' vocabularies and conceptual knowledge and to improve their comprehension.
- Daily independent reading, both in school and at home, of materials of their own choice is another important way for readers to build vocabulary and conceptual knowledge as well as to establish a lifelong interest in reading. Students may need help learning to select books that are well matched to their reading level and interests. At the same time, let them know that relatively easy books, which can build confidence and fluency, are good choices for independent reading, too. Make available a wide variety of fiction and nonfiction so that children will be able to find reading materials they enjoy.
- Encourage students to see the relevance of what they read by relating text materials to everyday situations. For example, help them relate topics in history or science to current events and relate themes in literary selections to situations in their own lives.
- Have students keep reading journals in which they make personal responses as they progress through a book. Prompt their thinking with thought-provoking questions.
- Model your own process of responding to a text by sharing aloud some of the questions and tentative assumptions you make as you read something with the class, particularly something challenging, such as a poem or a primary source written in an unusual style.
- Encourage students to be aware of their purposes for reading and to modify the way they approach the text in various tasks. For content that is particularly difficult, students should be encouraged to read much more deliberately than they would normally and to take notes as they work their way through the text.
- Be sure students are aware of organizational features of their textbooks and how section heads, margin notes, and other support features can aid their reading.

### ***Suggestions for Improving Factual Comprehension***

- In discussions and in writing about people, places, events, or ideas from their reading, encourage students to say things in their own way rather than simply repeat the language of the text. Ask questions that cannot be answered by "word-matching."
- When students come across key words that they do not know, encourage them to try to identify them using their knowledge of letter-sound relationships and word structure as well as clues from the language and meaning of the text.
- Encourage students to think of what they already know about the subject of the text they will be reading. If there is cultural or historical context for a piece of writing, familiarize students with that information.
- Encourage students to be aware of their level of understanding as they read. Skilled readers routinely monitor their own comprehension, pausing during reading to consider and either question or accept what they have just read before going on.

### ***Suggestions for Improving Inferential and Interpretive Information***

- In writing about and discussing their reading, encourage students to reach conclusions that require interpretation and inference. Have students support their ideas with information from the text.
- Have students examine the motivations and feelings of characters. Ask them to consider how they would react or feel if they were in the character's situation.
- Encourage students to go beyond the text in their responses to their reading. Ask them to predict what is likely to happen next or to suggest alternative endings to stories.
- When an author uses words in an unusual or creative way, have students discuss what the author's meanings might be and what effect this wording might have on the reader.

### ***Suggestions for Improving Analytic Understanding***

- Give students practice in summarizing the main idea or key points of a piece of writing.
- Give students reading materials that offer them the opportunity to differentiate between facts and opinions.
- Encourage students to consider what the author's purpose might be.
- Help students to consider how the author has used language to achieve certain effects, such as mood or a vivid image.
- Help students learn to identify some of the common ways in which authors develop ideas, such as giving examples, comparing and contrasting, or relating events in chronological order. Show how these techniques can be applied in students' own writing.
- Have students judge the adequacy of supporting information in a persuasive or an expository piece.

### **Language**

In the primary grades, language skills used in writing generally are developed best through the actual writing, revision, and reflection students experience. Models they see in their reading and feedback they obtain from their teacher and peers help to shape this development. Some teachers use daily oral language exercises to introduce students to new writing skills or to monitor the use of skills previously taught. Some of the suggestions given below in each language test area might be useful supplements to your current instructional practices.

#### ***Suggestions for Improving Spelling Ability***

- Together with students, develop a list of reasons why good spelling is important. Students should realize that good spelling aids communication and is rewarded in school and socially. Encourage students to take pride in being good spellers. How well a student learns to spell depends largely upon interest and desire to improve.
- Direct students' attention to similar spellings for certain words. Encourage them to use the word recognition skills learned in reading to figure out how certain words are spelled.

- As students improve their writing skills, help them understand the role of inventive spelling and the need for standard spelling conventions.
- Have students focus on learning to spell words that come up in the reading and writing they do in class. Students are more likely to remember and reuse new words they have encountered in a practical context.

#### ***Suggestions for Improving Skills in Capitalization***

- Point out uncommon capitalization situations that appear in reading assignments. Discuss why some words are capitalized and others are not.
- Expect careful use of capitals in written work in all curricular areas.
- Have students edit their own papers or those of others with special reference to capitalization.
- Use oral and written language exercises that emphasize the types of situations that you have identified as causing difficulty.
- Have students compile a list of words that they frequently fail to capitalize or that they frequently overcapitalize. Help students become aware of the rules covering such situations, and use oral language exercises emphasizing these special situations.

