Illinois Standards Achievement Test
2010 Technical Manual

Illinois State Board of Education
Division of Assessment

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1. PURPOSE AND DESIGN OF THE ISAT TESTING PROGRAM

In Spring 2010, students in grades 3 through 8 took the Illinois Standards Achievement Tests (ISAT) in reading and mathematics. Students in grades 4 and 7 took the ISAT tests in science as well. Approximately 900,000 students who were enrolled in public elementary and secondary schools across the state participated in the testing program. ISAT measures the extent to which students are meeting the Illinois Learning Standards. Illinois teachers and curriculum experts developed the ISAT tests in cooperation with the Illinois State Board of Education (ISBE).

This manual provides technical information about the 2010 tests. It describes the tests and assessment approaches and provides evidence of their technical adequacy. Other reports, documents, or publications issued by ISBE provide additional information about how to interpret test results (*Guide to the 2010 Illinois State Assessment*, *Understanding Your Child's ISAT Scores*), which is not included here.

Test Development

Each ISAT test is designed to ensure that its results validly and fairly assess the Illinois Learning Standards. The selection of items and assembly of each test is guided by a set of specifications: the Illinois Assessment Frameworks[1]. These specifications were developed by Illinois educators to help ensure that test content corresponds to the purposes, objectives, and skills framed by the learning standards and to define those elements of the standards that are suitable for state testing.

Illinois teachers and administrators participate in all phases of the test development process: item writing, item selection, bias review, and data review. The State Board of Education convenes a series of advisory committees to ensure that test development is continually informed and guided by the recommendations of content authorities, measurement specialists, and practitioners. The following evaluation criteria are applied to all assessment material used in the Illinois program:

Content. Every item is screened for alignment with the Assessment Frameworks, grade-level appropriateness, importance, and clarity. Incorrect choices (for multiple-choice items) are reviewed for plausibility. In tests other than reading, the complexity of the text of the questions is kept to the minimum necessary to state the problem.

Difficulty. Items are pilot tested on large samples of students prior to their inclusion in tests to develop a statistical profile for each item. Items that are too easy or too difficult and, therefore, provide little or no information are omitted.

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[1] http://www.isbe.net/assessment/IAFIndex.htm

Precision. Point-biserial (i.e., item-test) correlations evaluate the extent to which an item distinguishes between less proficient and more proficient students. Reviewers usually omit items with a point-biserial of less than .30 and select items with the highest point-biserials.

Fairness. Test items and forms undergo regular sensitivity reviews and statistical analyses to ensure that all materials meet fairness criteria with respect to the cultural and ethnic diversity of Illinois public schools.

Items from the *Stanford Achievement Test, Tenth Edition* (SAT 10) are included in the ISAT tests. The inclusion of SAT 10 items in the test permits national norm comparisons in addition to performance evaluation relative to the Illinois Learning Standards.

ISBE takes several precautions to help ensure test security. Test materials shipped to schools are packaged and sealed. Each test booklet is bar-coded so that it can be accounted for. The administration of tests is standardized. A series of manuals provides guidance on security and other issues to the district testing coordinator, school testing coordinator, and classroom test administrator. After administration, all materials are removed from schools and returned to a central facility for processing and secure destruction of unneeded materials.

Reading

The ISAT reading test assesses material defined by standards associated with two state learning goals. The standards were developed using the 1985 State Goals for Language Arts, various state and national standards drafts, and local education standards contributed by team members. These learning standards are designed to guide language arts instruction in Illinois schools. This alignment of assessment to curriculum ensures consistency and strengthens the influence of standards and assessment on improved teaching and learning. These standards are:

- **State Goal 1:** Read with understanding and fluency.
    Standard 1A: Apply word analysis and vocabulary skills to comprehend selections.
    Standard 1B: Apply reading strategies to improve understanding and fluency.
    Standard 1C: Comprehend a broad range of reading materials.

- **State Goal 2:** Read and understand literature representative of various societies, eras, and ideas.
    Standard 2A: Understand how literary elements and techniques are used to convey meaning.
    Standard 2B: Read and interpret a variety of literary works.

The reading test consists of 70 multiple-choice questions and two extended-response questions. Twenty of the multiple-choice and one extended-response question are pilot-test questions that do not contribute to students' test scores. The test is administered in three 45-minute sessions. Any student who is actively engaged in

testing after 45 minutes may be allowed 10 extra minutes to complete that test session.

The reading passages and accompanying questions reflect two of the most frequent purposes for reading—reading to gain information and reading for literary experience. The sources for these passages range from high-interest, grade-appropriate periodicals to newspapers, short stories, and novels. Illinois teachers reviewed and selected the material for these tests.

The multiple-choice questions require students to select one correct response from four options presented to them. Questions must meet both content and statistical criteria for inclusion in the test. The extended-response questions on the reading test require students not only to read and understand a text, but also to analyze, evaluate, and interpret the text as a means of making connections and conclusions related to the text. The rubric used to score the extended-response items is a holistic scoring rubric. It describes characteristics of different levels of achievement in reading. The levels of achievement on the reading rubric range from 0 to 4 (with 4 being the highest score). Responses with scores of 0 indicate that the student response is insufficient to effectively determine evidence of achievement in reading. Responses with scores of 1 and 2 indicate developing levels of achievement in reading. Responses with scores of 3 indicate a developed level of achievement in reading. Finally, responses with scores of 4 represent a well-developed level of achievement in reading. The rubric was developed with the assistance of Illinois educators.

In addition to an overall reading score, results are reported in terms of the percent of items correctly answered within four strands. These strands are as follows:

- *Vocabulary Development:* Using contextual clues and other skills to understand key words, phrases, and concepts in literary and informational texts. (Standard 1A)

- *Reading Strategies:* Identifying important information directly stated in the text. (Standard 1B)

- *Reading Comprehension:* Understanding of passages taken from sources such as novels, short stories, and periodicals. (Standard 1C)

- *Literature:* Understanding how literary elements and techniques are used to convey meaning. (Standard 2A)

Mathematics

People use mathematics to identify, describe, and investigate the patterns and challenges of everyday living. Mathematics helps us to understand events that have occurred and to predict and prepare for events to come so that we can understand our world better and live in it more successfully. Mathematics encompasses arithmetic, measurement, algebra, geometry, statistics, probability, and other fields. It deals with numbers, quantities, shapes, data, as well as numerical relationships

and operations. Confronting, understanding, and solving problems is at the heart of mathematics. Mathematics is much more than a collection of concepts and skills; it is a way of approaching new challenges through investigating, reasoning, visualizing, and problem-solving with the goal of communicating the observed relationships and problems.

The ISAT mathematics tests are designed to measure the following learning standards:

- **State Goal 6:** Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, and division), patterns, ratios, and proportions.
  Standard 6A: Demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings.
  Standard 6B: Investigate, represent, and solve problems using number facts, operations (addition, subtraction, multiplication, and division) and their properties, algorithms, and relationships.
  Standard 6C: Compute and estimate using mental mathematics, paper-and-pencil methods, calculators, and computers.
  Standard 6D: Solve problems using comparison of quantities, ratios, proportions, and percents. *(This standard is not assessed at grades 3 and 4.)*

- **State Goal 7:** Estimate, make, and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.
  Standard 7A: Measure and compare quantities using appropriate units, instruments, and methods.
  Standard 7B: Estimate measurements and determine acceptable levels of accuracy.
  Standard 7C: Select and use appropriate technology, instruments, and formulas to solve problems, interpret results, and communicate findings.

- **State Goal 8:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.
  Standard 8A: Describe numerical relationships using variables and patterns.
  Standard 8B: Interpret and describe numerical relationships using tables, graphs, and symbols. *(This standard is not assessed at grade 3.)*
  Standard 8C: Solve problems using systems of numbers and their properties.
  Standard 8D: Use algebraic concepts and procedures to represent and solve problems.

- **State Goal 9:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

Standard 9A: Demonstrate and apply geometric concepts involving points, lines, planes, and space.
Standard 9B: Identify, describe, classify, and compare relationships using points, lines, planes, and solids.
Standard 9C: Construct convincing arguments and proofs to solve problems. *(This standard is not assessed in isolation. Rather, its essence is assessed indirectly through problems that require this type of thinking.)*
Standard 9D: Use trigonometric ratios and circular functions to solve problems. *(This standard is not assessed until grade 11.)*

- **State Goal 10:** Collect, organize, and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.
  Standard 10A: Organize, describe, and make predictions from existing data.
  Standard 10B: Formulate questions, design data collection methods, gather and analyze data, and communicate findings.
  Standard 10C: Determine, describe, and apply the probabilities of events.

Illinois teachers developed the Illinois Learning Standards for mathematics. These goals, standards, benchmarks, and frameworks are an outgrowth of the 1985 Illinois State Goals for Learning influenced by the latest thinking in school mathematics. This includes the National Council of Teachers of Mathematics, Curriculum and Evaluation Standards for School Mathematics, ideas underlying recent local and national curriculum projects, results of state, national, and international assessment findings, and the work and experiences of Illinois school districts and teachers.

The mathematics assessment contains 70 multiple-choice questions, three short-response questions, and two extended-response questions. Five multiple-choice, one short-response, and one extended-response question are pilot-test questions that do not contribute to students' test scores. The test is administered in three 45-minute sessions. Any student who is actively engaged in testing after 45 minutes may be allowed 10 extra minutes to complete that test session.

The multiple-choice questions require students to select one correct response from four options presented to them. Questions must meet both content and statistical criteria for inclusion in the test. The short-response questions pose similar questions as multiple-choice items but require students to respond without being presented with answer choices. The rubric used to score the short-response items has a scale from 0 to 2 (with 2 being the highest score). The extended-response questions require students to consider a situation that demands more than a numerical response. The student is required to "solve" the situation, choose a plan, carry out the plan, and interpret the solution derived in terms of the original situation. Students are expected to clearly communicate their decision-making processes in the context of the task proposed by the item. The rubric used to score the extended-response items has three scoring dimensions: Mathematical Knowledge, Strategic Knowledge, and Explanation, with each dimension having a scale from 0 to 4 (with 4

being the highest score). The short- and extended-response rubrics were developed with the assistance of Illinois educators.

In addition to an overall mathematics score, results are reported in terms of the percent of items correctly answered within the five State Goals listed previously.

Science

Science is a creative endeavor of the human mind. It offers a special perspective on the natural world in terms of understanding and interaction. The Illinois Learning Standards for science are organized by goals that inform one another and depend upon one another for meaning. Expectations for learners related to the inquiry process are presented in standards addressing the application of science and in elements of technological design.

The ISAT science tests are designed to measure the following learning standards:

- **State Goal 11:** Understand the process of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.
  Standard 11A: Know and apply the concepts, principles, and processes of scientific inquiry.
  Standard 11B: Know and apply the concepts, principles, and processes of technological design.

- **State Goal 12:** Understand the fundamental concepts, principles, and interconnections of the life, physical, and earth/space sciences.
  Standard 12A: Know and apply concepts that explain how living things function, adapt, and change.
  Standard 12B: Know and apply concepts that describe how living things interact with each other and with their environment.
  Standard 12C: Know and apply concepts that describe properties of matter and energy and the interactions between them.
  Standard 12D: Know and apply concepts that describe force and motion and the principles that explain them.
  Standard 12E: Know and apply concepts that describe the features and processes of Earth and its resources.
  Standard 12F: Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.

- **State Goal 13:** Understand the relationships among science, technology, and society in historical and contemporary contexts.
  Standard 13A: Know and apply the accepted practices of science.
  Standard 13B: Know and apply concepts that describe the interaction between science, technology, and society.

The science assessment contains 80 multiple-choice questions; 5 of which are pilot-test questions that do not contribute to students' test scores. The test is administered in two 45-minute sessions. Any student who is actively engaged in

testing after 45 minutes may be allowed 10 extra minutes to complete that test session.

In addition to an overall score, results are reported in terms of the percent of items correctly answered within five strands. These strands are as follows:

- *Scientific Inquiry and Technological Design:* Understanding and applying knowledge of experimental and technological design, including data analysis, use of scientific instruments, and the metric system. (Standards 11A, 11B)

- *Life and Environmental Sciences:* Understanding and applying knowledge of biology and ecology. (Standards 12A, 12B)

- *Matter, Energy, and Forces:* Understanding and applying concepts that describe properties of matter and energy and the interactions between them. Knowing and applying concepts that describe force and motion and the principles that explain them. (Standards 12C, 12D)

- *Earth and Space Sciences:* Understanding and applying knowledge of geology, weather, renewable resources, astronomy, and space science. (Standards 12E, 12F)

- *Safety, Practice, Science/Technology/Society, and Measurement:* Understanding and applying knowledge of safety, valid sources of data, and ethical practices. Understanding and applying knowledge of the history and sociology of science, ethics, environmental issues, and recycling. (Standards 13A, 13B)

The Productive Thinking Scale (PTS) is used to evaluate the quality of science items. It is hierarchical with respect to the production of knowledge and independent of an item's difficulty or grade. Four cognitive skills define the hierarchy of productive thinking in generating scientific knowledge and each skill applies to both content (knowledge) and to process (research methods). These four skills include: (1) recall of conventions, whether names or norms; (2) reproduction of empirical facts or methodological tools and steps; (3) production of solutions to problems or research designs; and (4) creation of new theories and methods. The PTS subdivides reproduction and production into secondary processes. Hence, the PTS comprises six levels of productive thinking on a scale from low level (recall of conventional uses) to high level (creation of new theory).

Based on estimates of the thought processes that most students must use to answer an item, each item is ranked as to the level of conceptual skill it requires. Items that provide a rough balance across the middle ranks are selected, and items at the level of vocabulary or rote memory are limited to a lower percentage. Items are also examined to determine whether there is a reasonable distribution of items within the tests among major learning areas: earth science, physical science, and life science.

Item Bias Review and DIF Analysis

All ISAT items are screened for potential bias by teacher panels, administrators, and vendor content experts. They are checked during three stages: item writing, item review, and data review. First, all of the teachers who are involved in item writing are trained and instructed to balance ethnic and gender references and to avoid gender and ethnic stereotypes. Then, another group of teachers is invited to the item review meetings to screen for potential language and content bias. Items approved by the item review committee are pilot tested and analyzed for differential item functioning. Last, Illinois administrators, vendor content experts, and a group of teachers review each item based on statistical inputs in data review meetings.

Differential item functioning (DIF) refers to the different statistical properties of an item between groups. ISAT DIF analyses are done in three ways: males versus females, White versus Black, and White versus Hispanic. The two DIF statistical methods used are Mantel-Haenszel Delta and Mantel chi-square. Mantel-Haenszel Delta is used for multiple-choice items. It is transformed from Mantel-Haenszel alpha,

$$\hat{\alpha}_{MH} = \frac{\sum_i p_{ri} q_{fi} N_{ri} N_{fi} / N_i}{\sum_i q_{ri} p_{fi} N_{ri} N_{fi} / N_i},$$

where p_{ri} is the proportion of reference-group students (i.e., male, White) who answered the item correctly in the score group i, and q_{ri} is 1- p_{ri}. N_{ri} and N_{fi} are the numbers of students in the reference and focal groups, respectively. Similarly, p_{fi} is the proportion of focal-group students (i.e., female, Black, Hispanic) who answered the item correctly in the score group i, and q_{fi} is 1- p_{fi}. When a constant of -2.35 is applied to the natural logarithm of Mantel-Haenszel alpha, it becomes Mantel-Haenszel Delta (-2.35 $ln[\hat{\alpha}_{MH}]$). Mantel chi-square is used for open-ended items. Its expression is

$$M - \chi^2 = \frac{\left[\left| \sum_m R_{rm} - \sum_m E(R_{rm}) \right| - .5 \right]^2}{\sum_m Var(R_{rm})},$$

where R_{rm} is the number of reference-group students in score-group m who answered the item correctly, $E(R_{rm})$ is the number of the reference-group students of score-group m expected to answer the item correctly, and $Var(R_{rm})$ is the variance of R_{rm}.

Evaluation of DIF severity follows the ETS DIF categories, A, B, and C, where A represents a negligible DIF, B represents a moderate DIF, and C represents a large DIF.

Table 1.1 summarizes the number of pilot items that are accepted, rejected, and re-pilot tested. Note that the decisions are made based on item p-value, point-biserial, and DIF results, not on DIF results alone.

Table 1.1: Data Review Results

Subject	Grade	Total Pilot Items	# Accepted	# Rejected	# Re-Pilot Test
Reading	3	126	119	7	0
	4	126	119	7	0
	5	126	123	3	0
	6	126	123	3	0
	7	126	119	7	0
	8	126	122	4	0
Mathematics	3	42	31	6	5
	4	42	31	4	7
	5	42	36	3	3
	6	42	37	5	0
	7	42	33	6	3
	8	42	35	6	1
Science	4	30	22	2	6
	7	30	20	7	3

Table 1.2 summarizes items selected as cores that present DIF using ETS DIF categories. Note that items from ETS A category were chosen first for test construction. However, when items from the A category did not adequately fulfill the blueprint, items from the B category were selected. If the blueprint was still incomplete after choosing the B category items, then items from the C category were considered.

Table 1.2: ETS DIF B and C Categories between Male/Female, White/Black, and White/Hispanics

Subject	Grade	Male/Female		White/Black		White/Hispanics	
		B	C	B	C	B	C
Reading	3	0	0	0	0	0	1
	4	0	0	0	0	1	0
	5	0	0	0	0	2	0
	6	0	0	0	0	2	0
	7	0	0	1	1	4	0
	8	0	1	1	1	0	1
Mathematics	3	2	0	4	0	2	0
	4	2	0	1	0	6	0
	5	1	0	3	0	1	0
	6	3	1	4	1	1	1
	7	1	0	5	3	3	0
	8	0	0	1	1	0	0
Science	4	0	0	1	0	0	0
	7	4	0	5	0	3	0

Universal Design and Test Accommodations

The goal of universal design in test development is to maximize accessibility without adaptation or special design. The application of universal design principles offers a test that increases the participation of all students, including those with disabilities and English Language Learners. In practice, universal design considers the needs of different subpopulations to maintain test fairness. A benefit of applying universal design to test development is that the test will better accommodate Braille, audio aids, and visual aids.

Pearson, the ISAT test development contractor, employs the following principles and associated guidelines of universal design.

Principle	Guidelines
1. Equitable Use	Provide the same means of use for all users. Avoid segregating or stigmatizing users. Provide equal availability for privacy, security, and safety. Make the design appealing to all.
2. Flexibility in Use	Provide choice in methods of use. Accommodate right- or left-handed access and use. Facilitate the user's accuracy and precision. Provide adaptability to user's pace.
3. Simple and Intuitive	Eliminate unnecessary complexity. Be consistent with user expectations and intuition. Accommodate a range of literacy and language skills. Arrange information in order of

Principle	Guidelines
	importance. Provide effective prompting and feedback.
4. Perceptible Information	Use pictorial, verbal, and/or tactile modes for presentation of essential information. Provide adequate contrast between essential information and its surroundings. Differentiate elements in ways that can be easily described. Provide compatibility with devices used by people with sensory limitations.
5. Tolerance for Effort	Arrange elements to minimize hazards and errors. Provide warnings and fail-safe features. Discourage unconscious action in tasks that require vigilance.
6. Low physical Effort	Allow user to maintain a neutral body position. Use reasonable operating forces. Minimize repetitive actions and sustained physical effort.
7. Size and Space for Approach and Use	Provide a clear line of sight to important elements for any seated or standing user. Make comfortable for any seated or standing user. Accommodate variations in hand and grip size. Provide adequate space for the use of assistive devices or personal assistance.

Source*: Universal Design, Pearson Policy Report (Case, 2003).*

Pearson incorporated these principles and guidelines into item development, production, and administration procedures for the ISAT. The standardized Pearson universal design practice includes: (1) training staff on universal design, (2) screening item content and test booklet layout against universal design guidelines, (3) identifying supplementary materials to accommodate students with special needs, and (4) guarding universal design principles at item review committee meetings.

Pearson's universal design guidelines were implemented in item development for the ISAT by Pearson facilitators. The following considerations are incorporated in the Pearson item development training materials.

1. Considerations for tests
   a. Include and fairly represent as many groups as is reasonable.
   b. Include the numerous perspectives characterized by an issue rather than presenting only one side.
   c. Include a balance of roles for the groups represented. For example, include the contributions of both males and females as well as of various ethnic minority groups.