#### ***Suggestions for Improving Skills in Punctuation***

- Emphasize the importance of punctuation during oral reading. For example, show how the meaning of the words "Look out" changes when followed by a period, a question mark, or an exclamation mark.
- Have students note the rules of punctuation they have the most trouble with. Encourage them to focus on these rules as part of their revision process.
- Give students practice at revising or inserting correct punctuation into pieces that have punctuation errors or that are not punctuated at all.
- Construct oral or written lessons for punctuation rules that seem particularly difficult to students in the class.

### *Suggestions for Improving Usage*

- Help students to recognize usage errors in their own writing. Provide focused mini-lessons to help them learn how to correct these errors.
- Hand out readings with nonstandard usage to students. Have students revise the readings so that they reflect correct usage. Ask them to explain the changes they made.
- Because usage is influenced by attitudes as well as knowledge, try to convince students of the importance of appropriate usage in everyday situations.

### **Mathematics**

The mathematics tests reflect the content and process emphases of the *Principles and Standards for School Mathematics* published by the National Council of Teachers of Mathematics (NCTM) in 2000. The NCTM standards encourage teachers to expand students' understanding of mathematics concepts and to promote mathematical thinking and reasoning. The following are only a few of the ways to assist students' mathematical development.

- Engage students in thinking and talking about mathematical ideas they encounter in their daily lives. Draw attention to number concepts, geometry relationships, and other mathematical concepts that appear in their general reading.
- Use writing activities and oral presentations to develop students' ability to communicate mathematical ideas and to establish connections between math and other curricular areas.
- Assist students in learning a variety of estimation strategies and in recognizing which strategy might give the best estimate for a specific situation.
- Present problem-solving situations as a context for introducing new concepts, and lead students in discovering how tools such as geometry and measurement help solve important problems at home and in the workplace. Relate geometric shapes and patterns to processes in artistic creation.
- Use estimation and analogy to build a mental picture of the magnitude of quantities that are not readily measurable in real life.
- Help students see that mathematics is not an isolated activity confined only to "math time" but

is a tool that can be used for solving problems that arise during cooking projects, science activities, and art experiences.

- Addition and subtraction are easier for children to grasp at the beginning if they can "put together" or "take away" actual objects. Rocks, buttons, straws, or macaroni pieces can be manipulated by students as they learn to add or subtract. This makes their understanding of mathematical operations more concrete.
- The ability to compare objects in size, length, or weight forms an important basis for more advanced mathematical activities. One way to provide practice in comparison is by playing adaptations of simple games like "Red Rover"—one could ask anyone who is shorter than a certain child or taller than the teacher's chair to "come over."
- Allow students to help distribute papers, materials, or snacks to the other children in the class as an opportunity to illustrate the notion of one-to-one correspondence. Ask the student distributing materials whether he or she ran out or had extras or whether there was just one item for each child.

The NCTM *Principles and Standards for School Mathematics* recommends that teachers emphasize problem solving. Teachers are urged to lead students in asking questions, describing the problem, choosing from alternative methods, obtaining and interpreting data, evaluating the proposed solution, and presenting the results. Extending problem-solving skills to such content areas as measurement, geometry, algebra, statistics, and probability is especially important. The following ideas might be used to help students learn to solve math problems and to obtain and interpret data to answer questions.

- Encourage students to identify and verbalize math problems about situations they encounter in and out of the classroom. Have them translate their verbal descriptions into mathematical sentences that can be used to solve the problem.
- Help students consider strategic questions such as "What do I want to find out?"; "What facts are given?"; and "What information is needed?"
- Encourage students to collect and organize data to answer questions they have posed and make frequent use of graphs and tables. Ask them to create visual aids to effectively present their

findings to the class. Examples of good and bad ways of displaying data need to be analyzed and discussed.

- Encourage students to share examples of “bad statistics” from newspapers, magazines, and television and radio programs.
- Demonstrate and provide practice with problem-solving strategies such as trial and error, process of elimination, looking for a pattern, using manipulatives, making a table or graph, drawing a picture, or acting out the problem.
- Support the students’ use of a variety of ways to solve problems. After a correct solution has been found, explore alternative ways to solve the problem. Use estimation and mental computation to decide whether an answer is reasonable.
- Give students the opportunity to explore more complex situations in small groups with particular emphasis on multiple-step and nonroutine problems.
- Assist students in using technology to work on complicated situations.
- Present a variety of problem contexts, including problems involving measurement, geometry, patterns, and concepts of chance.
- Provide students with practice in analyzing trends and drawing conclusions.
- Provide as many opportunities for problem solving as time allows. Research suggests that practice is an important condition for becoming a good problem solver.