2. Considerations for items

   Avoid:

a. descriptions of groups in terms of physical, personality, or interest stereotypes;
b. the use of language that might be considered derogatory by any group;
c. the use of words that have different meanings in different cultural settings or dialects;
d. the use of subject matter likely to be unfamiliar to some groups while familiar to the majority;
e. the use of esoteric vocabulary or complex sentence structure when that is not being tested; and
f. the use of material presenting highly controversial or prejudiced points of view.

Do:
a. include material relevant to and stressing the positive aspects and values of diversity; and
b. present positive role models from various groups or material that discusses the contributions of groups to science, history, government, and the arts.

Concepts of universal design are also incorporated in the graphic design of the Illinois test booklet and answer documents, which include:

1. Production
    a. Use a font style that is easy to read.
    b. Enlarge the font size. Note that the previous ISAT font size is similar to the size chosen for the universal design.
    c. Design booklet and response sheet to reduce mismatching. Allow large space between items, frame items for easy identification, and use graphic item labels.
    d. Choose non-glare paper.
    e. Use more dramatic color contrast (including black and white print) to address the needs of different types of color blindness.

2. Administration
    a. Provide adequate testing time.
    b. Repeat instructions.
    c. Incorporate breaks between subtests.

There are five accommodated test formats for special populations: Braille and large print for all subject areas, and reader script, audiocassette, and Linguistically Modified versions of the mathematics and science subtests. Students who take such test formats have additional time as necessary to complete the test. This additional time is determined locally.

Students who take regular test formats have ten minutes of extended time for each test session. The decision of whether to apply the 10-minute extended time period is made at the time of testing by the test administrator, based on whether students are actively engaged in testing after regular time has elapsed.

The Linguistically Modified version of the ISAT was initially developed and administered in the 2008–2009 school year. Linguistic modification of test items can be defined as modifying the language of the test to lessen its linguistic complexity while still maintaining the construct of the test. Such modified items avoid linguistic features which increase the reading load of test items, yet have little to do with what the items are supposed to assess. Items were modified (if necessary) using simple, clear, grade-appropriate language and avoiding complex grammatical constructions and idiomatic speech which might be unfamiliar to English language learners. The *ISAT Specifications for Linguistic Modification* was used to train the committee members and guide the process.

ISAT census and pilot test items were reviewed and modified based on language structures/syntax, vocabulary, contextual information, and in some cases formatting to minimize obstacles that may keep students from showing whether they have learned the tested skills.

Language Structures/Syntax

- Test items should be straightforward and easy to understand.
- Use simple and clear language, but avoid choppy sentences.
- Simplify complex sentence structures and avoid compound tenses.
- Use present tense whenever appropriate.
- State the point of the question as early in the sentence as possible.
- Use active voice rather than passive voice whenever possible.
- Limit the use of pronouns. If used, place the pronoun as near as feasible to the referenced noun.
- Avoid contractions.
- Use consistent language structure within an item in order to focus student attention on what is being asked.

Vocabulary

- Use grade-appropriate vocabulary and commonly used words.
- Do not eliminate subject-area terminology that is integral to the skill or concept being assessed.
- When appropriate, use the same word to refer to the same object, phenomenon, etc., throughout the item. Varying words unnecessarily can make text more difficult to understand.
- Avoid using the same word as multiple parts of speech within the same item.
- Avoid words with multiple meanings when their use might be confusing.
- Consider the most commonly understood meaning of a word
- Create and/or label art as needed to help students understand specialized vocabulary that is not content-specific.
- Avoid colloquial and idiomatic language.

Contextual Information

- Avoid using contexts that would be more familiar to some groups of students than to others.
- Delete extraneous information including irrelevant material and unnecessary words in items or graphics.
- Use grade-appropriate, universal contexts that students are likely to encounter in school settings and in textbooks.
- Provide enough contextual information to be clear, but keep in mind that giving too much information can make items lengthy and increase the reading load unnecessarily.

Format

- Determine appropriate font, point size, and use of white space.
- Limit text-wrapping in passages and items.
- Separate text into manageable units (chunking), if needed.

2. RELIABILITY and GENERALIZABILITY

The reliability of a test reflects the degree to which test scores are free from errors of measurement that arise from various sources. Test reliability indicates the extent to which differences in test scores reflect real differences in the construct being measured across some variation in one or more factors, such as time or specific test items used. Different coefficients can be distinguished accordingly. For example, test-retest reliability measures the extent to which scores remain constant over time. A low test-retest reliability coefficient means that a person's scores are likely to shift unpredictably from one time to another. Generalizability, which may be thought of as a liberalization of classical theory (Feldt & Brennan, 1989, p. 128), treats these error components and their impact on score precision singly and in interaction.

Internal Consistency of Overall Scores

Because achievement test items typically represent only a relatively small sample from a much larger domain of suitable questions, the test score consistency (generalizability) across items is of particular interest. That is, how precisely will tests line up students if different sets of items from the same domain are used? Unless the lineups are very similar, it is difficult or impossible to make educationally sound decisions on the basis of test scores. This characteristic of test scores is most commonly referred to as *internal consistency*, which is quantified in terms of an index called coefficient alpha. The coefficient, which can range from 0.00 to 1.00, corresponds to a generalizability coefficient for a person by item design or, more broadly, as a generalizability coefficient for the person by item by occasion design with one fixed occasion and k randomly selected items (Feldt & Brennan, 1989, p 135). Most well-constructed achievement tests have values above .90. Table 2.1 presents alpha coefficients for the tests administered in the assessment. As the table shows, ISAT tests are highly reliable, since the alpha coefficients are comparable to or higher than those typically reported in the literature.

Table 2.1: Reliability Estimates

Grade	Reading	Mathematics	Science
3	0.92	0.94	
4	0.90	0.93	0.92
5	0.90	0.94	
6	0.90	0.94	
7	0.89	0.94	0.91
8	0.91	0.94	

Note: Based on population data

Table 2.1a: Reliability Estimates by Ethnicity

Grade	Ethnicity	Reading	Mathematics	Science
	Missing	0.92	0.94	
	American Indian or Alaskan Native	0.92	0.94	
	Asian/Pacific Islander	0.91	0.93	
3	Black or African American	0.91	0.94	
	Hispanic	0.91	0.93	
	White	0.91	0.93	
	Multiracial/Ethnic	0.91	0.93	
	Missing	0.90	0.93	0.91
	American Indian or Alaskan Native	0.90	0.93	0.92
	Asian/Pacific Islander	0.89	0.93	0.91
4	Black or African American	0.88	0.92	0.89
	Hispanic	0.88	0.92	0.89
	White	0.88	0.92	0.89
	Multiracial/Ethnic	0.88	0.92	0.90
	Missing	0.90	0.93	
	American Indian or Alaskan Native	0.89	0.93	
	Asian/Pacific Islander	0.88	0.94	
5	Black or African American	0.89	0.92	
	Hispanic	0.88	0.92	
	White	0.88	0.93	
	Multiracial/Ethnic	0.88	0.93	
	Missing	0.90	0.93	
	American Indian or Alaskan Native	0.89	0.93	
	Asian/Pacific Islander	0.89	0.94	
6	Black or African American	0.90	0.93	
	Hispanic	0.89	0.93	
	White	0.88	0.93	
	Multiracial/Ethnic	0.89	0.93	
	Missing	0.89	0.91	0.90
	American Indian or Alaskan Native	0.89	0.93	0.91
	Asian/Pacific Islander	0.88	0.94	0.90
7	Black or African American	0.88	0.92	0.88
	Hispanic	0.88	0.92	0.88
	White	0.88	0.93	0.90
	Multiracial/Ethnic	0.89	0.93	0.90
	Missing	0.92	0.92	
	American Indian or Alaskan Native	0.90	0.93	
	Asian/Pacific Islander	0.90	0.94	
8	Black or African American	0.90	0.92	
	Hispanic	0.90	0.92	
	White	0.90	0.93	
	Multiracial/Ethnic	0.90	0.94	

Table 2.1b: Reliability Estimates by LEP

Grade	LEP	Reading	Mathematics	Science
3	Missing			
	Yes	0.88	0.93	
	No	0.92	0.94	
4	Missing			
	Yes	0.84	0.91	0.86
	No	0.90	0.93	0.91
5	Missing			
	Yes	0.82	0.90	
	No	0.90	0.94	
6	Missing			
	Yes	0.87	0.91	
	No	0.90	0.94	
7	Missing			
	Yes	0.83	0.90	0.84
	No	0.89	0.94	0.91
8	Missing			
	Yes	0.87	0.91	
	No	0.91	0.94	

Table 2.1c: Reliability Estimates by Income

Grade	Low Income	Reading	Mathematics	Science
3	Missing	0.92	0.94	
	Yes	0.91	0.93	
	No	0.90	0.93	
4	Missing	0.90	0.93	0.91
	Yes	0.88	0.92	0.90
	No	0.87	0.92	0.89
5	Missing	0.90	0.93	
	Yes	0.89	0.92	
	No	0.87	0.93	
6	Missing	0.90	0.93	
	Yes	0.90	0.93	
	No	0.88	0.93	
7	Missing	0.89	0.91	0.90
	Yes	0.88	0.92	0.89
	No	0.87	0.93	0.89
8	Missing	0.92	0.92	
	Yes	0.90	0.92	
	No	0.89	0.93	

The reliability coefficients reported in Tables 2.1 to 2.1c are derived within the context of classical test theory (CTT) and provide a single measure of precision for the entire test. Within the context of item response theory (IRT), it is possible to measure the relative precision of the test at different points on the scale. Figures

2.1–2.3 present the test information functions for the ISAT reading, mathematics, and science tests.

The amount of information at any point is directly related to the precision of the test. That is, precision is the highest where information is the highest. Conversely, where information is the lowest, precision is the lowest, and ability is most poorly estimated. As is evident from the figures, the information functions for these tests are the highest near the points on the scales where the "meets standards" cut scores are located. For example, for reading grade 5, the peak of the information is achieved near -0.53 which is the location of the "meets standards" performance level.

Figure 2.1: ISAT Reading Test Information Functions
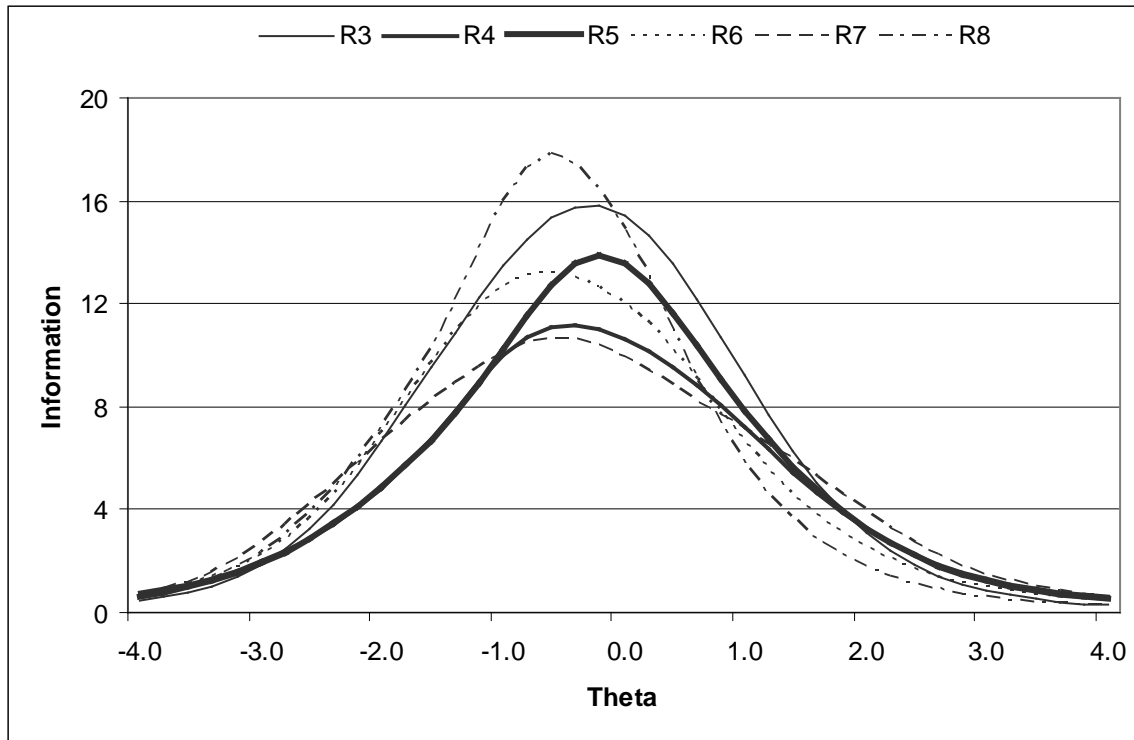
Note: Reading uses the three-parameter logistic model.

Figure 2.2: ISAT Mathematics Test Information Functions
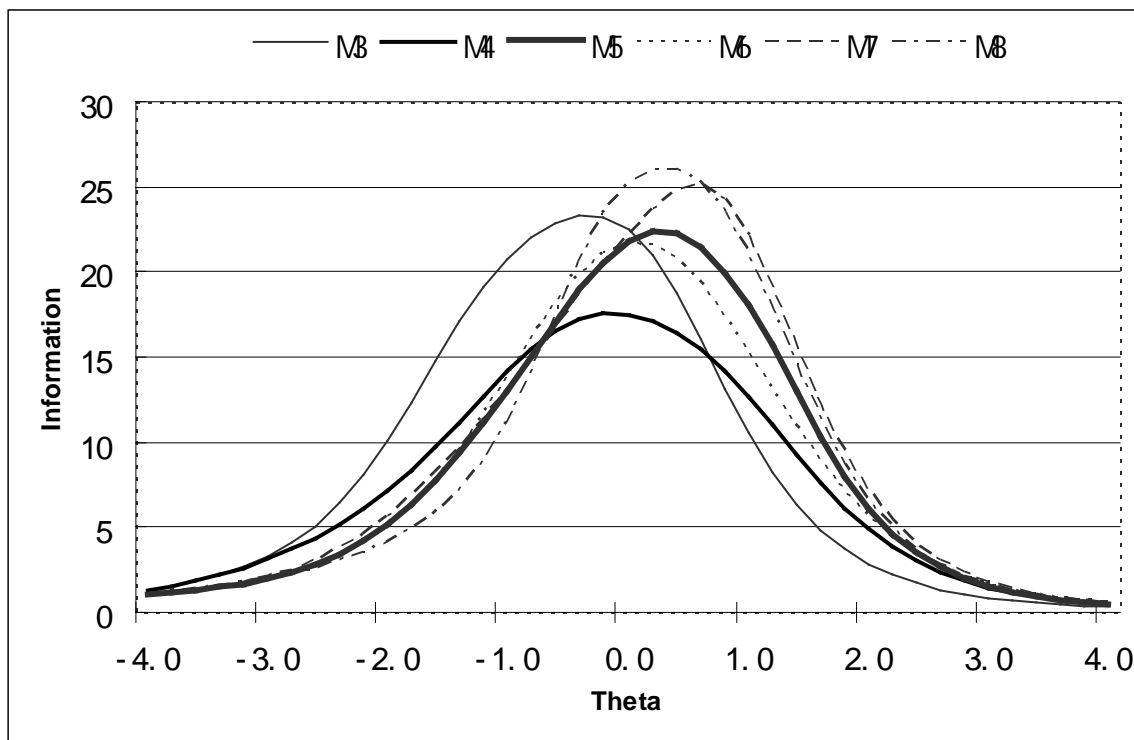
Note: Mathematics uses the three-parameter logistic model.

Figure 2.3: ISAT Science Test Information Functions
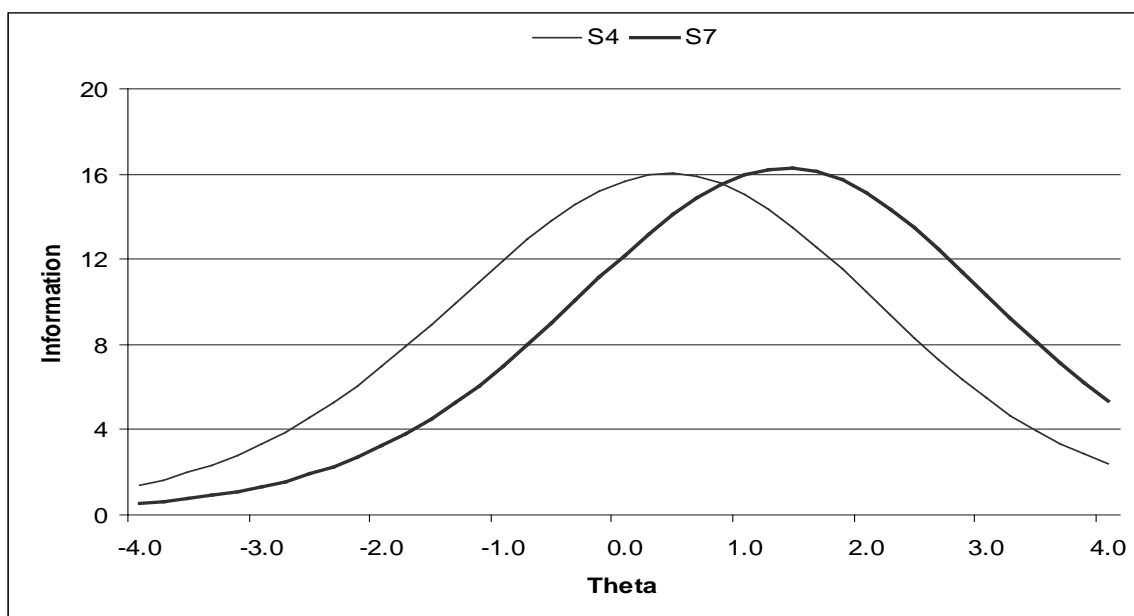
Note: Science uses the Rasch model.

IRT Conditional SEM

The standard error of measurement (SEM) reflects the degree of error associated with student scores. Classical test theory has a fixed SEM value for all students, but item response theory's SEM varies across the ability range. The item response theory, or conditional standard error of measurement (CSEM), is defined as

$$CSEM(\theta) = \frac{1}{\sqrt{I(\theta)}}$$

where $I(\theta)$ is the test information function. The item response theory's SEM has an inverse shape relative to the classical test theory's SEM in which for the former SEM values decrease as theta moves toward the center.

Two different procedures were used to derive the CSEM for ISAT scale scores. The approaches depend on the scaling model used to derive the ISAT scale scores. Whereas the ISAT science test is scaled with the Rasch model, the ISAT reading and mathematics tests are scaled with the 3PL/GPC model. For science, the approach takes the estimates of the CSEM of students' ability and places them onto the vertical ISAT scale by first applying the multiplicative constant for the SAT 10 scale (i.e., 35), and then applying the multiplicative constant for the ISAT scale (i.e., 0.86411). For reading and math, the approach relies on a linear interpolation method and the raw-to-scale table of the previous year. When using this method, the following steps are taken:

1. Obtain raw-to-scale score table for the current year (with proper weighting applied to constructed response items). This table does not include the CSEM;
2. Map current year's scale scores on previous year's raw-to-scale score table which included the CSEM;
3. If a match is found for a particular scale score, then previous year's CSEM value for that particular score is used;
4. If a match were not found for a particular scale score, then linear interpolation would be used to derive the CSEM for that particular scale score based on the following formula:

$$CSEM = CSEM_{low} + (CSEM_{high} - CSEM_{low})\frac{(SCALE - SCALE_{low})}{(SCALE_{high} - SCALE_{low})}$$

in which SCALE denotes the particular scale score for which the CSEM is to be derived;
CSEM denotes the CSEM for a particular scale score that is to be derived;
$SCALE_{low}$ is a scale score from previous year's raw-to-scale score table that is closest on the lower end to the scale score for which the CSEM is to be derived;

$SCALE_{high}$ is a scale score from previous year's raw-to-scale score table that is closest on the higher end to the scale score for which the CSEM is to be derived;

$CSEM_{low}$ is the CSEM associated with $SCALE_{low}$ from previous year's raw-to-scale score table; and

$CSEM_{high}$ is the CSEM associated with $SCALE_{high}$ from previous year's raw-to-scale score table.

The item response theory's SEM is estimated for each reported scale score by subject and grade. The SEM values can be found at Appendix A.

Reliability of the Extended-Response Scores

When scores integrate constructed response items, they are affected by other sources of variance, particularly readers (raters), since different readers evaluate different students and items.

Inter-rater Agreement

Inter-rater agreement evaluates the consistency of scores assigned to the same response by different readers. For the constructed-response items, inter-rater agreement was monitored daily, and two readers independently scored about 10% of the items across grades.

For the reading test, scorers provided a single score for each extended-response item, while extended-response items in the mathematics test were scored for knowledge, strategy, and explanation. Tables 2.2 and 2.3 present inter-rater agreement statistics for constructed responses in reading and mathematics, respectively. The results for the combination of exact and adjacent agreements on short constructed-response items are 98 and 99%. The inter-rater agreements on extended-response items are generally in the mid 90 to 100%.

Table 2.2: Inter-rater Agreement for Reading Extended-Response Items

Grade	N	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent
3	14411	63%	35%	98%
4	14884	63%	35%	98%
5	14653	64%	34%	98%
6	15024	63%	35%	98%
7	14778	68%	31%	99%
8	14874	66%	33%	99%

Table 2.3: Inter-rater Agreement for Mathematics Constructed- Response Items

Grade	N	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent
		Short Constructed Response Item 1		
3	14729	96%	4%	100%
4	14620	93%	7%	100%
5	14843	95%	5%	100%
6	14896	95%	4%	99%
7	14872	97%	3%	100%
8	14086	94%	6%	100%
		Short Constructed Response Item 2		
3	15047	98%	2%	100%
4	14468	97%	3%	100%
5	14632	95%	5%	100%
6	14628	95%	5%	100%
7	14934	87%	13%	100%
8	14467	94%	5%	99%
		Extended Response Item: Knowledge		
3	14920	89%	7%	96%
4	14753	83%	16%	99%
5	14778	87%	12%	99%
6	14827	91%	8%	99%
7	14618	76%	21%	97%
8	15594	80%	19%	99%
		Extended Response Item: Strategy		
3	14923	83%	13%	96%
4	14753	84%	11%	95%
5	14778	81%	15%	96%
6	14826	85%	13%	98%
7	14618	76%	19%	95%
8	15591	78%	17%	95%
		Extended Response Item: Explanation		
3	14897	65%	31%	96%
4	14749	70%	25%	95%
5	14774	59%	36%	95%
6	14828	63%	30%	93%
7	14617	58%	35%	93%
8	15577	66%	26%	92%

Agreement with Validation Papers

Pearson's validity mechanism provides an objective and systematic check of accuracy. "Validity papers" are actual student responses that are chosen by scoring directors as examples that clearly earn certain scores. These "true" scores will be assigned to validity responses to compare how often scorers match them throughout the scoring sessions. The validity pool will include responses encompassing the

entire score range for each item, and scorers will read and score them blind (unaware they are scoring validity papers rather than live responses).

The image scoring system will automatically generate a report that compares the scores given by individual scorers with the pre-assigned validity scores. This report will be used to monitor the accuracy of individual scorers and the group as a whole. If a scorer drops below an acceptable percentage of accuracy, that scorer may be required to receive individual feedback and/or retraining before being allowed to score any more responses on the given item.

As scoring progresses, validity responses will be identified through the image scoring system itself. Scoring supervisors will use the backreading tool to identify responses that serve as clear examples deserving of certain score points. They will regularly escalate such responses for review by scoring directors. Scoring directors will select from this pool of responses to be used for validity purposes, choosing valuable examples representing the full range of possible scores. Then, the selected responses will be transparently routed to all scorers assigned to that item. The validity responses will be interspersed with live responses to each scorer at regular intervals throughout the scoring day. Responses in the validity pool will be regularly replaced by new samples, which may also be used to target particular scoring issues that arise. The entire process will be transparent to the scorers.

For the reading test, scorers provided a single score for the extended-response item, while extended-response items in the mathematics test were scored for knowledge, strategy, and explanation. Tables 2.4 and 2.5 present agreement with validation papers for extended responses in reading and mathematics, respectively. These values are based on a sample of the total papers scored.

Table 2.4: Agreement with Validation Papers for Reading Extended-Response Items

Grade	N	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent
3	7857	71	28	99
4	8634	69	30	99
5	7524	84	16	100
6	8192	80	19	99
7	1765*	75	24	99
8	7339	74	25	99

Note: * All reading items, with the exception of Grade 7, were set at higher validity presentation rates in order to improve IRR agreement and reduce the number of resets.

Table 2.5: Agreement with Validation Papers for Mathematics Constructed-Response Items

Grade	N	% Exact Agreement	% Adjacent Agreement	% Exact + Adjacent
		Short Constructed Response Item 1		
3	1580	99	1	100
4	1626	98	2	100
5	1641	97	3	100
6	1690	98	2	100
7	1691	97	3	100
8	1693	96	4	100
		Short Constructed Response Item 2		
3	1576	99	1	100
4	1618	96	4	100
5	1641	97	3	100
6	1681	95	5	100
7	1691	96	4	100
8	1685	93	7	100
		Extended Response Item: Knowledge		
3	1601	98	1	99
4	1631	95	5	100
5	1653	90	8	98
6	1695	97	3	100
7	1740	92	8	100
8	1749	93	7	100
		Extended Response Item: Strategy		
3	1601	95	3	98
4	1631	96	4	100
5	1653	89	8	97
6	1695	95	4	99
7	1740	94	5	99
8	1749	92	8	100
		Extended Response Item: Explanation		
3	1601	78	21	99
4	1631	89	9	98
5	1653	76	21	97
6	1695	73	24	97
7	1740	73	25	98
8	1749	81	13	94

Reliability of the Performance Category Decisions: Standard Setting

Students' ISAT scores are reported relative to four performance categories: Academic Warning, Below Standards, Meets Standards, and Exceeds Standards. Sets of score cutoffs were developed for each learning area and each grade. The development of the score cutoffs that define these categories is fully documented in separate publications available from ISBE (*Performance Levels for the Illinois Standards Achievement Tests: Reading, Mathematics, Writing* and *Performance Levels for the Illinois Standards Achievement Tests: Science, Social Science*). However, the process is briefly described as follows.

Prior to the standard-setting meetings, which took place during April 1999 (for reading and mathematics) and April 2000 (for science), ISBE convened committees of curriculum experts to develop concrete descriptions of student knowledge and skill levels that define the specific performance categories. Educators throughout Illinois extensively reviewed these descriptions.

Panels of recognized subject matter experts convened in Springfield to translate the verbal descriptions into cut scores on the ISAT tests (i.e., scores that define the boundaries between categories). Panelists were drawn from a pool of educators who had specific knowledge of student performance at the grade levels being assessed by ISAT and experience in assessing students at those grade levels. Panelists were selected to be broadly representative of the geographic and ethnic diversity of Illinois' public school system. A total of 170 educators participated in the standard-setting process. The distribution of educators across learning areas was as follows: mathematics—56; reading—52; science—30.

A procedure originally proposed by Angoff is one of the most frequently used methods for determining cut scores when multiple-choice test scores are used. It can be most simply described as a focused, judgmental process by knowledgeable content experts. The basic Angoff procedure fits the format of the ISAT reading, mathematics, and science tests.

In the most frequent application of the Angoff method (e.g., to establish a pass-fail standard), panelists are asked to examine an item and decide what proportion of minimally competent individuals will answer the question correctly. With respect to the ISAT, however, instead of being asked about minimally competent students, panelists were asked to indicate what percentage of three groups of students—those who were just above the Academic Warning/Below Standards boundary, those who were just above the Below Standards/Meets Standards boundary, and those who were just above the Meets Standards/Exceeds Standards boundary—would answer the question correctly. The ratings were made sequentially rather than simultaneously (i.e., panelists made all judgments relative to one cut score before moving to the next cut score). Item performance statistics were provided to help panelists anchor their ratings.

The cutoff scores that resulted were originally expressed on the 1999 ISAT scales, which were grade-dependent. With the shift to the 2006 vertical scales, there was a need to conduct a study that would identify points on the new scales that represented comparable levels of achievement. In addition, there was a need to establish corresponding cut points for grades, which were not previously tested (i.e., grades 4, 6, and 7 in reading and mathematics).

The "bridge" study was conducted in 2005. Students who had taken ISAT also completed the SAT 10. The ISAT scores were statistically equated to the SAT 10 vertical scale. Then, when 2006 ISAT results became available, those scores were linked to the SAT 10 vertical scale. This provided the final link to the 2006 ISAT scales, which were linear transformations of the SAT 10 vertical scale. The bridge study results were also used to establish cutoffs for the intermediate grades, which were done by interpolating between existing values.

Results of the bridge study were examined and approved by the State Testing Review Committee at meetings held in September 2005 and January 2006. A panel of content experts also examined these results in December 2005. The State Board of Education voted to accept them at the February 2006 meeting. These cut scores are shown in Table 2.6.

Table 2.6: ISAT Cut Scores for Each Performance Level

Grade	Academic Warning	Below Standards	Meets Standards	Exceeds Standards
		READING		
3	120-155	156-190	191-226	227+
4	120-157	158-202	203-236	237+
5	120-160	161-214	215-246	247+
6	120-166	167-219	220-256	257+
7	120-173	174-225	226-266	267+
8	120-179	180-230	231-277	278+
		MATHEMATICS		
3	120-162	163-183	184-223	224+
4	120-171	172-199	200-246	247+
5	120-179	180-213	214-270	271+
6	120-193	194-224	225-275	276+
7	120-206	207-234	235-280	281+
8	120-220	221-245	246-287	288+
		SCIENCE		
4	120-157	158-186	187-236	237+
7	120-196	197-213	214-259	260+

The reliabilities of such classifications, which are criterion-referenced, are related to the reliabilities of the tests on which they are based, but they are not identical. Glaser (1963) was among the first to draw attention to this distinction, and Feldt and Brennan (1989) extensively reviewed the topic.

As Feldt and Brennan (1989, p. 140) point out, approaches to the development of reliability coefficients for criterion-referenced interpretations of test scores have been based either on squared-error loss or threshold loss. It is threshold loss, which evaluates the consistency with which people are classified with respect to a criterion, that is of greater concern here. Specifically, the issue is how consistently do tests classify students with respect to the performance standards?

Two threshold-loss coefficients have been developed: p, the proportion of persons consistently classified on two parallel tests, and k (kappa), which corrects p for the proportion of consistent classifications that would be expected by chance. Because scores on classically parallel tests are rarely available in practice, methods have been developed to estimate these values from a single test (Subkoviak, 1984). An approach proposed by Peng and Subkoviak (1980) was applied to the performance classifications made on the basis of the tests.

Table 2.7 presents the values for p, k, and p_{miss}, the expected proportion of inconsistent decisions, which is simply $(1 - p)$. In interpreting the first two indices, Feldt and Brennan (1989) suggest that p reflects the *consistency of decisions* made about examinees, whereas k, since it is corrected for chance, reflects the *contribution of the test* to the consistency of the decision.

Overall, the values suggest that decisions made with respect to the student performance classifications are very consistent. Note that the p and k values are calculated for the complete test population. Values for other test populations (e.g., IEP students alone, non-IEP students only) may differ.

Table 2.7: Reliability of Student Performance Decisions Based on Test Scores

Area	Grade	Academic Warning/Below Standards			Below Standards/Meets Standards			Meets Standards/Exceeds Standards		
		p	kappa	p_{miss}	p	kappa	p_{miss}	p	kappa	p_{miss}
Reading	3	0.961	0.625	0.039	0.912	0.773	0.088	0.875	0.688	0.125
	4	0.986	0.435	0.014	0.896	0.731	0.104	0.866	0.674	0.134
	5	0.995	0.258	0.005	0.899	0.732	0.101	0.863	0.674	0.137
	6	0.997	0.412	0.003	0.918	0.731	0.082	0.843	0.593	0.157
	7	0.996	0.366	0.004	0.901	0.714	0.099	0.863	0.564	0.137
	8	0.997	0.346	0.003	0.932	0.740	0.068	0.875	0.367	0.125
Mathematics	3	0.975	0.562	0.026	0.942	0.754	0.058	0.900	0.794	0.100
	4	0.988	0.449	0.012	0.936	0.733	0.064	0.897	0.746	0.103
	5	0.994	0.143	0.006	0.927	0.735	0.073	0.929	0.757	0.071
	6	0.991	0.238	0.009	0.934	0.746	0.066	0.912	0.763	0.088
	7	0.982	0.440	0.018	0.931	0.737	0.069	0.913	0.785	0.088
	8	0.989	0.178	0.011	0.927	0.727	0.073	0.913	0.796	0.087
Science	4	0.973	0.517	0.027	0.908	0.741	0.093	0.913	0.691	0.087
	7	0.960	0.603	0.040	0.915	0.707	0.085	0.897	0.701	0.103

Area	Grade	Academic Warning/Below Standards			Below Standards/Meets Standards			Meets Standards/Exceeds Standards		
		p	kappa	p_{miss}	p	kappa	p_{miss}	p	kappa	p_{miss}
AVERAGE		0.985	0.398	0.016	0.920	0.736	0.080	0.890	0.685	0.110

3. VALIDITY

Test validity refers to the degree to which a test measures what it is intended to measure. Evidence that supports a test's validity is gathered for different aspects and through different methods. The three most recognized aspects are content validity, construct validity, and criterion-related validity. Content validity refers to how well a test covers the content of interest. The process does not involve any statistical computation. Instead, it examines the correspondence between test blueprints that describe the intended content and test items. Construct validity is composed of the analyses of a test's internal constructs in order to confirm that the test indeed functions as it is intended to function. Analyses of construct validity include correlations between items and the test, discrimination between subgroups, factor analysis, and multitrait-multimethod approaches. Criterion-related validity indicates whether a test is consistent with other tests that measure the same content. Depending on the use of information, criterion-related validity can be either concurrent or predictive. The former focuses on the relationship between two tests given at the same time that measure the same content, and the later focuses on the use of a test to predict future performance (Cronbach & Meehl, 1955; Crocker & Algina, 1986; and Clark & Watson, 1995).

Content Validity

An alignment analysis for each subject area was conducted in September 2006 and reported in November 2006 by Norman Webb (see Appendix D). The alignment has been retained through the years. Evidence of content validity has been provided in the 2010 Test Construction Specifications, which contains descriptions of the blueprint, the process, and the decisions made for defining and developing the ISAT tests.

Construct Validity

Dimensionality

Dimensionality is a unique aspect of construct validity. Investigation is necessary when item response theory (IRT) is used because IRT models assume that a test measures only one latent trait (unidimensionality). Although it is generally agreed that unidimensionality is a matter of degree rather than an absolute situation, there is no consensus on what defines dimensionality or on how to evaluate it. Approaches that evaluate dimensionality can be categorized into answer patterns, reliability, components and factor analysis, and latent traits. Components and factor analysis are the most popular methods for evaluation (Hattie, 1985; Abedi, 1997).

Lord (1980) stated that if the ratio of the first to the second eigenvalue is large and the second eigenvalue is close to other eigenvalues, the test is unidimensional. Divgi (1980) expanded Lord's idea and created an index by considering the pattern of the

first three factor components (eigenvalues). The Divgi Index examines the ratio of the difference of the first and second eigenvalues over the difference of the second and third eigenvalues. A large ratio indicates a greater difference between the first and second eigenvalues, thus, creating a unidimensional tendency. A cut value of 3 is chosen for the index so that values greater than 3 are considered unidimensional.

The ISAT dimensionality analysis employs exploratory factor analysis using the principal axis factoring estimation procedure and oblique rotation[2]. It is defined in factor analysis that a test's total variance equals the sum of the common variance, the specific variance, and the error variance. Reliability is equivalent to the sum of the first two variances, i.e., common and specific variances. Principal axis factoring extracts the first two variances, in other words, the variance of reliability. The use of oblique rotation is based on the assumption that latent variables are correlated. Table 3.1 lists the Divgi index by subject and grade. All values are greater than 3, which suggest that all of the ISAT test forms are unidimensional. Scree plots, another reference of dimensionality, are presented in Appendix C. The elbow shaped plots support the unidimensionality conclusion drawn from the Divgi index.

Table 3.1: Divgi Index

Grade	Reading	Mathematics	Science
3	25.9	96.8	
4	72.3	35.6	27.8
5	133.3	39.3	
6	39.0	83.6	
7	59.2	27.8	22.0
8	110.0	59.3	

Internal Construct

The purpose of studying the internal structure of a test is to demonstrate that all of the items work coherently. Methods that are used to provide evidence of the internal structure of a test are usually associated with correlations, for example, the item-total correlation and subscale-total correlation.

Empirical data is used to evaluate test structure through point-biserial correlations of item-total and subscale-total correlations. The subscale scores are the points earned for each reporting category. The corrected point-biserial, in contrast to the uncorrected method, excludes an item from the total score when computing its point-biserial. This method avoids the overestimation issue that commonly occurs in the uncorrected method. The subscale-total correlation includes the subscale items in the total scores. A summary of item-total point-biserial correlations by grade is listed in Table 3.2. The median of the item point-biserial correlations is above 0.30 across subjects and grades. Tables 3.3 through 3.5 present correlations between subscales and the total test.

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[2] The oblimin method is used. Oblique rotation rotates the structure and pattern matrix, rather than the structure and transformation matrix. The rotation results in switching the structure and pattern axes.