High school mathematics spans a wider range of courses and content areas. Depending on their abilities and interests, students can pursue a variety of paths in a typical secondary mathematics curriculum. In the most general sense, a secondary mathematics curriculum must prepare students to face the quantitative needs of daily living. In addition, many other curriculum areas have quantitative demands. Students must have adequate preparation in mathematics to be successful in these other areas. And finally, the high school mathematics curriculum must provide the foundation for post-secondary study of mathematics. Problem-solving skills are most likely reinforced in a number of different high school classrooms.

To help students develop these skills, teachers may want to consider the following instructional suggestions, in addition to those listed above:

- Provide problems that require students to make applications, synthesize concepts, and generalize, both on homework assignments and on tests. Also provide problems that illustrate quantitative applications outside of the mathematics classroom. These could be applications from daily living or applications from other disciplines.
- Encourage students to explain their problem-solving strategies to each other. Ask students to develop problems for other students to solve. Encourage peer tutoring and cross-age tutoring as a means of enhancing the mathematical understanding and confidence of both the tutor and tutored.
- If students are required to prepare written work for mathematics class, consider a writing assignment in which students must provide examples of applications of mathematics in other areas.

## Appendix: Item-Skill Classification Tables

### *ITBS Reading Item-Skill Classifications—Complete Battery*

<b>Process Skills</b>	<b>Level 7 (Grade 1)</b>	<b>Level 8 (Grade 2)</b>
<b>Sentence Comprehension</b>		
Factual understanding	16–21	16–22
<b>Story Comprehension</b>		
Factual understanding	2, 5, 6, 9–11, 13, 14, 26, 29, 31, 32, 34	1, 2, 4, 5, 10, 12, 24, 26, 27, 29, 31, 34, 37
Inference and interpretation	1, 3, 4, 7, 8, 12, 15, 22–25, 28, 30, 33	3, 6–9, 11, 13–15, 23, 25, 28, 32, 33, 36
Analysis and generalization	27	30, 35, 38

**ITBS Language Item-Skill Classifications—Complete Battery**

<b>Content Skills</b>	<b>Level 7 (Grade 1)</b>	<b>Level 8 (Grade 2)</b>
<b><i>Spelling</i></b>		
<b>Vowels</b>	1, 3, 8, 9, 11, 14, 16, 20, 21, 23	4, 7–9, 14, 15, 17, 20, 21
<b>Consonants</b>	2, 4–7, 10, 12, 13, 18, 19	1, 3, 5, 6, 10, 11, 22
<b>Vowel/Consonant Combinations</b>	15	2, 12, 16
<b>Affixes</b>	17, 22	13, 18, 19, 23
<b><i>Language</i></b>		
<b>Spelling in Context*</b>		
Vowels	1, 3, 8, 9, 11	4, 7–9
Consonants	2, 4–7, 10	1, 3, 5, 6, 10, 11
Vowel/consonant combinations	–	2
<b>Capitalization in Context</b>		
Name/titles	25, 27	27, 28, 30
Dates/holidays	28	–
Place names	–	25, 26
Writing conventions	24, 26	24, 29
<b>Punctuation in Context</b>		
End punctuation	29–32	31, 33, 34, 36
Comma	33	32, 37
Apostrophe	–	35
<b>Usage and Expression</b>		
Nouns, pronouns, and modifiers	36–38, 43, 44, 46	39–42, 47, 48, 51, 53
Verbs	34, 35, 39, 41, 42, 45	38, 44–46, 49, 50, 52, 54
Complete sentences	40	43

\*Note: Some Spelling items have been classified in two categories. Separate scores for Spelling and Language are reported.

**ITBS Math Concepts Item-Skill Classifications—Complete Battery**

<b>Content/Process Skills</b>	<b>Level 7 (Grade 1)</b>	<b>Level 8 (Grade 2)</b>
<b>Number Properties and Operations</b>		
Create and interpret representations of numbers	1, 3, 6, 10, 15, 19, 23, 24, 26	6, 20, 26
Compare and order numbers	7	4, 8, 10
Use place value	–	5, 13, 30
Estimate and round numbers	21	15, 18, 28, 29, 31
Apply properties of numbers	28	–
<b>Algebraic Concepts</b>		
Use and interpret operational and relational symbols	13	23
Solve number sentences	8, 22, 29	3, 19
Use variables and number sentences to model situations	17	11, 14
Understand and explore numerical patterns	20	21
<b>Geometry</b>		
Identify, classify, and compare geometric figures	2, 14	1, 9
Recognize geometric properties, patterns, and relationships	5, 9, 11	12, 16, 24
<b>Measurement</b>		
Measure length/distance, time, temperature, weight, and volume	12	17, 27
Estimate measurements with precision	18, 25, 27	2
Identify and use appropriate instruments and units of measurement	4, 16	7, 22, 25