Table 3.2: Median of Item-Total Point-Biserial by Subject and Grade

	Reading	Mathematics	Science
3	0.43	0.44	
4	0.37	0.40	0.35
5	0.37	0.41	
6	0.39	0.41	
7	0.37	0.40	0.34
8	0.38	0.40	

Table 3.3: Reading Subscale-Total Correlations by Grade

Grade	Subscale Category	Total	RC1	RC2	RC3	RC4
3	Total	1.00	0.84	0.71	0.97	0.89
	Vocabulary Development	0.84	1.00	0.54	0.75	0.70
	Reading Strategies	0.71	0.54	1.00	0.63	0.58
	Reading Comprehension	0.97	0.75	0.63	1.00	0.80
	Literature	0.89	0.70	0.58	0.80	1.00
4	Total	1.00	0.79	0.79	0.96	0.83
	Vocabulary Development	0.79	1.00	0.56	0.67	0.58
	Reading Strategies	0.79	0.56	1.00	0.70	0.60
	Reading Comprehension	0.96	0.67	0.70	1.00	0.71
	Literature	0.83	0.58	0.60	0.71	1.00
5	Total	1.00	0.73	0.60	0.95	0.91
	Vocabulary Development	0.73	1.00	0.39	0.64	0.59
	Reading Strategies	0.60	0.39	1.00	0.52	0.47
	Reading Comprehension	0.95	0.64	0.52	1.00	0.77
	Literature	0.91	0.59	0.47	0.77	1.00
6	Total	1.00	0.80	0.48	0.96	0.90
	Vocabulary Development	0.80	1.00	0.31	0.70	0.67
	Reading Strategies	0.48	0.31	1.00	0.39	0.35
	Reading Comprehension	0.96	0.70	0.39	1.00	0.78
	Literature	0.90	0.67	0.35	0.78	1.00
7	Total	1.00	0.77	0.60	0.95	0.88
	Vocabulary Development	0.77	1.00	0.40	0.66	0.62
	Reading Strategies	0.60	0.40	1.00	0.49	0.46
	Reading Comprehension	0.95	0.66	0.49	1.00	0.74
	Literature	0.88	0.62	0.46	0.74	1.00
8	Total	1.00	0.79	0.73	0.96	0.88
	Vocabulary Development	0.79	1.00	0.52	0.70	0.62
	Reading Strategies	0.73	0.52	1.00	0.64	0.57
	Reading Comprehension	0.96	0.70	0.64	1.00	0.75
	Literature	0.88	0.62	0.57	0.75	1.00

Table 3.4: Mathematics Subscale-Total Correlations by Grade

Grade	Subscale Category	Total	RC1	RC2	RC3	RC4	RC5
3	Total	1.00	0.95	0.90	0.81	0.83	0.86
	Number Sense (RC1)	0.95	1.00	0.79	0.74	0.72	0.77
	Measurement (RC2)	0.90	0.79	1.00	0.68	0.69	0.73
	Algebra (RC3)	0.81	0.74	0.68	1.00	0.60	0.64
	Geometry (RC4)	0.83	0.72	0.69	0.60	1.00	0.68
	Data Analysis, Statistics, & Probability (RC5)	0.86	0.77	0.73	0.64	0.68	1.00
4	Total	1.00	0.94	0.86	0.81	0.86	0.85
	Number Sense	0.94	1.00	0.75	0.73	0.73	0.74
	Measurement	0.86	0.75	1.00	0.64	0.69	0.67
	Algebra	0.81	0.73	0.64	1.00	0.64	0.66
	Geometry	0.86	0.73	0.69	0.64	1.00	0.69
	Data Analysis, Statistics, & Probability	0.85	0.74	0.67	0.66	0.69	1.00
5	Total	1.00	0.91	0.89	0.90	0.83	0.86
	Number Sense	0.91	1.00	0.75	0.77	0.67	0.73
	Measurement	0.89	0.75	1.00	0.75	0.68	0.71
	Algebra	0.90	0.77	0.75	1.00	0.69	0.74
	Geometry	0.83	0.67	0.68	0.69	1.00	0.67
	Data Analysis, Statistics, & Probability	0.86	0.73	0.71	0.74	0.67	1.00
6	Total	1.00	0.93	0.87	0.93	0.84	0.82
	Number Sense	0.93	1.00	0.75	0.81	0.70	0.71
	Measurement	0.87	0.75	1.00	0.77	0.69	0.67
	Algebra	0.93	0.81	0.77	1.00	0.72	0.71
	Geometry	0.84	0.70	0.69	0.72	1.00	0.64
	Data Analysis, Statistics, & Probability	0.82	0.71	0.67	0.71	0.64	1.00
7	Total	1.00	0.87	0.84	0.93	0.86	0.83
	Number Sense	0.87	1.00	0.69	0.74	0.66	0.65
	Measurement	0.84	0.69	1.00	0.70	0.68	0.65
	Algebra	0.93	0.74	0.70	1.00	0.74	0.72
	Geometry	0.86	0.66	0.68	0.74	1.00	0.69
	Data Analysis, Statistics, & Probability	0.83	0.65	0.65	0.72	0.69	1.00
8	Total	1.00	0.85	0.87	0.94	0.83	0.89
	Number Sense	0.85	1.00	0.70	0.75	0.64	0.69
	Measurement	0.87	0.70	1.00	0.76	0.68	0.73
	Algebra	0.94	0.75	0.76	1.00	0.71	0.78
	Geometry	0.83	0.64	0.68	0.71	1.00	0.67
	Data Analysis, Statistics, & Probability	0.89	0.69	0.73	0.78	0.67	1.00

Table 3.5: Science Subscale-Total Correlations by Grade

Grade	Subscale Category	Total	RC1	RC2	RC3	RC4	RC5
4	Total	1.00	0.84	0.87	0.85	0.83	0.87
	Scientific Inquiry & Technological Design (RC1)	0.84	1.00	0.66	0.65	0.63	0.69
	Life and Environmental Sciences (RC2)	0.87	0.66	1.00	0.68	0.66	0.69
	Matter, Energy, & Forces (RC3)	0.85	0.65	0.68	1.00	0.65	0.66
	Earth & Space Sciences (RC4)	0.83	0.63	0.66	0.65	1.00	0.65
	Safety, Practices, Science/Technology/Society, & Measurement (RC5)	0.87	0.69	0.69	0.66	0.65	1.00
7	Total	1.00	0.85	0.85	0.82	0.85	0.88
	Scientific Inquiry & Technological Design	0.85	1.00	0.65	0.63	0.65	0.70
	Life and Environmental Sciences	0.85	0.65	1.00	0.61	0.66	0.70
	Matter, Energy, & Forces	0.82	0.63	0.61	1.00	0.62	0.64
	Earth & Space Sciences	0.85	0.65	0.66	0.62	1.00	0.68
	Safety, Practices, Science/Technology/Society, & Measurement	0.88	0.70	0.70	0.64	0.68	1.00

Concurrent Validity

An investigation of the correlation between ISAT and SAT 10 items is utilized to attempt to provide concurrent validity evidence. SAT 10 items are embedded in the ISAT to provide a national norm reference. Although the SAT 10 is aligned with Illinois standards, it is still an entity by itself (refer to the SAT 10 alignment study in Appendix B). The investigation of the SAT 10 correlation with the ISAT has two layers. First, the correlation between SAT 10 and the full ISAT that includes SAT 10 items is investigated (SAT 10–ISAT). Then, the SAT 10 with the ISAT that excludes SAT 10 items is investigated (SAT 10–non-SAT 10). Since the former includes SAT 10 items, an inflated correlation is expected. In other words, the correlation of SAT 10–ISAT should be higher than the correlation of SAT 10–non-SAT 10. The SAT 10–non-SAT 10 correlations range from 0.77 to 0.87, while the SAT 10–ISAT correlations are above 0.91.

Table 3.6: Correlation between SAT 10-Full ISAT and SAT 10-Non-SAT 10 Items

Grade	Reading Full ISAT	Reading Non-SAT 10	Mathematics Full ISAT	Mathematics Non-SAT 10	Science Full ISAT	Science Non-SAT 10
3	0.96	0.82	0.95	0.86		
4	0.96	0.79	0.94	0.84	0.92	0.79
5	0.95	0.78	0.95	0.86		
6	0.95	0.80	0.95	0.87		
7	0.94	0.77	0.95	0.85	0.91	0.79
8	0.96	0.80	0.95	0.87		

4. SCALING AND EQUATING PROCEDURES

Scaling and Equating

ISAT reading, mathematics, and science scores are each reported on a continuous standard score scale. The lowest possible score is 120. The upper limit of the scale is not restricted, but scores generally fall below 400. The scales are continuous across grades. That is, a score of 200, for example, has the same essential meaning for a third-grade student and a fifth-grade student in terms of the achievement it represents.

Because test items change each year, raw scores (i.e., number or percent correct scores) will not always have the same meaning or represent the same level of proficiency. Without equating, each administration of a test with different items would lead to a new reporting scale, independent of that used previously. It would still be possible to measure relative performance, but it would not be possible to indicate growth across years for schools, districts, or the state. The equating process makes longitudinal comparisons possible.

Starting in 2008, reading and mathematics equating is conducted using the three-parameter logistic model (3-PL model). Details of the 3-PL equating procedure can be found in the *Documentation of the ISAT Equating for 2008* (Pearson, 2008). The 3-PL model uses item difficulty, item discrimination, pseudo-chance, and the person's proficiency level to describe the probability of a correct response to an item. Science still uses the Rasch model. The Rasch model uses only item difficulty and the person's ability to determine the probability of a correct response.

The equating procedures may be summarized as follows. Each test form contains a sufficient number of items that have been previously administered to provide a reliable and content-representative equating link. During calibration of the new tests, the 3-PL model sets item parameters for these linking items to their historical values through Stocking-Lord true score equating method. In the Rasch model the item parameters are set to their historical values through the WINSTEPS constrained calibration approach. By estimating values for the remaining items under these constraints, item parameter values for the remaining items are automatically adjusted to the existing scale. The logic of the equating procedure rests on certain assumptions. The most important assumption is that the items parameters used for linking stay the same in the two test administrations. Also careful checks are made on the item fit statistics for the anchor items to ensure data fits the Rasch model. Individual proficiency scores are then transformed using equations developed in the bridge study to have the characteristics of the 2006 reporting scales. The lowest possible scale score is 120, and the student standard deviation of scale scores is approximately 30.

The ISAT has a large testing population that requires a long period of time for scoring. ISAT equating analyses are conducted on samples that are drawn from the test population in order to meet the reporting schedule. The sample is 2,500 per

form. Since ISAT has six forms, approximately 15,000 records were used in equating until 2008. The 2009 and 2010 ISAT test administrations are different from previous years in two ways: 1) a linguistically modified form is added to the existing accommodations, and 2) a different cover page is used for accommodations of large print, reader script, and auditory via audiocassette or compact disk (CD) that were not formally distinguished in the 2008 administration. All accommodations that used such a cover are called special form. The 2010 sample is drawn from eight forms, the regular six forms, a linguistically modified form, and the special form. The regular six forms are still targeted at 2,500 per form. Samples of the linguistically modified form and the special form are drawn to reflect their population proportion relative to the regular form proportion. The total sample sizes range approximately from 16,000 to 18,000 across grades.

Table 4.1 shows the summaries of the 3-PL equating results for reading and mathematics and the Rasch equating results for science. The item count (N), minimum value (Min), maximum value (Max), mean, and standard deviation (SD) are presented for each of the three parameters.

Table 4.1: Summary of Equating Results BY Subject and Grade

Subject	Grade	N	Item Discrimination (a)				Item Difficulty (b)				Pseudo-Chance (c)			
			Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD
R	3	51	0.34	1.45	0.91	0.27	-2.02	1.05	-0.54	0.77	0	0.34	0.15	0.09
R	4	51	0.22	1.45	0.71	0.25	-2.38	1.49	-0.51	0.93	0	0.37	0.14	0.08
R	5	51	0.27	1.41	0.78	0.25	-2.05	1.06	-0.46	0.84	0	0.40	0.15	0.09
R	6	51	0.25	1.31	0.78	0.24	-2.59	2.32	-0.69	0.92	0	0.39	0.15	0.09
R	7	51	0.20	1.22	0.75	0.23	-2.56	1.47	-0.53	0.96	0	0.46	0.15	0.10
R	8	51	0.26	1.75	0.88	0.28	-3.07	0.33	-0.88	0.68	0	0.33	0.16	0.09
M	3	70	0.33	1.54	0.91	0.28	-2.83	0.97	-0.81	0.83	0	0.39	0.15	0.10
M	4	70	0.35	1.61	0.82	0.28	-2.62	1.55	-0.63	0.91	0	0.53	0.17	0.11
M	5	70	0.36	1.90	0.90	0.28	-2.67	1.47	-0.29	0.81	0	0.45	0.17	0.10
M	6	70	0.29	1.59	0.86	0.30	-2.29	1.43	-0.34	0.78	0	0.50	0.17	0.11
M	7	70	0.39	1.89	0.99	0.35	-1.85	1.64	-0.13	0.80	0	0.39	0.18	0.10
M	8	70	0.31	1.80	0.92	0.35	-1.96	1.26	-0.12	0.70	0	0.45	0.18	0.10
S	4	75					-1.98	2.12	0.32	0.88				
S	7	75					-0.54	2.90	1.31	0.82				

Prevention and Detection of Scale Drift

Scale or item parameter drift is used to describe a condition under which scale scores or cutoff levels on a test do not represent comparable levels of proficiency at two points in time. Under conditions of scale drift, if average scores increase (or decrease) or the proportion of the population scoring above certain target levels changes over time, there can be no confidence that the change represents a real change in knowledge of the material being tested.

There are many valid reasons why scores increase over time, such as improved mastery of the concepts and knowledge represented by the test blueprint and better

test preparation. However, the situation may also occur for unacceptable reasons. The equating of successive test forms, for example, always entails some degree of statistical error, which may accumulate undesirably over periods of time. The frequent repetition of items can also lead to situations where score increases reflect familiarity with specific content rather than greater familiarity with the underlying subject matter.

The ISAT program takes a number of steps to attempt to reduce the effects of scale drift. The items used to anchor each successive form represent the full range of content being tested and occupy the same positions in different test forms to avoid parameter shifts arising from location differences. The anchor item set is always large, usually representing about half the test. During the calibration runs, item parameter stability is carefully and systematically examined to identify any items that appear to have changed in performance since their first use. All of these procedures help to eliminate the undesirable effects of scale drift.

ISAT has a 30% item refresh rate when developing new tests. The 2009 ISAT carries 70% of operational items from the previous year for mathematics and science. Most of those items are eligible for linking. Reading is an exception because reading items tie with passages. In order to fulfill the 30% rule, two passages are replaced in the reading test and about 41% items are left for linking.

Evaluating a Vertical Scale

Three properties are used to evaluate a vertical scale: grade-to-grade growth, grade-to-grade variability, and the effect size for grade-to-grade differences (Kolen & Brennan, 2004). The grade-to-grade growth and variability of each ISAT test are presented in Figures 4.1 through 4.3 below. The growth is indicated by using the grade level mean scale score and a variability of one standard deviation. Although science statistics are included in this session, discussions of these statistics are excluded because the gap exists between grades 4 and 7.

Yen (1986) proposed an effect size index to detect the separation of grade distributions. The effect size computation utilizes the mean, variance, and sample size

$$effectsize = \frac{\bar{x}_{upper} - \bar{x}_{lower}}{\sqrt{(n_{upper}s^2_{upper} + n_{lower}s^2_{lower})/(n_{upper} + n_{lower})}},$$

where x, n, and s are the mean, variance, and sample size of the upper and lower grades. This index gives effect size in standard deviation units. Cohen (1988) suggested that the cuts for small, median, and large effect sizes are 0.2, 0.5, and 0.8, respectively.

Table 4.2 presents the means and standard deviations for each grade and Table 4.3 shows the effect size of grade-to-grade differences. Larger growths are found in reading and mathematics lower grades and then the growths slow down in higher grades. All of the effect sizes of reading and mathematics are smaller than 1. In

other words, the growth for reading and mathematics is less than 1 standard deviation. Based on Cohen's principle, the growth is between the small to median sizes. The effect size values are consistent with the study done by Downing and Haladyna (2006).

Table 4.2: Scale Score Means and Standard Deviations by Subject and Grade

Grade	Reading			Mathematics			Science		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
3	153147	207.6	29.7	153449	217.1	30.4			
4	146093	219.2	28.4	146335	229.9	28.1	146214	208.7	28.7
5	143967	231.5	27.2	144226	242.9	29.8			
6	147912	240.0	25.4	148190	255.0	29.6			
7	148686	244.3	27.3	148946	264.1	29.8	148624	238.7	27.4
8	148409	250.5	22.3	148536	274.3	28.5			

Table 4.3: Effect Size of Grade-to-Grade Difference

Grades	Reading	Mathematics	Grades	Science
3-4	0.40	0.44	4-7	1.07
4-5	0.44	0.45		
5-6	0.32	0.41		
6-7	0.16	0.31		
7-8	0.25	0.35		

Figure 4.1: Reading Scale Score Mean and 1-SD Band across Grades
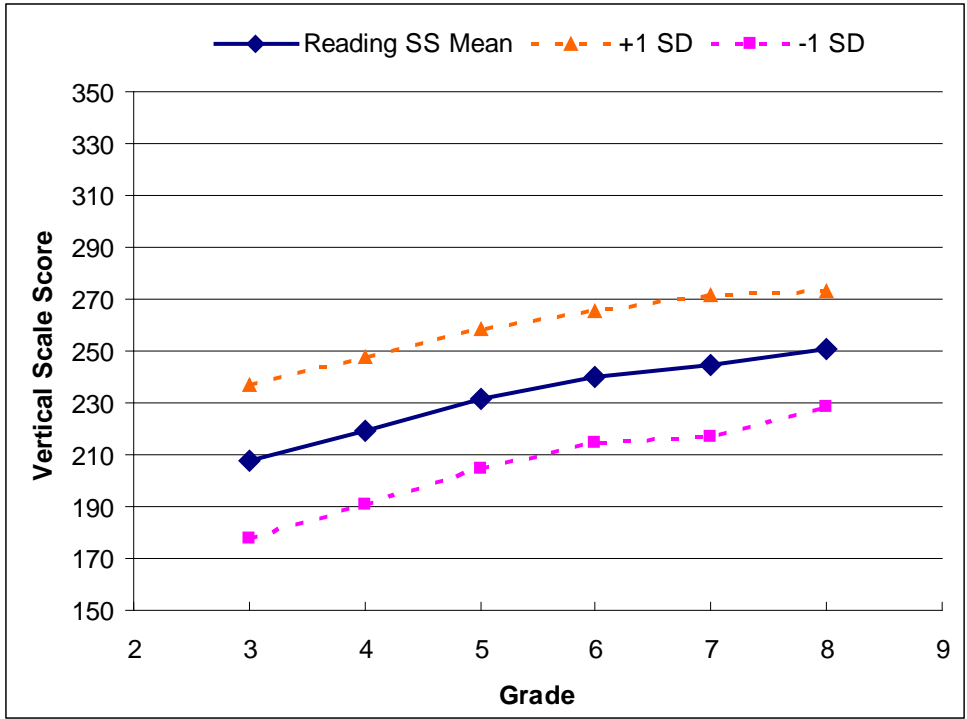
Figure 4.2: Mathematics Scale Score Mean and 1-SD Band across Grades
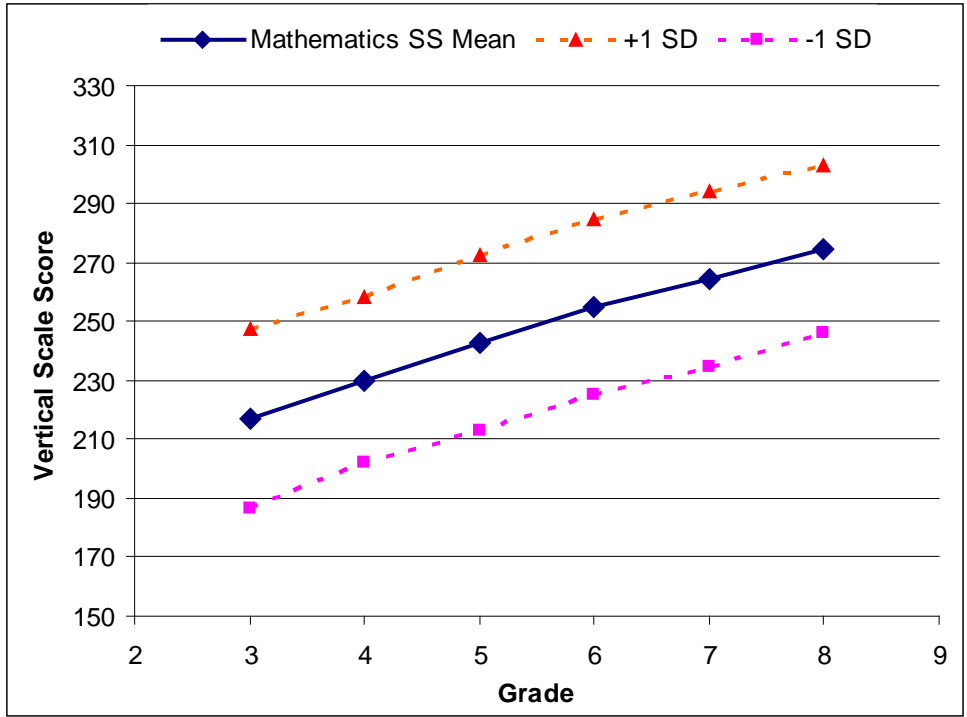
Figure 4.3: Science Scale Score Mean and 1-SD Band across Grades
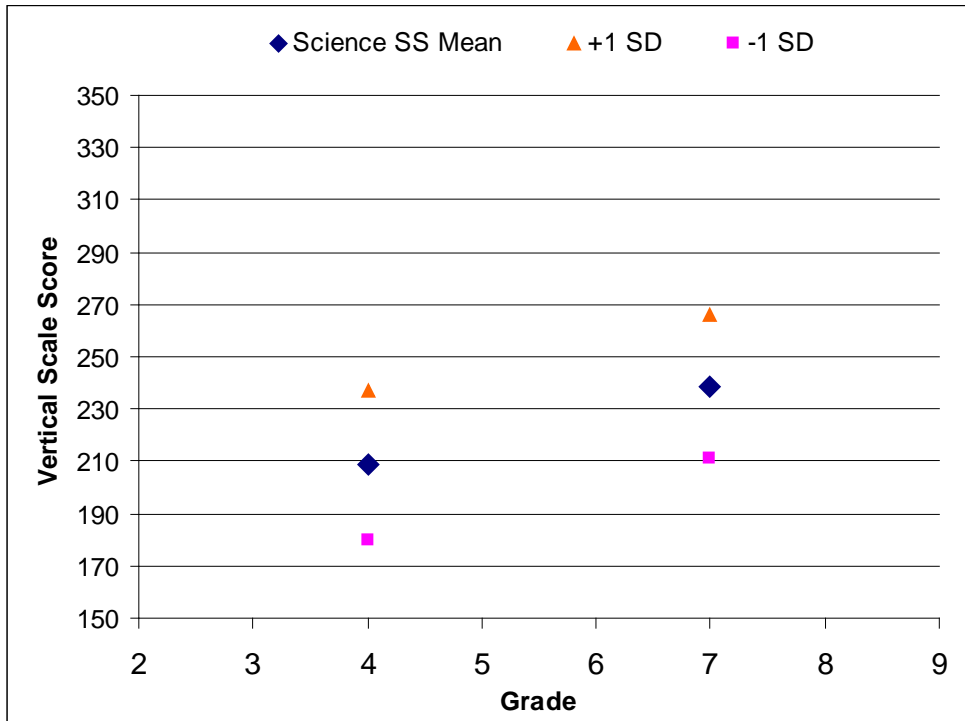
5. RESULTS

Performance Relative to the Illinois Learning Standards

Due to the cancellation of the IMAGE test, those English language learners (ELL) who would take the IMAGE started to take the ISAT in 2008. In 2009 and 2010, linguistically modified forms were administered to the ELL population in mathematics and science. Students who take the linguistically modified forms were included in the operational equating and in this analysis. Tables 5.1 shows the percentages of students falling into each performance level by subject and grade from 1999, when the ISAT started, through 2010. In order to highlight the change in population, years 1999 through 2007 are shaded to indicate populations before the change.

Table 5.1: Percentages of Students by Subject and Grade Falling into Each Performance Level: 1999-2010

Grade	Year	Reading				Mathematics				Science			
		Warning	Below	Meet	Exceed	Warning	Below	Meet	Exceed	Warning	Below	Meet	Exceed
3	1999	8	31	44	17	12	20	47	21				
	2000	6	32	41	21	10	21	46	23				
	2001	7	31	43	19	8	18	46	28				
	2002	7	31	44	19	7	19	44	30				
	2003	8	30	40	22	7	17	45	31				
	2004	7	28	42	23	7	14	46	33				
	2005	7	27	45	22	5	15	45	34				
	2006	6	24	47	23	4	11	47	38				
	2007	5	22	49	24	4	10	45	42				
	2008	7	22	48	24	3	11	44	41				
	2009	5	23	46	26	3	11	44	41				
	2010	5	21	46	28	3	11	45	42				
4	2000									1	35	51	13
	2001									8	26	54	11
	2002									8	25	53	14
	2003									7	27	52	14
	2004									6	26	55	13
	2005									5	24	55	16
	2006	2	26	47	26	2	14	59	26	3	17	64	15
	2007	1	25	48	25	1	12	57	29	4	17	62	18
	2008	2	25	47	27	1	15	58	26	4	20	59	17
	2009	1	25	46	28	1	13	58	28	3	20	59	18
	2010	1	25	45	29	1	13	58	29	3	20	60	17
5	1999	1	38	37	24	6	39	53	3				
	2000	0	41	39	20	6	37	52	5				
	2001	1	40	34	25	4	34	55	6				
	2002	1	39	37	22	5	32	55	8				
	2003	1	39	37	23	4	28	59	10				

Grade	Year	Reading				Mathematics				Science			
		Warning	Below	Meet	Exceed	Warning	Below	Meet	Exceed	Warning	Below	Meet	Exceed
	2004	2	37	36	25	3	25	60	12				
	2005	2	38	40	19	3	24	61	12				
	2006	1	30	46	22	1	21	64	15				
	2007	1	30	44	26	1	17	63	20				
	2008	1	26	46	27	1	18	64	17				
	2009	0	26	48	26	0	17	66	16				
	2010	0	25	45	30	0	16	66	18				
6	2006	0	27	53	19	1	20	63	16				
	2007	0	26	54	19	1	18	62	19				
	2008	0	21	53	26	1	17	62	21				
	2009	0	20	53	27	1	17	59	23				
	2010	0	18	55	26	1	15	60	25				
7	2000									12	16	54	18
	2001									11	17	52	20
	2002									10	17	56	17
	2003									10	17	56	18
	2004									10	15	58	17
	2005									10	15	54	20
	2006	1	28	60	12	3	21	55	21	6	13	62	19
	2007	1	26	58	15	2	18	54	25	7	14	55	24
	2008	1	22	59	19	2	18	54	26	6	14	56	23
	2009	0	22	57	21	2	16	55	28	7	14	56	24
	2010	0	22	58	20	2	14	56	29	5	12	61	22
8	1999	1	27	54	18	5	52	36	7				
	2000	0	28	56	16	8	46	35	12				
	2001	1	34	56	10	7	42	37	13				
	2002	1	31	58	10	7	40	37	15				
	2003	1	36	54	10	6	41	38	16				
	2004	2	31	57	10	6	40	38	17				
	2005	1	27	61	12	6	40	37	17				
	2006	0	21	70	9	2	20	53	26				
	2007	1	18	70	12	1	18	52	29				
	2008	0	18	73	8	2	18	53	27				
	2009	0	16	75	9	1	18	55	27				
	2010	0	15	73	12	1	15	53	31				

Note 1: Because of rounding, the percentages in each row may not total exactly to 100%.
Note 2: Starting in 2008, the ISAT testing population included the ELL group.

Table 5.2 presents the average proportion correct of multiple-choice items by reporting categories. The proportion correct of a reporting category is the score earned in the category divided by its maximum possible score.

The reporting categories for reading are 1. Vocabulary Development, 2. Reading Strategies, 3. Reading Comprehension, and 4. Literature. The reporting categories for mathematics are 1. Number Sense, 2. Measurement, 3. Algebra, 4. Geometry, and 5. Data Analysis, Statistics, and Probability. The reporting categories for science

include 1. Scientific Inquiry and Technological Design, 2. Life and Environmental Sciences, 3. Matter, Energy, and Forces, 4. Earth and Space Sciences, and 5. Safety, Practice, Science/Technology/Society, and Measurement.

Table 5.2: Average Proportion Correct by Reporting Category

Subject	Reporting Category	Grade					
		3	4	5	6	7	8
Reading	1. Vocabulary Development	0.73	0.63	0.65	0.76	0.75	0.72
	2. Reading Strategies	0.60	0.68	0.68	0.64	0.58	0.73
	3. Reading Comprehension	0.65	0.65	0.71	0.75	0.69	0.74
	4. Literature	0.71	0.67	0.64	0.70	0.70	0.78
Mathematics	1. Number Sense	0.69	0.67	0.56	0.68	0.53	0.63
	2. Measurement	0.76	0.64	0.59	0.63	0.58	0.51
	3. Algebra	0.74	0.79	0.67	0.64	0.63	0.63
	4. Geometry	0.67	0.66	0.64	0.69	0.71	0.59
	5. Data Analysis, Statistics, and Probability	0.69	0.67	0.65	0.58	0.68	0.59
Science	1. Scientific Inquiry and Technological Design		0.64			0.64	
	2. Life and Environmental Sciences		0.66			0.71	
	3. Matter, Energy, and Forces		0.59			0.60	
	4. Earth and Space Sciences		0.62			0.59	
	5. Safety, Practice, Science/Technology/Society, and Measurement		0.65			0.66	

Note: ELL students are included.

Performance Relative to National Quarters

The legislation that authorized the development of the ISAT required that reports provide national comparative data as a secondary reference point for evaluating school improvement efforts. Since the costs of obtaining nationally representative samples of students for each test would be prohibitively expensive, that mandate has been met by administering a nationally standardized achievement test concurrently with the ISAT to a sample of Illinois students until after 2005. The two score distributions are then compared to identify points on the ISAT scale that correspond to the 25th, 50th, and 75th percentile performance levels for the national sample.

Between the years 1999 through 2005, the ISAT used the *Stanford Achievement Test*, *Ninth Edition* (SAT 9) for the purpose of determining Illinois students' relative standing within the national population. Equipercentile methodology was used to equate scores on the two tests. In equipercentile equating, the scores on two tests are assumed to be equivalent if they have the same percentile rank. For example, the SAT 9 score that cuts off 10% of the equating sample is assumed to represent a

level of proficiency equal to the ISAT score that cuts off 10% of the equating sample, even though the scores themselves may be quite different numerically.

Starting in 2006, the *Stanford Achievement Test, Tenth Edition* (SAT 10) is embedded in the ISAT to provide both criterion- and norm-referenced scores. The SAT 10 national norm is computed solely based on SAT 10 items. Consequently, students of the same ISAT scale scores might receive different national norm scores. National quartiles of the 2010 assessment outcomes are shown in Tables 5.3. Since ELL students take regular ISAT reading test and receive modified mathematics and science tests, the national quartiles for reading includes ELL population while mathematics and science excludes ELL students. The values for reading in Years 2008, 2009, and 2010 are shaded in Table 5.3 to indicate the unique population composite.

Table 5.3: Percentages of Students Falling into Each National Quartile: 1999-2010

Grade	Year	Reading				Mathematics				Science			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3	1999	22	22	25	32	19	21	28	32				
	2000	21	21	25	33	18	21	26	36				
	2001	21	22	25	32	14	19	25	42				
	2002	21	21	26	33	13	19	25	43				
	2003	22	20	25	33	12	18	25	44				
	2004	19	20	26	35	10	17	28	46				
	2005	18	21	23	37	9	18	27	47				
	2006	12	20	32	35	16	18	27	39				
	2007	12	21	33	35	16	19	27	38				
	2008	10	21	30	40	13	18	25	44				
	2009	9	21	29	41	16	15	25	44				
	2010	8	20	29	43	15	15	25	45				
4	2000									18	26	25	31
	2001									19	23	27	30
	2002									18	24	27	30
	2003									18	25	25	32
	2004									16	26	26	32
	2005									13	25	25	37
	2006	9	18	31	43	10	17	32	42	12	23	28	37
	2007	9	17	31	43	10	16	31	43	11	22	29	39
	2008	8	19	27	45	10	17	28	44	9	22	28	41
	2009	8	19	27	46	11	19	24	45	13	18	35	34
	2010	7	18	28	47	10	17	29	44	12	18	36	34
5	1999	21	23	27	28	20	22	24	33				
	2000	21	26	28	25	19	22	21	38				
	2001	25	21	24	30	17	19	21	42				
	2002	23	23	26	28	16	19	22	43				
	2003	23	22	27	28	13	17	21	49				
	2004	22	23	27	28	10	16	24	49				
	2005	21	22	33	24	11	15	22	53				
	2006	13	18	33	37	14	16	25	45				

Grade	Year	Reading				Mathematics				Science			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	2007	12	17	33	38	12	15	25	48				
	2008	9	17	27	47	10	15	25	50				
	2009	9	17	27	47	11	17	26	47				
	2010	8	16	27	48	9	15	25	51				
6	2006	13	26	36	24	15	18	30	36				
	2007	13	26	37	25	14	18	30	38				
	2008	9	21	38	33	9	17	24	49				
	2009	9	20	38	33	9	17	24	50				
	2010	8	19	38	35	8	16	24	52				
7	2000									14	24	22	41
	2001									12	25	20	43
	2002									12	25	23	41
	2003									11	23	24	42
	2004									12	23	23	42
	2005									12	23	20	45
	2006	8	22	28	41	17	17	28	39	12	21	30	37
	2007	9	22	28	41	16	16	28	40	12	21	30	37
	2008	7	16	33	44	11	19	27	42	10	27	23	40
	2009	6	15	33	45	6	16	32	46	10	26	23	42
	2010	6	15	33	46	5	15	32	48	8	25	23	44
8	1999	15	22	30	33	15	25	25	35				
	2000	13	24	33	30	18	20	21	41				
	2001	17	26	33	24	17	19	18	45				
	2002	17	23	34	25	16	19	20	46				
	2003	19	27	31	24	16	17	18	48				
	2004	16	24	35	25	14	18	18	50				
	2005	12	25	35	28	15	18	19	48				
	2006	8	25	34	33	12	18	24	47				
	2007	8	26	33	32	11	17	24	48				
	2008	10	19	30	41	12	15	26	47				
	2009	10	19	30	42	11	14	26	49				
	2010	8	18	30	44	10	13	26	51				

Note 1: Because of rounding, the percentages in each row may not total exactly to 100%.

Note 2: The norm of 2006 and forward is based on the SAT 10 national norm and 1999 through 2005 norms are based on SAT 9.

Note 3: Starting in 2008, the reading analysis includes the ELL group.

Correlations between Subjects

Correlations between content subjects are presented at each grade level in Table 5.4. They are computed using scale scores. The correlations range from .742 to .806 across grades. The sample sizes on which the correlations are based are shown in Table 5.5.

Table 5.4: Correlations among ISAT Scale Scores

| Grade | Subject | Subject/Correlation | | |
		Reading	Mathematics	Science
3	Reading	1.000	0.767	
	Mathematics	0.767	1.000	
4	Reading	1.000	0.775	0.806
	Mathematics	0.775	1.000	0.796
	Science	0.806	0.796	1.000
5	Reading	1.000	0.763	
	Mathematics	0.763	1.000	
6	Reading	1.000	0.767	
	Mathematics	0.767	1.000	
7	Reading	1.000	0.768	0.792
	Mathematics	0.768	1.000	0.792
	Science	0.792	0.792	1.000
8	Reading	1.000	0.742	
	Mathematics	0.742	1.000	

Table 5.5: Sample Size of Correlation Computation

| | N | | |
Grade	Reading-Mathematics	Reading-Science	Mathematics-Science
3	152919		
4	145847	145723	145994
5	143765		
6	147712		
7	148446	148119	148415
8	148068		

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APPENDIX A: Conditional Standard Errors of Measurement Associated With ISAT Scale Scores

Conditional SEM Associated with ISAT Reading Scale Scores

Raw Score	Grade 3 Scale Score	se$_{SS}$	Grade 4 Scale Score	se$_{SS}$	Grade 5 Scale Score	se$_{SS}$	Grade 6 Scale Score	se$_{SS}$	Grade 7 Scale Score	se$_{SS}$	Grade 8 Scale Score	se$_{SS}$
0	120	47	120	46	120	46	120	47	120	46	120	46
1	120	12	120	14	120	16	120	20	120	20	120	19
2	120	11	120	14	120	14	120	18	120	19	120	19
3	120	11	120	14	120	14	124	17	131	16	128	17
4	120	11	121	14	124	13	133	15	140	14	137	15
5	120	11	128	12	131	12	140	13	147	13	144	14
6	120	11	134	11	136	11	146	13	153	11	149	12
7	121	11	139	11	141	11	151	12	158	11	154	12
8	126	11	144	10	146	11	156	11	162	10	160	11
9	129	10	147	10	150	10	161	11	166	10	166	10
10	134	10	150	9	155	9	167	10	169	10	172	10
11	138	9	153	9	161	9	170	10	174	9	180	10
12	141	9	155	9	163	9	174	9	176	9	184	9
13	145	9	158	8	167	8	177	9	179	9	188	8
14	148	8	161	8	171	8	180	9	182	9	193	8
15	151	8	163	8	174	8	183	8	185	8	196	8
16	154	8	166	8	177	8	186	8	188	8	199	8
17	156	8	169	8	180	8	189	8	191	8	202	8
18	160	8	172	8	183	8	191	8	193	8	205	8
19	163	8	175	8	186	8	193	8	196	8	208	8
20	165	8	177	8	189	8	195	8	199	8	210	8
21	168	8	180	7	192	7	198	8	202	8	213	8
22	171	8	182	7	194	7	200	8	204	8	215	8
23	173	8	185	7	197	7	202	8	207	8	217	8
24	176	8	188	7	199	7	204	8	209	8	219	8
25	179	8	190	7	202	7	206	8	212	8	221	8
26	181	8	193	7	204	7	208	8	214	8	223	8
27	184	8	195	7	206	7	210	8	217	8	225	8
28	186	8	198	7	209	7	212	8	219	8	226	8
29	188	8	200	7	211	8	214	8	221	8	228	8
30	191	8	203	7	213	8	216	8	224	8	230	8
31	193	8	205	7	215	8	218	8	226	8	231	8
32	196	8	207	8	217	8	220	8	228	8	233	8
33	198	8	210	8	219	8	222	8	231	8	234	8
34	200	8	212	8	221	8	224	8	233	8	236	8
35	203	8	215	8	224	8	226	8	235	8	237	8
36	205	8	217	8	226	8	228	8	238	8	239	8
37	207	8	220	8	228	8	230	8	240	8	241	8
38	210	9	222	8	230	8	232	8	242	8	242	8
39	212	9	225	8	233	9	234	8	245	9	244	8
40	214	9	227	9	235	9	237	8	248	9	246	8
41	217	9	230	9	238	9	239	8	251	9	247	8
42	219	9	233	9	240	9	242	8	254	9	249	8

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8	
43	222	10	237	9	243	9	244	8	257	9	251	9
44	224	10	240	10	247	9	247	8	261	10	253	9
45	227	10	243	10	250	9	250	9	265	11	256	9
46	230	10	247	10	254	10	253	9	267	11	258	9
47	234	11	251	11	258	10	257	10	273	12	261	10
48	237	11	256	11	262	11	261	10	278	12	264	10
49	241	11	261	12	267	11	265	11	284	13	267	10
50	246	12	266	13	273	12	270	11	290	14	272	11
51	252	13	273	14	280	14	275	12	297	15	278	11
52	260	15	281	16	288	16	282	12	306	17	283	12
53	272	17	292	20	298	18	291	14	320	21	292	14
54	295	27	308	26	313	23	304	18	339	29	307	18
55	323	43	329	38	337	36	329	28	359	41	336	29
56	329	47	341	46	351	46	360	47	369	47	364	47

Conditional Standard Errors of Measurement Associated with ISAT Mathematics Scale Scores

Raw Score	Grade 3 Scale Score	sess	Grade 4 Scale Score	sess	Grade 5 Scale Score	sess	Grade 6 Scale Score	sess	Grade 7 Scale Score	sess	Grade 8 Scale Score	sess
0	120	49	120	48	120	48	120	48	120	49	120	49
1	120	12	120	17	120	19	120	24	120	27	137	27
2	120	10	120	13	120	18	130	19	132	21	157	19
3	120	10	120	13	127	16	142	16	144	17	169	16
4	120	10	120	12	136	13	150	14	153	15	178	14
5	120	10	126	11	142	12	157	12	160	13	185	13
6	120	10	131	11	148	12	163	11	166	13	190	12
7	120	10	136	11	153	11	167	11	171	12	195	11
8	120	10	140	10	157	10	171	10	175	11	200	10
9	125	10	144	10	161	9	175	10	179	11	203	9
10	129	9	147	10	164	9	179	9	182	10	207	9
11	133	9	150	9	167	9	182	9	185	10	210	9
12	137	9	153	9	171	8	185	8	189	10	213	8
13	140	8	157	8	174	8	187	8	192	9	216	8
14	143	8	159	8	177	8	189	8	196	8	219	8
15	145	8	162	8	180	8	191	8	199	8	221	8
16	148	8	164	8	183	7	194	8	202	8	223	8
17	151	8	167	7	185	7	196	7	204	8	225	7
18	153	7	169	7	188	7	198	7	207	8	227	7
19	155	7	172	7	190	7	200	7	209	8	229	7
20	158	7	173	7	192	7	203	7	211	7	231	7
21	160	7	176	7	194	7	205	7	213	7	232	7
22	162	7	177	7	196	7	206	7	215	7	234	7
23	163	7	179	7	198	7	208	7	217	7	236	7
24	166	7	181	7	200	7	210	7	219	7	237	7
25	168	7	183	7	202	7	212	7	221	7	239	7
26	169	7	185	7	203	7	214	7	223	7	240	7
27	171	7	187	7	205	7	215	7	225	7	242	7
28	173	7	189	7	207	7	217	6	227	7	243	7
29	175	7	190	7	209	6	218	6	229	7	245	7
30	176	7	192	7	210	6	220	6	231	7	246	7
31	178	7	194	6	212	6	222	6	233	7	248	6
32	179	7	195	6	214	6	223	6	235	7	249	6
33	181	7	197	6	215	6	225	6	236	6	251	6
34	183	7	198	6	217	6	226	6	238	6	252	6
35	184	7	200	6	218	6	228	6	239	6	254	6
36	186	7	201	6	220	6	229	6	241	6	255	6
37	187	7	203	6	222	6	231	6	243	6	257	6
38	189	7	204	6	223	6	232	6	245	6	258	6
39	190	7	206	6	225	6	234	6	246	6	259	6
40	192	7	207	6	226	6	235	6	248	6	261	6
41	193	7	209	7	228	7	237	6	250	6	262	6
42	195	7	210	7	229	7	238	6	251	6	264	6
43	196	7	212	7	231	7	240	6	253	6	265	6
44	198	7	213	7	233	7	241	6	254	6	267	6
45	199	7	215	7	234	7	243	6	256	6	268	6