**ITBS Math Problems Item-Skill Classifications—Complete Battery**

<b>Content/Process Skills</b>	<b>Level 7 (Grade 1)</b>	<b>Level 8 (Grade 2)</b>
<b><i>Problem Solving</i></b>		
<b>Single-step</b>	1–10, 13	1–3, 5–7, 10, 11, 14, 16
<b>Multiple-step</b>	12, 14	4, 8, 9, 13, 15
<b>Approaches and Procedures</b>		
Identify extraneous or insufficient information	11	12
Choose solution methods	15–17	17–19
<b><i>Data Interpretation</i></b>		
<b>Read Amounts</b>		
On the scales of bar graphs	21	23, 27
By locating a specific cell in a table	25, 26	–
<b>Compare Quantities</b>		
To determine rank	18, 27	20, 24, 30
To determine sums and differences	19, 24, 28	21, 25, 28
To find ratios	–	–
<b>Interpret Relationships and Trends</b>		
To understand underlying relationships	20, 22, 23	22, 26, 29

## *ITED Reading Comprehension Item-Skill Classifications*

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<b>Process Skills</b>	<b>Level 15 (Grade 9)</b>
<b>Factual Understanding</b>	
Understand stated information	5, 8–13, 36, 39, 41, 42
Determine the literal meaning of specific words or phrases	1, 3, 19, 40
<b>Inference and Interpretation</b>	
Draw conclusions or deduce meanings not explicitly stated in the text; infer relationships; infer the traits, feelings, and motives of characters or individuals; make predictions; apply information	14, 27, 29–31, 33, 34, 38, 44
Interpret nonliteral language	21–23, 32, 43
<b>Analysis and Generalization</b>	
Determine the main idea, topic, or theme of a passage or portion of a passage; identify major points; make generalizations	2, 4, 17, 24–26, 35, 37
Identify the author’s or speaker’s purpose or viewpoint (in the passage or portion thereof); distinguish among facts, opinions, observations, conclusions, assumptions, etc.	16, 18
Recognize aspects of a passage’s structure, style, mood, or tone; recognize literary or argumentative techniques	6, 7, 15, 20, 28

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***ITED* Language: Revising Written Materials Item-Skill Classifications**

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<b>Process Skills</b>	<b>Level 15 (Grade 9)</b>
<b>Spelling</b>	2, 12, 21, 28, 43, 47
<b>Capitalization and Punctuation</b>	3, 4, <u>6</u> , 15, 22, 37, 45
<b>Usage and Grammar</b>	<u>1</u> , 13, 14, 20, 23, <u>30</u> , 33, 48, <u>55</u>
<b>Sentence Structure</b>	<u>1</u> , <u>6</u> , 9, 10, 17–19, 24, 26, <u>30</u> , 35, 39, <u>41</u> , <u>42</u> , 49, 50, <u>51</u> , 52, 54
<b>Organization of Ideas</b>	25, 31, 34, 38, 40, <u>42</u> , 44, 56
<b>Appropriateness of Expression</b>	5, 7, 8, 11, 16, 27, 29, 32, 36, <u>41</u> , 46, <u>51</u> , 53, <u>55</u>

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\* An underscore indicates the question has been classified in two categories.

## *ITED Mathematics: Concepts & Problem Solving Item-Skill Classifications*

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<b>Content/Process Skills</b>	<b>Level 15 (Grade 9)</b>
<i>Classification by Process</i>	
<b>Understanding Mathematical Concepts and Procedures</b>	
Select appropriate procedures; identify examples and counterexamples of concepts	5, 12, 17, 22, 23, 32, 33, 35, 39
<b>Data Interpretation</b>	
Make inferences or predictions based on data or information; interpret data from a variety of sources	8–11, 16, 18, 19, 26, 27, 29, 31, 36, 37, 40
<b>Problem Solving</b>	
Reason quantitatively; evaluate reasonableness of solutions	1–4, 6, 7, 13–15, 20, 21, 24, 25, 28, 30, 34, 38
<i>Classification by Content</i>	
<b>Number and Operations on Numbers</b>	1–4, 6, 7, 13–16, 21, 23–25, 28, 29, 34
<b>Data Analysis/Probability/Statistics</b>	5, 8–11, 18, 19, 26, 27, 31, 36, 37
<b>Geometry/Measurement</b>	17, 20, 30, 33, 38, 40
<b>Algebraic Concepts</b>	12, 22, 32, 35, 39

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***ITED* Computation Item-Skill Classifications**

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<b>Content Skills</b>	<b>Level 15 (Grade 9)</b>
<b>Integers</b>	1, 2, 3, 5, 11, 15, 18, 20, 22, 24, 29
<b>Decimals/Percents</b>	8–10, 12, 14, 16, 21, 23
<b>Fractions</b>	4, 6, 7, 17, 26, 27
<b>Algebraic Manipulations</b>	13, 19, 25, 28, 30

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