Raw Score	Grade 3 Scale Score	se_ss	Grade 4 Scale Score	se_ss	Grade 5 Scale Score	se_ss	Grade 6 Scale Score	se_ss	Grade 7 Scale Score	se_ss	Grade 8 Scale Score	se_ss
46	201	7	217	7	236	7	244	6	258	7	270	6
47	202	7	218	7	238	7	246	6	260	7	271	6
48	204	7	220	7	239	7	247	6	261	7	273	6
49	205	7	221	7	241	7	249	7	263	7	274	6
50	207	7	223	7	243	7	251	7	265	7	276	7
51	208	7	225	7	244	7	252	7	266	7	277	7
52	210	7	227	7	246	7	254	7	268	7	279	7
53	211	7	228	7	248	7	256	7	270	7	281	7
54	213	7	230	7	250	7	257	7	272	7	282	7
55	215	7	232	7	252	7	259	7	274	7	284	7
56	217	7	234	8	254	8	261	7	276	7	286	7
57	218	7	236	8	256	8	263	7	277	7	288	7
58	220	8	238	8	258	8	265	8	279	8	289	7
59	222	8	240	8	260	8	267	8	281	8	291	7
60	224	8	242	8	262	8	269	8	283	8	293	8
61	226	8	244	8	265	8	271	8	286	8	296	8
62	228	8	247	8	267	9	273	8	288	8	298	8
63	230	8	249	8	269	9	276	9	290	8	300	8
64	233	9	252	9	271	10	278	9	292	8	303	8
65	235	9	254	9	274	10	281	9	295	9	305	9
66	238	9	257	10	277	10	284	9	298	9	308	9
67	241	10	260	10	280	10	287	10	301	10	311	10
68	244	10	264	11	284	11	291	10	304	10	315	10
69	248	11	267	11	287	12	295	11	308	10	319	11
70	252	11	271	11	291	13	299	12	312	11	323	11
71	257	11	276	12	296	14	304	13	316	12	329	12
72	262	13	281	13	302	15	310	14	322	14	336	13
73	269	14	288	15	309	18	318	16	329	15	345	16
74	279	16	297	17	318	20	328	19	338	18	357	19
75	293	21	313	24	335	28	346	28	354	25	377	28
76	341	49	355	48	369	48	379	48	392	48	410	48

Conditional Standard Errors of Measurement Associated with ISAT Science Scale Scores

Raw Score	Grade 4 Scale Score	sess	Grade 7 Scale Score	sess
0	120	55	120	55
1	120	31	120	31
2	120	22	120	22
3	120	18	120	18
4	120	16	120	16
5	120	15	128	14
6	120	13	134	13
7	120	12	139	12
8	120	12	144	12
9	120	11	148	11
10	121	11	152	11
11	125	10	156	10
12	129	10	159	10
13	132	10	162	10
14	135	10	165	9
15	138	9	168	9
16	141	9	171	9
17	143	9	174	9
18	146	9	176	9
19	148	8	179	8
20	151	8	181	8
21	153	8	183	8
22	155	8	186	8
23	158	8	188	8
24	160	8	190	8
25	162	8	192	8
26	164	8	194	8
27	166	8	197	8
28	168	8	198	8
29	170	8	200	8
30	172	8	202	8
31	174	8	204	8
32	176	8	206	8
33	178	8	208	8
34	180	8	210	8
35	182	8	211	8
36	184	8	214	8
37	186	8	215	8
38	187	8	217	8
39	189	8	219	8
40	191	8	221	8
41	193	8	223	8
42	195	8	224	8
43	197	8	227	8

	Grade 4		Grade 7	
Raw Score	Scale Score	se$_{ss}$	Scale Score	se$_{ss}$
44	199	8	228	8
45	201	8	230	8
46	203	8	232	8
47	205	8	234	8
48	207	8	236	8
49	209	8	238	8
50	211	8	240	8
51	213	8	242	8
52	215	8	244	8
53	217	8	246	8
54	220	8	249	8
55	222	8	251	8
56	224	8	253	8
57	227	9	256	8
58	229	9	258	9
59	232	9	260	9
60	234	9	263	9
61	237	9	266	9
62	240	10	269	10
63	243	10	272	10
64	247	10	276	10
65	250	11	279	11
66	254	11	283	11
67	259	12	288	11
68	263	12	292	12
69	269	13	298	13
70	275	14	304	14
71	282	16	311	16
72	292	18	321	18
73	305	22	333	22
74	326	31	355	31
75	363	55	392	55

APPENDIX B: Alignment Study of the Illinois Learning Standards to Stanford Achievement Test, Tenth Edition

January 2003

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Summary of Findings

Assessment and Accountability Task Force Request for Alignment

In a draft document dated November 6, 2002, Illinois' Assessment and Accountability Task invited "test producers" to submit "a "correlation between their test item bank used for their national norm-referenced test and the Illinois Learning Standards… (page 1)." Essentially, this "correlation" is an alignment study. The November 6th document was the genesis of this report and the work that follows is an effort to provide the Illinois State Board of Education (ISBE) with the results of an alignment between the *Stanford Achievement Tests, Tenth Edition* to the Illinois Learning Standards in reading and mathematics.

Federal Requirements on Alignment

In 1994, the federal government passed the *Improving America's School Act* (IASA). This sweeping legislation enacted several new requirements for states. Listed below are but of few of these requirements.

- The development of challenging academic and performance standards in at least reading/language arts and mathematics
- The adoption or development of assessments to evaluate the state's academic standards
- The alignment of state assessments to state standards
- The disaggregation and reporting of assessment data by specific groups
- Accountability requirements for schools not meeting the state's expectations

Of particular interest to this study is the third point above, "The alignment of state assessments to state standards." The specific section of federal law requiring states to align to standards is shown here,

> *The State assessment shall – Be aligned with the State's challenging content and student performance standards and provide coherent information about student attainment of such standards.* (IASA, §1111(b)(3)(B))

In the federal government's 1997 question and answer document, *GUIDANCE ON STANDARDS, ASSESSMENTS, AND ACCOUNTABILITY*[3], the following guidance is given on alignment.

21. What are some ways to judge the alignment of local standards and assessments with State standards and assessments?

If the State allows the use of local standards and/or assessments, the State has the responsibility of ensuring that the local standards and assessments are aligned with the State's system. Areas of alignment that the State may consider include--
- range of coverage;
- depth of coverage;
- degree of emphasis on topics or areas; and
- degree of rigor.

In reviewing local assessments, States can look at the alignment of the assessments with the State assessments and with the State and local content standards. The same areas reviewed for determining alignment of content standards can be useful in reviewing assessments.

Empirical evidence of alignment between State and local standards and assessments may also be gathered [emphasis added]. For example, a State may

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[3] www.ed.gov/offices/OESE/StandardsAssessment/assess.html#tech

wish to administer its assessment to a sample of students in a district and compare the results to the results of the local assessment.

As part of IASA, states were to be evaluated by peer reviewers in the year 2000 to determine state compliance to this law. In November of 1999, the US Department of Education published, *PEER REVIEWER GUIDANCE FOR EVALUATING EVIDENCE OF FINAL ASSESSMENTS UNDER TITLE I OF THE ELEMENTARY AND SECONDARY EDUCATION ACT* (Peer Review Guidance). This guidance further clarified what was expected regarding the alignment of state assessments to state standards.

Reviewers will look for a description of the State's approach to ensuring alignment. They will evaluate whether the approach is reasonable and thoughtful. They will be looking for evidence that the State is taking a coherent approach to ensuring that its tests reflect what the State has determined students need to know and do. This almost surely will involve some type of alignment study. (Questions for Reviewers, section C.1, p.28)

While no particular alignment strategy was required by this document, Dr. Webb's alignment strategy[4] seemed to be favored by the authors. This strategy addresses several components of the alignment process. Dr. Webb's alignment strategy will be described in detail in the next section.

As specified by law, peer reviewers evaluated all 50 states' assessment and accountability systems in the year 2000. Initially only 16 of the 50 states' assessment and accountability systems met federal requirements. Subsequently, 21 states have met IASA requirements, 35 states were awarded timeline waivers and 4 states entered into compliance agreements with the US Department of Education. Of the 39 states not meeting federal assessment and accountability criteria, 18 fell short in areas related to alignment. Based upon federal reviews, alignment has had substantial influence upon how states implement federally approved assessment systems.

An element that contributed to the more stringent assessment and accountability requirements found in the No Child Left Behind Act of 2001 (NCLB) was the lack of compliance by more than half of the nation's states to the federal assessment and accountability mandates found in IASA.

In NCLB, specific language was drafted to ensure that alignment issues were addressed, see §1111(B)(1)(D)(ii)(I) and 1111(B)(3)(C)(ii). The federal government's *Standards and Assessments Non-Regulatory Draft Guidance*, March 10, 2003, page 12 states:

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[4] Webb, N. L. (1997). *Criteria for alignment of expectations and assessments in mathematics and science education.* Council of Chief State School Officers and National Institute for Science Education Research Monograph No. 6. Madison, WI: University of Wisconsin.

Webb, Norman L. (1999). *Alignment of science and mathematics standards and assessments in four states*. Washington, DC: Council of Chief State School Officers.

For there to be alignment, it is essential that an assessment measure the depth and breadth of the State academic content standards for a given grade level. Assessments that devote a disproportionate number of items to a small subset of the content and skills specified in the standards or that focus on peripheral, rather than significant content, are not well aligned.

The following dimensions are important for judging the alignment between standards and assessments:
- *Comprehensiveness*: Does the assessment reflect the full range of the standards?
- *Content and Performance Match*: Does the assessment measure what the standards state students should both know and be able to do?
- *Emphasis*: Does the assessment reflect the same degree of emphasis on the different content standards as is reflected in the standards?
- *Depth*: Does the assessment reflect the cognitive demand and depth of the standards? Is the assessment as cognitively demanding as the standards?
- *Consistency with achievement standards*: Does the assessment provide results that reflect the meaning of the different levels of achievement standards?
- *Clarity for users*: Is the alignment between the standards and assessments clear to all members of the school community?

Again, Dr. Webb's alignment strategy closely mirrors the requirements specified in this guidance. Since Dr. Webb's alignment methodology is nationally recognized and is seen as an acceptable alignment strategy by the federal government, it will be used as the primary method for alignment of the Illinois Standards for Learning and the *Stanford Achievement Test, Tenth Edition.*

The Webb Alignment Process

Assuring adequate content validity has always been a concern for test developers and users. Typically, the most common method for ascertaining content validity has been the use of content experts in the test development process. However, the alignment of a test to a set of achievement standards is a relatively new strategy to determine the content validity of an assessment.

Several alignment strategies have been developed (e.g., Webb's strategy, Survey of Enacted Curriculum, Achieve[5]). Webb's process has been one of the most recognized, and it will be the process used here. The Webb alignment process is briefly described below. For a more detailed discussion on this process see Webb, 1999[6]. There are five main criteria in Webb's process: categorical concurrence, depth of knowledge, range of knowledge, balance or representation, and source of challenge.

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[5] Chief Council of State School Officers (September, 2002). *Models for Alignment Analysis and Assistance to States.* Author. Washington, D.C.
[6] Webb, N.L. (1999). *Alignment of Science and Mathematics Standards and Assessments in Four States.* National Institute for Science Education: Madison, WI.

Categorical Concurrence
This criterion represents the degree to which a test matches content standards. According to Webb, at least six test items should be provided for every content standard.

A point of clarification is needed here. Webb defines standards into three distinct levels: standard, goal and objective. The term standard represents a generalized content category like reading or number operations and relationships. Standards are the most generalized statement about what students should know and be able to do. Below the standard level are goals. Goals are more detailed descriptions of student expectations. An example of a goal in the subject of reading would be *vocabulary usage*. An objective is an even more detailed description of student expectations. Again using reading, a goal would be "to identify word meanings from common Latin and Greek base words."

Depth of Knowledge
Each content standard, goal or objective has an associated complexity. For example, asking a student to identify, which characters are in a story, is a much less demanding task then asking a student to explain characters' motives or opinions in the context of that story. In Webb's framework, the complexity of task is termed Depth of Knowledge and is identified by four levels:

Level 1: Recall and recognition,
Level 2: Skills and concepts,
Level 3: Strategic thinking, and
Level 4: Extended Thinking.

In Webb's framework, these four levels are assigned to standards, goals or objectives. The Depth of Knowledge (DOK) ratings can also be applied to test items as well. Test items with assigned DOK ratings can then be compared to content standards', goals' or objectives' ratings to judge alignment.

According to Webb (2001[7]) the DOK "criterion between standards and assessment is met if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards." The acceptable level for DOK is .50 or above—i.e., 50% of the items that test a standard should be at or above the DOK assigned to that standard.

Range of Knowledge
Webb[5] states that "[t]his criterion is met if a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer the assessment items/activities." For the Range criterion to be met at least 50% of the objectives within a standard had to have at least one assessment item.

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[7] Webb, N.L. (2001). Reviewer Background Information and Instructions, Mathematics Standards and Assessments Alignment Analysis, CSSO TILSA Alignment Study. Unpublished Document.

Balance of Representation
Balanced of Representation or Balance is met if "the degree to which one objective is given emphasis on the assessment is comparable to the emphasis given to the other objectives within a standard[5]." An index is calculated to obtain Balance. The intent of the Balance index to identify the degree to which item coverage is spread evenly across the goals/objectives within a standard. According to Webb, this index must be .70 or higher to show acceptable balance.

Source of Challenge
A test item is designed to evaluate specific goals and/or objectives. Other than guessing, if a student correctly answers an item, we assume that that student understands or has mastered the assessed goal/objective. If students who have not mastered a goal/objective get the right answer for the wrong reason or if students who have mastered a goal/objective get the wrong answer for the right reason, Webb claims that these types of items are a source of challenge. During the alignment process, raters identify those items that may represent a source of challenge. In this alignment study source of challenge items are not reported.

To review, four analyses will be reported for this alignment study with the following criteria for acceptance:

Categorical Concurrence: At least 6 items per standard,
Depth of Knowledge: At least .50 or higher,
Range of Knowledge: At least .50 or higher,
Balance of Representation: At least .70 or higher.

Alignment Process and Panelists

Pearson Educational Measurement contracted with Dr. Webb to conduct an alignment study of the Illinois Learning Standards to the *Stanford Achievement Test*, *Tenth Edition*. Table 1 presents the grades, subjects and subtests aligned for this study.

Table 1: Aligned Subjects, Grades and Subtests

Subject	Test Levels, Grade Spans, and Grades				
	Primary 3	Intermediate 1	Intermediate 2	Advanced 1	Advanced 2
	Early Elementary	Late Elementary		Middle/Junior High School	
	Grade 3	Grade 4	Grade 5	Grade 7	Grade 8
Reading	X		X		X
Mathematics	X		X		X
Science		X		X	
Social Science			X		X

On January 2nd and 3rd of this year, Dr. Norm Webb, 21 educators from three Illinois school districts (Champaign-Urbana, Normal, and Rockford) and 11 content specialists or measurement experts from Pearson participated in an alignment study

The alignment study was sequenced as follows. First Dr. Webb introduced the concept of alignment and described his alignment process. Once initial training was completed, participants went to their respective content groups and continued training. Each content group had a room leader—a person from Pearson experienced in Dr. Webb's process. Room leaders continued training on all aspects of the alignment process. Participants were given training materials on which to practice before actually conducting the alignment.

Once, training was complete, each content group went through the Illinois Learning Standards (ILS) Goals and assigned DOK Levels to each one. In keeping with Webb's process, the assignment of DOK levels to the ILS Goals was conducted by consensus. Once DOK assignment was completed, each rater independently went through all relevant subtest forms and assigned Goals and DOK levels to each test item. To ensure reliability, raters jointly evaluated at least 5 test items per subtest. All material was collected at the completion of the study and sent to San Antonio, Texas (Pearson Educational Measurement's headquarters) for analysis.

Results of Alignment

Tables 2 through 5 show the DOK assignments for the Illinois Learning Standards' Goals in reading, mathematics, science and social science. In these tables, the first column displays the standard (Goal) and the second column displays the consensus DOK level for that goal.

Table 2: Illinois Learning Standards' Reading Goals and DOK Assignments

Early Elementary		Late Elementary		Middle School	
Goal	**DOK**	**Goal**	**DOK**	**Goal**	**DOK**
1.A.1a	1	1.A.2a	2	1.A.3a	2
1.A.1b	2	1.A.2b	2	1.A.3b	3
1.B.1a	3	1.B.2a	3	1.B.3a	3
1.B.1b	2	1.B.2b	2	1.B.3b	3
1.B.1c	2	1.B.2c	2	1.B.3c	2
1.B.1d	1	1.B.2d	1	1.B.3d	1
1.C.1a	3	1.C.2a	3	1.C.3a	3
1.C.1b	2	1.C.2b	3	1.C.3b	3
1.C.1c	3	1.C.2c	3	1.C.3c	3
1.C.1d	2	1.C.2d	3	1.C.3d	3
1.C.1e	3	1.C.2e	3	1.C.3e	3
1.C.1f	2	1.C.2f	3	1.C.3f	2
2.A.1a	2	2.A.2a	2	2.A.3a	4
2.A.1b	2	2.A.2b	3	2.A.3b	3
2.A.1c	2	2.A.2c	2	2.A.3c	1
				2.A.3d	3
2.B.1a	3	2.B.2a	3		
2.B.1b	4	2.B.2b	4	2.B.3a	4
2.B.1c	3	2.B.2c	4	2.B.3b	3
				2.B.3c	3

Table 3: Illinois Learning Standards' Mathematics Goals and DOK Assignments

Early Elementary		Late Elementary		Middle School	
Goal	**DOK**	**Goal**	**DOK**	**Goal**	**DOK**
6.A.1a	1	6.A.2	2	6.A.3	1
6.A.1b	1	6.B.2	2	6.B.3a	1
6.B.1	2	6.C.2a	2	6.B.3b	2
6.C.1a	2	6.C.2b	3	6.B.3c	2
6.C.1b	3	6.D.2	2	6.C.3a	2
6.D.1	2	7.A.2a	2	6.C.3b	3
7.A.1a	1	7.A.2b	1	6.D.3	2
7.A.1b	1	7.B.2a	2	7.A.3a	1
7.A.1c	2	7.B.2b	2	7.A.3b	2
7.A.1d	1	7.C.2a	2	7.B.3	2
7.B.1a	2	7.C.2b	1	7.C.3a	2
7.B.1b	2	8.A.2a	1	7.C.3b	2
7.C.1	1	8.A.2b	2	8.A.3a	2
8.A.1a	1	8.B.2	3	8.A.3b	2
8.A.1b	1	8.C.2	2	8.B.3	3
8.B.1	1	8.D.2	2	8.C.3	2
8.C.1	2	9.A.2a	2	8.D.3a	2
8.D.1	1	9.A.2b	2	8.D.3b	4
9.A.1a	1	9.A.2c	2	8.D.3c	2
9.A.1b	1	9.A	2	9.A.3a	2
9.B.1a	2	9.B.2	2	9.A.3b	2
9.B.1b	2	9.C.2	3	9.A.3c	3
9.B.1c	2	10.A.2a	2	9.B.3	2
9.C.1	3	10.A.2b	2	9.C.3a	3
10.A.1a	2	10.A.2c	3	9.C.3b	3
10.A.1b	3	10.B.2a	4	9.D.3	2
10.B.1a	4	10.B.2b	2	10.A.3a	3
10.B.1b	2	10.B.2c	3	10.A.3b	2
10.B.1c	3	10.B.2d	3	10.A.3c	3
10.C.1a	2	10.C.2a	2	10.B.3	4
10.C.1b	2	10.C.2b	2	10.C.3a	2
		10.C.2c	2	10.C.3b	3

Table 4: Illinois Learning Standards' Science Goals and DOK Assignments

Late Elementary		Middle School	
Goal	DOK	Goal	DOK
11.A.2a	2	11.A.3d	3
11.A.2b	2	11.A.3e	2
11.A.2c	2	11.A.3f	2
11.A.2d	2	11.A.3g	2
11.A.2e	2	11.B.3a	2
11.B.2a	2	11.B.3b	3
11.B.2b	3	11.B.3c	2
11.B.2c	2	11.B.3d	2
11.B.2d	2	11.B.3e	3
11.B.2e	3	11.B.3f	3
11.B.2f	2	12.A.3a	1
12.A.2a	1	12.A.3b	2
12.A.2b	2	12.A.3c	2
12.B.2a	2	12.B.3a	2
12.B.2b	1	12.B.3b	2
12.C.2a	2	12.C.3a	2
12.C.2b	1	12.C.3b	2
12.D.2a	1	12.D.3a	2
12.D.2b	2	12.D.3b	2
12.E.2a	1	12.E.3a	2
12.E.2b	2	12.E.3b	2
12.E.2c	1	12.E.3c	3
12.F.2a	2	12.F.3a	2
12.F.2b	1	12.F.3b	1
12.F.2c	1	12.F.3c	2
13.A.2a	1	13.A.3a	1
13.A.2b	1	13.A.3b	2
13.A.2c	1	13.A.3c	2
13.B.2a	1	13.B.3a	1
13.B.2b	2	13.B.3b	1
13.B.2c	2	13.B.3c	1
13.B.2d	2	13.B.3d	2
13.B.2e	2	13.B.3e	2
13.B.2f	2	13.B.3f	3

Table 5: Illinois Learning Standards' Social Science Goals and DOK Assignments

Late Elementary		Middle School	
Goal	**DOK**	**Goal**	**DOK**
14.A.2	3	14.A.3	2
14.B.2	1	14.B.3	2
14.C.2	3	14.C.3	2
14.D.2	2	14.D.3	2
14.E.2	2	14.E.3	2
14.F.2	2	14.F.3a	3
15.A.2a	2	14.F.3b	2
15.A.2b	2	15.A.3a	2
15.A.2c	1	15.A.3b	2
15.B.2a	1	15.A.3c	2
15.B.2b	2	15.A.3d	2
15.B.2c	2	15.B.3a	1
15.C.2a	2	15.B.3b	2
15.C.2b	2	15.C.3	2
15.C.2c	2	15.D.3a	2
15.D.2a	2	15.D.3b	2
15.D.2b	2	15.D.3c	2
15.E.2a	2	15.E.3a	1
15.E.2b	1	15.E.3b	2
16.A.2a	2	16.A.3a	2
16.A.2b	3	16.A.3b	3
16.A.2c	4	16.A.3c	2
16.B.2a(US)	2	16.B.3a(US)	3
16.B.2b(US)	2	16.B.3b(US)	3
16.B.2c(US)	2	16.B.3c(US)	2
16.B.2d(US)	1	16.B.3d(US)	2
16.B.2a(W)	2	16.B.3a(W)	2
16.B.2b(W)	2	16.B.3b(W)	2
16.C.2a(US)	2	16.B.3c(W)	2
16.C.2b(US)	2	16.B.3d(W)	2
16.C.2c(US)	2	16.C.3a(US)	2
16.C.2a(W)	2	16.C.3b(US)	2
16.C.2b(W)	1	16.C.3c(US)	2
16.C.2c(W)	2	16.C.3a(W)	2
16.D.2a(US)	2	16.C.3b(W)	2
16.D.2b(US)	2	16.C.3c(W)	3
16.D.2c(US)	2	16.D.3a(US)	2
16.D.2(W)	2	16.D.3b(US)	2
16.E.2a(US)	1	16.D.3(W)	3
16.E.2b(US)	1	16.E.3a(US)	3
16.E.2c(US)	2	16.E.3b(US)	3
16.E.2a(W)	2	16.E.3c(US)	3
16.E.2b(W)	1	16.E.3a(W)	2
17.A.2a	2	16.E.3b(W)	2
17.A.2b	4	17.A.3a	2
17.B.2a	2	17.A.3b	2

Table 5: Illinois Learning Standards' Social Science
Goals and DOK Assignments

Late Elementary		Middle School	
Goal	DOK	Goal	DOK
17.B.2b	2	17.B.3a	2
17.C.2a	2	17.B.3b	2
17.C.2b	2	17.C.3a	2
17.C.2c	2	17.C.3b	2
17.D.2a	2	17.C.3c	3
17.D.2b	2	17.D.3a	3
18.A.2	2	17.D.3b	2
18.B.2a	2	18.A.3	2
18.B.2b	1	18.B.3a	3
18.C.2	3	18.B.3b	2
		18.C.3a	2
		18.C.3b	2

Again, all DOK levels assigned to Goals were done by consensus. Room leaders relied heavily upon Illinois educators to obtain the assigned DOK levels.

After DOK levels have been assigned, participants examined subtests from the *Stanford Achievement Test, Tenth Edition* (*Stanford Tenth Edition*) and assigned primary and secondary goals and DOK levels to each item. The analysis reported below reflects only primary goal alignment. Thus, the results of categorical concurrence, range and DOK are slightly underrepresented. Additionally, reading alignment is conducted only on the Reading Comprehension subtest and mathematics alignment is conducted on the Mathematics Problem Solving subtest. *Stanford Tenth Edition* provides other subtest(s) in reading (Word Study Skills, Reading Vocabulary) and math (Math Procedures). The categorical concurrence, range and DOK results would be slightly higher if these tests were added to the analysis.

The tables below present the results of the alignment study. To limit bias, ratings from Pearson staff are removed from the analysis. Thus, the results below represent the alignment of the *Stanford Tenth Edition* to the Illinois Learning Standard Goals in reading, mathematics, science and social science by Illinois educators.

Illinois Learning Standards for Reading: Goals 1 and 2

STATE GOAL 1: Read with understanding and fluency.

A. Apply word analysis and vocabulary skills to comprehend selections.

Early Elementary	Late Elementary	Middle/Junior High School
1.A.1a Apply word analysis skills (e.g., phonics, word patterns) to recognize new words.	1.A.2a Read and comprehend unfamiliar words using root words, synonyms, antonyms, word origins and derivations.	1.A.3a Apply knowledge of word origins and derivations to comprehend words used in specific content areas (e.g., scientific, political, literary, mathematical).
1.A.1b Comprehend unfamiliar words using context clues and prior knowledge; verify meanings with resource materials.	1.A.2b Clarify word meaning using context clues and a variety of resources including glossaries, dictionaries and thesauruses.	1.A.3b Analyze the meaning of words and phrases in their context.

B. Apply reading strategies to improve understanding and fluency.

Early Elementary	Late Elementary	Middle/Junior High School
1.B.1a Establish purposes for reading, make predictions, connect important ideas, and link text to previous experiences and knowledge.	1.B.2a Establish purposes for reading; survey materials; ask questions; make predictions; connect, clarify and extend ideas.	1.B.3a Preview reading materials, make predictions and relate reading to information from other sources.
1.B.1b Identify genres (forms and purposes) of fiction, nonfiction, poetry and electronic literary forms.	1.B.2b Identify structure (e.g., description, compare/contrast, cause and effect, sequence) of nonfiction texts to improve comprehension.	1.B.3b Identify text structure and create a visual representation (e.g., graphic organizer, outline, drawing) to use while reading.
1.B.1c Continuously check and clarify for understanding (e.g., reread, read ahead, use visual and context clues, ask questions, retell, use meaningful substitutions).	1.B.2c Continuously check and clarify for understanding (e.g., in addition to previous skills, clarify terminology, seek additional information).	1.B.3c Continuously check and clarify for understanding (e.g., in addition to previous skills, draw comparisons to other readings).
1.B.1d Read age-appropriate material aloud with fluency and accuracy.	1.B.2d Read age-appropriate material aloud with fluency and accuracy.	1.B.3d Read age-appropriate material with fluency and accuracy.

C. Comprehend a broad range of reading materials.

Early Elementary	Late Elementary	Middle/Junior High School
1.C.1a Use information to form questions and verify predictions.	1.C.2a Use information to form and refine questions and predictions.	1.C.3a Use information to form, explain and support questions and predictions.
1.C.1b Identify important themes and topics.	1.C.2b Make and support inferences and form interpretations about main themes and topics.	1.C.3b Interpret and analyze entire narrative text using story elements, point of view and theme.
1.C.1c Make comparisons across reading selections.	1.C.2c Compare and contrast the content and organization of selections.	1.C.3c Compare, contrast and evaluate ideas and information from various sources and genres.

1.C.1d Summarize content of reading material using text organization (e.g., story, sequence).	1.C.2d Summarize and make generalizations from content and relate to purpose of material.	1.C.3d Summarize and make generalizations from content and relate them to the purpose of the material.
1.C.1e Identify how authors and illustrators express their ideas in text and graphics (e.g., dialogue, conflict, shape, color, characters).	1.C.2e Explain how authors and illustrators use text and art to express their ideas (e.g., points of view, design hues, metaphor).	1.C.3e Compare how authors and illustrators use text and art across materials to express their ideas (e.g., foreshadowing, flash-backs, color, strong verbs, language that inspires).
1.C.1f Use information presented in simple tables, maps and charts to form an interpretation.	1.C.2f Connect information presented in tables, maps and charts to printed or electronic text.	1.C.3f Interpret tables that display textual information and data in visual formats.

STATE GOAL 2: Read and understand literature representative of various societies, eras and ideas.

A. Understand how literary elements and techniques are used to convey meaning.

Early Elementary	Late Elementary	Middle/Junior High School
2.A.1a Identify the literary elements of theme, setting, plot and character within literary works.	2.A.2a Identify literary elements and literary techniques (e.g., characterization, use of narration, use of dialogue) in a variety of literary works.	2.A.3a Identify and analyze a variety of literary techniques (e.g., figurative language, allusion, dialogue, description, word choice, dialect) within classical and contemporary works representing a variety of genres.
2.A.1b Classify literary works as fiction or nonfiction.	2.A.2b Describe how literary elements (e.g., theme, character, setting, plot, tone, conflict) are used in literature to create meaning.	2.A.3b Describe how the development of theme, character, plot and setting contribute to the overall impact of a piece of literature.
2.A.1c Describe differences between prose and poetry.	2.A.2c Identify definitive features of literary forms (e.g., realistic fiction, historical fiction, fantasy, narrative, nonfiction, biography, plays, electronic literary forms).	2.A.3c Identify characteristics and authors of various literary forms (e.g., short stories, novels, drama, fables, biographies, documentaries, poetry, science fiction).
		2.A.3d Identify ways that an author uses language structure, word choice and style to convey the author's viewpoint.

B. Read and interpret a variety of literary works.

Early Elementary	Late Elementary	Middle/Junior High School
2.B.1a Respond to literary materials by connecting them to their own experience and communicate those responses to others.	2.B.2a Respond to literary material by making inferences, drawing conclusions and comparing it to their own experience, prior knowledge and other texts.	2.B.3a Respond to literary material from personal, creative and critical points of view.

2.B.1b Identify common themes in literature from a variety of eras.	2.B.2b Identify and explain themes that have been explored in literature from different societies and eras.	2.B.3b Compare and contrast common literary themes across various societies and eras.
2.B.1c Relate character, setting and plot to real-life situations.	2.B.2c Relate literary works and their characters, settings and plots to current and historical events, people and perspectives.	2.B.3c Analyze how characters in literature deal with conflict, solve problems and relate to real-life situations.

Results for Reading

Summary of Early Elementary Alignment with Stanford 10 P3						
Reading Comprehension						
Goals	**All Raters**			**Illinois Raters**		
	Items	**DOK**	**Range**	**Items**	**DOK**	**Range**
1A	1	100.0%	1	1	100.0%	1
1B	31	35.4%	1	31	38.3%	1
1C	17	71.6%	1	17	72.3%	1
Goal 1	**50**	**50.0%**	**100.0%**	**49**	**51.9%**	**100.0%**
2A	2	84.2%	1	2	58.3%	1
2B	1	55.6%	1	1	55.6%	1
Goal 2	**2**	**75.0%**	**100.0%**	**4**	**57.6%**	**100.0%**

Findings of Illinois Alignment Study						
Early Elementary Reading Standards To Stanford 10 Reading Comprehension, Level—Primary 3						
Goals	**All Raters**			**Illinois Raters**		
	Categorical Concurrence	**Depth of Knowledge**	**Range of Knowledge**	**Categorical Concurrence**	**Depth of Knowledge**	**Range of Knowledge**
Goal 1	Met Criteria	Marginal	Met Criteria	Met Criteria	Marginal	Met Criteria
Goal 2	Weak	Met Criteria	Met Criteria	Weak	Met Criteria	Met Criteria

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

Summary of Late Elementary Alignment with Stanford 10 I2						
Reading Comprehension						
Goals	**All Raters**			**Illinois Raters**		
	Items	**DOK**	**Range**	**Items**	**DOK**	**Range**
1A	3	88.0%	1	1	85.7%	1
1B	25	42.9%	1	31	43.3%	1
1C	21	41.9%	1	17	42.7%	1
Goal 1	**49**	**45.1%**	**100.0%**	**19**	**45.6%**	**100.0%**
2A	5	83.3%	1	6	89.3%	1
2B	1	14.3%	0	1	14.3%	0
Goal 2	**5**	**72.1%**	**50.0%**	**4**	**74.3%**	**50.0%**

Findings of Illinois Alignment Study						
Early Elementary Reading Standards To Stanford 10 Reading Comprehension, Level—Intermediate 2						
Goals	**All Raters**			**Illinois Raters**		
	Categorical Concurrence	**Depth of Knowledge**	**Range of Knowledge**	**Categorical Concurrence**	**Depth of Knowledge**	**Range of Knowledge**
Goal 1	Met Criteria	Weak	Met Criteria	Met Criteria	Weak	Met Criteria
Goal 2	Weak	Met Criteria	Marginal	Weak	Met Criteria	Marginal

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

	Summary of Middle School Alignment with Stanford 10 A2					
	Reading Comprehension					
Goals	**All Raters**			**Illinois Raters**		
	Items	**DOK**	**Range**	**Items**	**DOK**	**Range**
1A	4	18.2%	0	4	19.4%	0
1B	20	47.2%	1	21	48.6%	1
1C	20	35.8%	1	20	36.2%	1
Goal 1	**43**	**39.4%**	**66.7%**	**45**	**40.2%**	**66.7%**
2A	8	55.6%	1	5	51.3%	1
2B	2	41.7%	0	1	60.0%	0
Goal 2	**9**	**53.3%**	**50.0%**	**6**	**52.3%**	**50.0%**

	Findings of Illinois Alignment Study					
	Early Elementary Reading Standards To Stanford 10 Reading Comprehension, Level—Advanced 2					
Goals	**All Raters**			**Illinois Raters**		
	Categorical Concurrence	**Depth of Knowledge**	**Range of Knowledge**	**Categorical Concurrence**	**Depth of Knowledge**	**Range of Knowledge**
Goal 1	Met Criteria	Weak	Met Criteria	Met Criteria	Weak	Met Criteria
Goal 2	Met Criteria	Marginal	Marginal	Marginal	Marginal	Marginal

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

Illinois Learning Standards for Mathematics: Goals 6 through 10

STATE Goal 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

A. Demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings.

Early Elementary	Late Elementary	Middle/Junior High School
6.A.1a Identify whole numbers and compare them using the symbols <, >, or = and the words "less than", "greater than", or "equal to", applying counting, grouping and place value concepts.	6.A.2 Compare and order whole numbers, fractions and decimals using concrete materials, drawings and mathematical symbols.	6.A.3 Represent fractions, decimals, percentages, exponents and scientific notation in equivalent forms.
6.A.1b Identify and model fractions using concrete materials and pictorial representations.		

B. Investigate, represent and solve problems using number facts, operations (addition, subtraction, multiplication, division) and their properties, algorithms and relationships.

Early Elementary	Late Elementary	Middle/Junior High School
		6.B.3b Apply primes, factors, divisors, multiples, common factors and common multiples in solving problems.
		6.B.3c Identify and apply properties of real numbers including pi, squares, and square roots.

C. Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.

Early Elementary	Late Elementary	Middle/Junior High School
6.C.1a Select and perform computational procedures to solve problems with whole numbers.	6.C.2a Select and perform computational procedures to solve problems with whole numbers, fractions and decimals.	6.C.3a Select computational procedures and solve problems with whole numbers, fractions, decimals, percents and proportions.
6.C.1b Show evidence that whole number computational results are correct and/or that estimates are reasonable.	6.C.2b Show evidence that computational results using whole numbers, fractions and decimals are correct and/or that estimates are reasonable.	6.C.3b Show evidence that computational results using whole numbers, fractions, decimals, percents and proportions are correct and/or that estimates are reasonable.

D. Solve problems using comparison of quantities, ratios, proportions and percents.

6.D.1 Compare the numbers of objects in groups.	6.D.2 Describe the relationship between two sets of data using ratios and appropriate notations (e.g., a/b, a to b, a:b).	6.D.3 Apply ratios and proportions to solve practical problems.

STATE GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

A. Measure and compare quantities using appropriate units, instruments and methods.

Early Elementary	Late Elementary	Middle/Junior High School
7.A.1a Measure length, volume and weight/mass using rulers, scales and other appropriate measuring instruments in the customary and metric systems.	7.A.2a Calculate, compare and convert length, perimeter, area, weight/mass and volume within the customary and metric systems.	7.A.3a Measure length, capacity, weight/mass and angles using sophisticated instruments (e.g., compass, protractor, trundle wheel).
7.A.1b Measure units of time using appropriate instruments (e.g., calendars, clocks, watches—both analog and digital).	7.A.2b Solve addition, subtraction, multiplication and division problems using currency.	7.A.3b Apply the concepts and attributes of length, capacity, weight/mass, perimeter, area, volume, time, temperature and angle measures in practical situations.
7.A.1c Identify and describe the relative values and relationships among coins and solve addition and subtraction problems using currency.		
7.A.1d Read temperatures to the nearest degree from Celsius and Fahrenheit thermometers.		

B. Estimate measurements and determine acceptable levels of accuracy.

Early Elementary	Late Elementary	Middle/Junior High School
7.B.1b Compare estimated measures to actual measures taken with appropriate measuring instruments.	7.B.2b Estimate conversions between measures within the customary and metric systems.	

C. Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.

Early Elementary	Late Elementary	Middle/Junior High School
	7.C.2b Construct or draw figures with given perimeters and areas.	7.C.3b Use concrete and graphic models and appropriate formulas to find perimeters, areas, surface areas and volumes of two- and three-dimensional regions.

STATE GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

A. Describe numerical relationships using variables and patterns.

Early Elementary	Late Elementary	Middle/Junior High School
8.A.1a Identify, describe and extend simple geometric and numeric patterns.	8.A.2a Identify, describe, extend and create geometric and numeric patterns.	8.A.3a Apply the basic properties of commutative, associative, distributive, transitive, inverse, identity, zero, equality and order of operations to solve problems.

8.A.1b Solve simple number sentences (e.g., 2 + □ = 5).	8.A.2b Construct and solve number sentences using a variable to represent an unknown quantity.	8.A.3b Solve problems using linear expressions, equations and inequalities.

B. Interpret and describe numerical relationships using tables, graphs and symbols.

Early Elementary	Late Elementary	Middle/Junior High School
8.B.1 Solve problems involving pattern identification and completion of patterns.	8.B.2 Analyze a geometric pattern and express the results numerically.	8.B.3 Use graphing technology and algebraic methods to analyze and predict linear relationships and make generalizations from linear patterns.

C. Solve problems using systems of numbers and their properties.

Early Elementary	Late Elementary	Middle/Junior High School
8.C.1 Describe the basic arithmetic operations (addition, subtraction, multiplication, division) orally, in writing and using concrete materials and drawings.	8.C.2 Explain operations and number properties including commutative, associative, distributive, transitive, zero, equality and order of operations.	8.C.3 Apply the properties of numbers and operations including inverses in algebraic settings derived from economics, business and the sciences.

D. Use algebraic concepts and procedures to represent and solve problems.

8.D.1 Find the unknown numbers in whole-number addition, subtraction, multiplication and division situations.	8.D.2 Solve linear equations involving whole numbers.	8.D.3a Solve problems using numeric, graphic or symbolic representations of variables, expressions, equations and inequalities.
		8.D.3b Propose and solve problems using proportions, formulas and linear functions.
		8.D.3c Apply properties of powers, perfect squares and square roots.

STATE GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

A. Demonstrate and apply geometric concepts involving points, lines, planes and space.

Early Elementary	Late Elementary	Middle/Junior High School
9.A.1a Identify related two- and three-dimensional shapes including circle-sphere, square-cube, triangle-pyramid, rectangle-rectangular prism and their basic properties.	9.A.2a Build physical models of two- and three-dimensional shapes.	9.A.3a Draw or construct two- and three- dimensional geometric figures including prisms, pyramids, cylinders and cones.
9.A.1b Draw two-dimensional shapes.	9.A.2b Identify and describe how geometric figures are used in practical settings (e.g., construction, art, advertising).	9.A.3b Draw transformation images of figures, with and without the use of technology.

	9.A.2c Describe and draw representations of geometric relationships, patterns, symmetries, and designs in two- and three-dimensions with and without technology.	9.A.3c Use concepts of symmetry, congruency, similarity, scale, perspective, and angles to describe and analyze two- and three-dimensional shapes found in practical applications (e.g., geodesic domes, A-frame houses, basketball courts, inclined planes, art forms, blueprints).

B. Identify, describe, classify and compare relationships using points, lines, planes and solids.

9.B.1a Identify and describe characteristics, similarities and differences of geometric shapes.	9.B.2 Compare geometric figures and determine their properties including parallel, perpendicular, similar, congruent and line symmetry.	9.B.3 Identify, describe, classify and compare two- and three-dimensional geometric figures and models according to their properties.
9.B.1b Sort, classify and compare familiar shapes.		
9.B.1c Identify lines of symmetry in simple figures and construct symmetrical figures using various concrete materials.		

C. Construct convincing arguments and proofs to solve problems.

9.C.1 Draw logical conclusions and communicate reasoning about simple geometric figures and patterns using concrete materials, diagrams and contemporary technology.	9.C.2 Formulate logical arguments about geometric figures and patterns and communicate reasoning.	9.C.3a Construct, develop and communicate logical arguments (informal proofs) about geometric figures and patterns.
		9.C.3b Develop and solve problems using geometric relationships and models, with and without the use of technology.

D. Use trigonometric ratios and circular functions to solve problems.

		9.D.3 Compute distances, lengths and measures of angles using proportions, the Pythagorean theorem and its converse.

STATE GOAL 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

A. Organize, describe and make predictions from existing data.

Early Elementary	Late Elementary	Middle/Junior High School
10.A.1a Organize and display data using pictures, tallies, tables, charts or bar graphs.	10.A.2a Organize and display data using pictures, tallies, tables, charts, bar graphs, line graphs, line plots and stem-and-leaf	10.A.3a Construct, read and interpret tables, graphs (including circle graphs) and charts to organize and represent data.

		graphs.
10.A.1b Answer questions and make predictions based on given data.	10.A.2b Using a data set, determine mean, median, mode and range, with and without the use of technology.	10.A.3b Compare the mean, median, mode and range, with and without the use of technology.
	10.A.2c Make predictions and decisions based on data and communicate their reasoning.	10.A.3c Test the reasonableness of an argument based on data and communicate their findings.

B. Formulate questions, design data collection methods, gather and analyze data and communicate findings.

10.B.1a Formulate questions of interest and design surveys or experiments to gather data.	10.B.2a Formulate questions of interest and select methods to systematically collect data.	10.B.3 Formulate questions (e.g., relationships between car age and mileage, average incomes and years of schooling), devise and conduct experiments or simulations, gather data, draw conclusions and communicate results to an audience using traditional methods and contemporary technologies.
10.B.1b Collect, organize and describe data using pictures, tallies, tables, charts or bar graphs.	10.B.2b Collect, organize and display data using tables, charts, bar graphs, line graphs, circle graphs, line plots and stem-and-leaf graphs.	
10.B.1c Analyze data, draw conclusions and communicate the results.	10.B.2c Analyze the data using mean, median, mode and range, as appropriate, with or without the use of technology.	
	10.B.2d Interpret results or make relevant decisions based on the data gathered.	

C. Determine, describe and apply the probabilities of events.

Early Elementary	Late Elementary	Middle/Junior High School
10.C.1a Describe the concept of probability in relationship to likelihood and chance.	10.C.2a Calculate the probability of a simple event.	10.C.3a Determine the probability and odds of events using fundamental counting principles.
10.C.1b Systematically list all possible outcomes of a simple one-stage experiment (e.g., the flip of one coin, the toss of one die, the spin of a spinner).	10.C.2b Compare the likelihood of events in terms of certain, more likely, less likely or impossible.	10.C.3b Analyze problem situations (e.g., board games, grading scales) and make predictions about results.
	10.C.2c Determine the probability of an event involving "and", "or" or "not".	

Results for Mathematics

Summary of Early Elementary Alignment with Stanford 10 P3						
Mathematics Problem Solving						
Goals	**All Raters**			**Illinois Raters**		
	Items	**DOK**	**Range**	**Items**	**DOK**	**Range**
6A	9	100.0%	1	8	100.0%	1
6B	3	56.0%	1	4	42.1%	1
6C	5	58.1%	1	5	52.0%	1
6D	2	44.4%	1	2	41.7%	1
Goal 6	**20**	**80.7%**	**100.0%**	**19**	**74.0%**	**100.0%**
7A	6	80.0%	1	6	80.0%	1
7B	0	0.0%	0	0	0.0%	0
7C	1	100.0%	1	1	100.0%	1
Goal 7	**7**	**82.1%**	**66.7%**	**7**	**80.6%**	**66.7%**
8A	4	100.0%	1	4	100.0%	1
8B	0	0.0%	0	0	100.0%	0
8C	2	30.8%	1	1	0.0%	1
8D	2	100.0%	1	1	100.0%	1
Goal 8	**7**	**84.5%**	**75.0%**	**7**	**85.3%**	**75.0%**
9A	1	100.0%	1	1	100.0%	1
9B	2	52.6%	1	2	45.5%	1
9C	0	100.0%	0	0	100.0%	0
Goal 9	**3**	**66.7%**	**66.7%**	**4**	**66.7%**	**66.7%**
10A	5	28.2%	1	6	26.7%	1
10B	0	66.7%	0	0	0.0%	0
10C	2	53.3%	1	2	33.3%	1
Goal 10	**7**	**36.8%**	**66.7%**	**8**	**27.5%**	**66.7%**

Findings of Illinois Alignment Study						
Early Elementary Math Standards To Stanford 10 Mathematics Problem Solving, Level--Primary 3						
Goals	**All Raters**			**Illinois Raters**		
	Categorical Concurrence	**Depth of Knowledge**	**Range of Knowledge**	**Categorical Concurrence**	**Depth of Knowledge**	**Range of Knowledge**
Goal 6	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 7	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 8	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 9	Weak	Met Criteria	Met Criteria	Weak	Met Criteria	Met Criteria
Goal 10	Met Criteria	Weak	Met Criteria	Met Criteria	Weak	Met Criteria

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

Summary of Late Elementary Alignment with Stanford 10 I2

Mathematics Problem Solving

Goals	All Raters			Illinois Raters		
	Items	**DOK**	**Range**	**Items**	**DOK**	**Range**
6A	7.5	36.7%	1	7.0	34.3%	1
6B	3.5	85.7%	1	4.0	85.0%	1
6C	7.1	47.4%	1	7.6	42.1%	1
6D	3.0	83.3%	1	3.2	75.0%	1
Goal 6	**21.1**	**55.0%**	**100.0%**	**21.8**	**52.3%**	**100.0%**
7A	4.1	69.7%	1	4.2	66.7%	1
7B	1.3	30.0%	1	1.4	28.6%	1
7C	0.8	100.0%	1	0.6	100.0%	1
Goal 7	**6.3**	**64.0%**	**100.0%**	**6.4**	**59.4%**	**100.0%**
8A	5.3	85.7%	1	5.0	88.0%	1
8B	0.8	33.3%	1	0.4	50.0%	1
8C	1.3	20.0%	1	1.0	0.0%	1
8D	1.4	100.0%	1	1.4	100.0%	1
Goal 8	**8.6**	**73.9%**	**100.0%**	**7.8**	**76.9%**	**100.0%**
9A	2.3	44.4%	1	1.8	44.4%	1
9B	2.0	81.3%	1	2.6	84.6%	1
9C	0.0	0.0%	0	0.0	0.0%	0
Goal 9	**4.0**	**61.8%**	**66.7%**	**5.0**	**68.2%**	**66.7%**
10A	4.0	23.4%	1	4.0	25.0%	1
10B	0.6	0.0%	1	0.6	0.0%	1
10C	2.9	73.9%	1	2.8	71.4%	1
Goal 10	**7.5**	**53.3%**	**100.0%**	**7.4**	**54.1%**	**100.0%**

Findings of Illinois Alignment Study

Early Elementary Math Standards
To Stanford 10 Mathematics Problem Solving, Level—Intermediate 2

Goals	All Raters			Illinois Raters		
	Categorical Concurrence	**Depth of Knowledge**	**Range of Knowledge**	**Categorical Concurrence**	**Depth of Knowledge**	**Range of Knowledge**
Goal 6	Met Criteria	Marginal	Met Criteria	Met Criteria	Marginal	Met Criteria
Goal 7	Marginal	Met Criteria	Met Criteria	Marginal	Met Criteria	Met Criteria
Goal 8	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 9	Weak	Met Criteria	Met Criteria	Weak	Met Criteria	Met Criteria
Goal 10	Met Criteria	Marginal	Met Criteria	Met Criteria	Marginal	Met Criteria

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

Summary of Middle School Alignment with Stanford 10 A2

Mathematics Problem Solving

Goals	All Raters			Illinois Raters		
	Items	DOK	Range	Items	DOK	Range
6.A	6.1	100.0%	1	5.8	100.0%	1
6.B	3.5	82.1%	1	4.4	77.3%	1
6.C	7.8	56.5%	1	8	52.5%	1
6.D	1.3	90.0%	1	1.6	87.5%	1
Goal 6	**18.6**	**77.9%**	**100.0%**	**19.8**	**74.7%**	**100.0%**
7.A	2.0	87.5%	1	1.8	88.9%	1
7.B	0.4	100.0%	0	0.2	100.0%	0
7.C	1.5	91.7%	1	1.8	88.9%	1
Goal 7	**3.9**	**90.3%**	**66.7%**	**3.8**	**89.5%**	**66.7%**
8.A	3.5	85.7%	1	3.6	88.9%	1
8.B	2.0	12.5%	1	1.4	14.3%	1
8.C	0.4	66.7%	0	0	0.0%	0
8.D	3.5	78.6%	1	3.4	70.6%	1
Goal 8	**9.5**	**67.1%**	**75.0%**	**8.6**	**69.8%**	**75.0%**
9.A	3.3	15.4%	1	3.2	18.8%	1
9.B	1.8	57.1%	1	1.6	87.5%	1
9.C	0.8	33.3%	0	0.8	50.0%	0
9.D	1.4	100.0%	1	1.6	100.0%	1
Goal 9	**7.3**	**43.1%**	**75.0%**	**7.4**	**54.1%**	**75.0%**
10.A	5.3	50.0%	1	5.4	51.9%	1
10.B	0.0	0.0%	0	0	0.0%	0
10.C	3.4	66.7%	1	2.8	57.1%	1
Goal 10	**8.8**	**57.1%**	**66.7%**	**8.4**	**54.8%**	**66.7%**

Findings of Illinois Alignment Study

Early Elementary Math Standards
To Stanford 10 Mathematics Problem Solving, Level—Advanced 2

Goals	All Raters			Illinois Raters		
	Categorical Concurrence	Depth of Knowledge	Range of Knowledge	Categorical Concurrence	Depth of Knowledge	Range of Knowledge
Goal 6	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 7	Weak	Met Criteria	Met Criteria	Weak	Met Criteria	Met Criteria
Goal 8	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Met Criteria
Goal 9	Met Criteria	Weak	Met Criteria	Met Criteria	Marginal	Met Criteria
Goal 10	Met Criteria	Met Criteria	Met Criteria	Met Criteria	Marginal	Met Criteria

Alignment Criteria: Categorical Concurrence ≥ 6, Depth of Knowledge ≥ .50, Range of Knowledge ≥ .50

Met Criteria: Categorical Concurrence >6, DOK >.55, Range >.55
Marginal: Categorical Concurrence = 6, DOK between .50 and .54, Range between .50 and .54
Weak: Categorical Concurrence < 6, DOK <.50, Range <.50

APPENDIX C: Dimensionality Study Scree Plots

Exploratory Factor Analysis Scree Plots for Reading

Scree Plot for Reading Grade 3
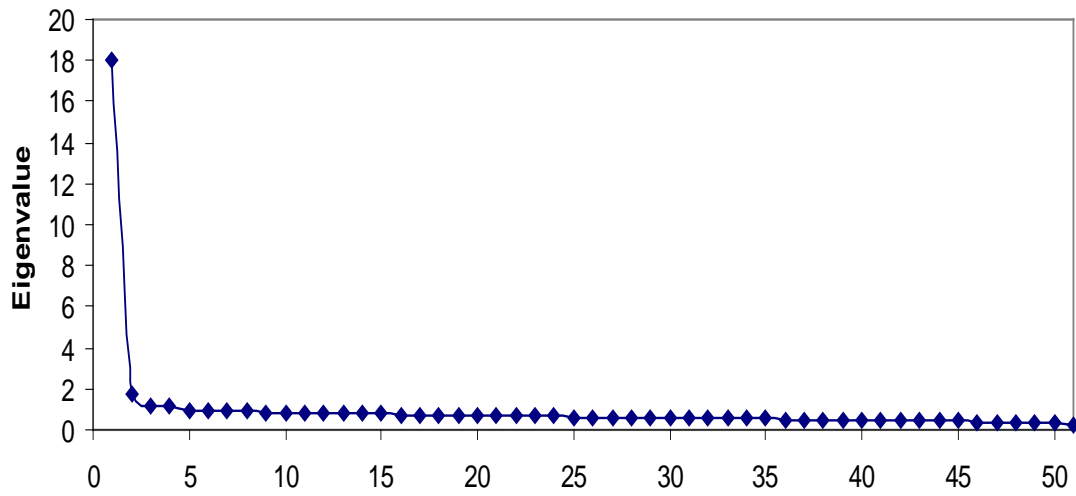
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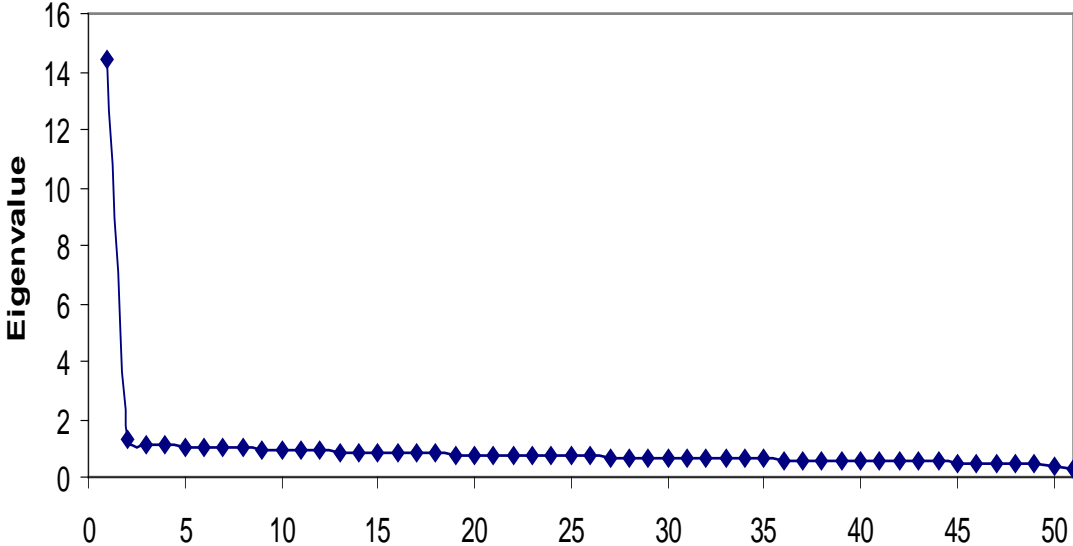
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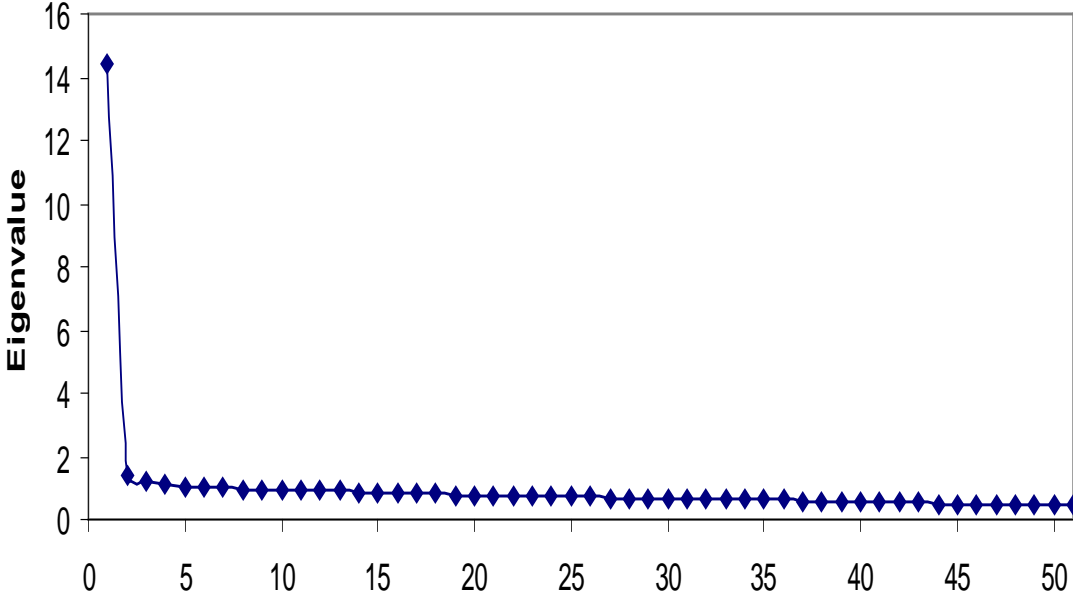
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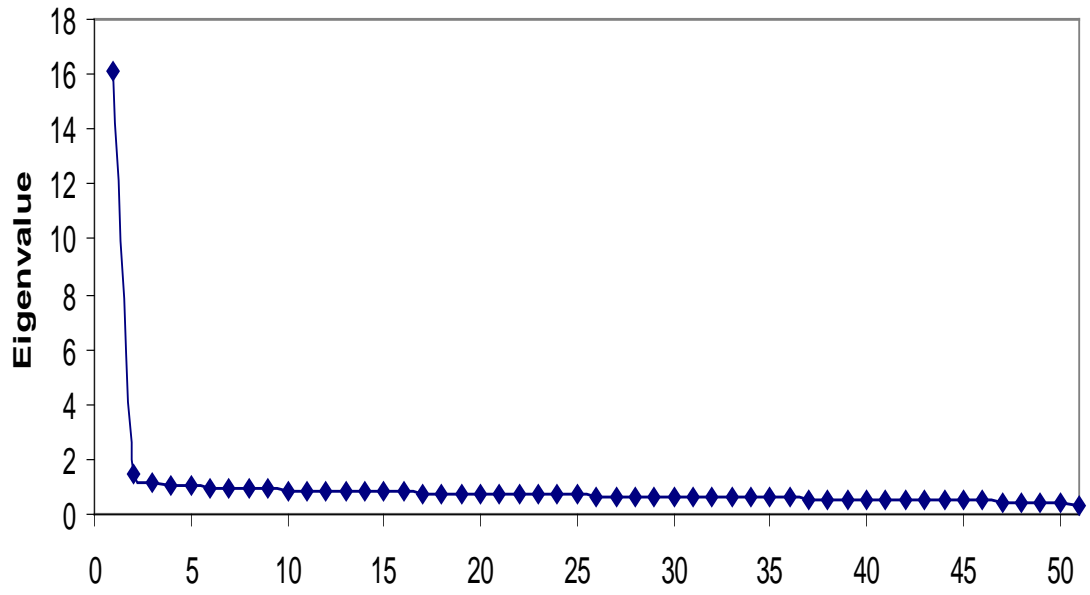
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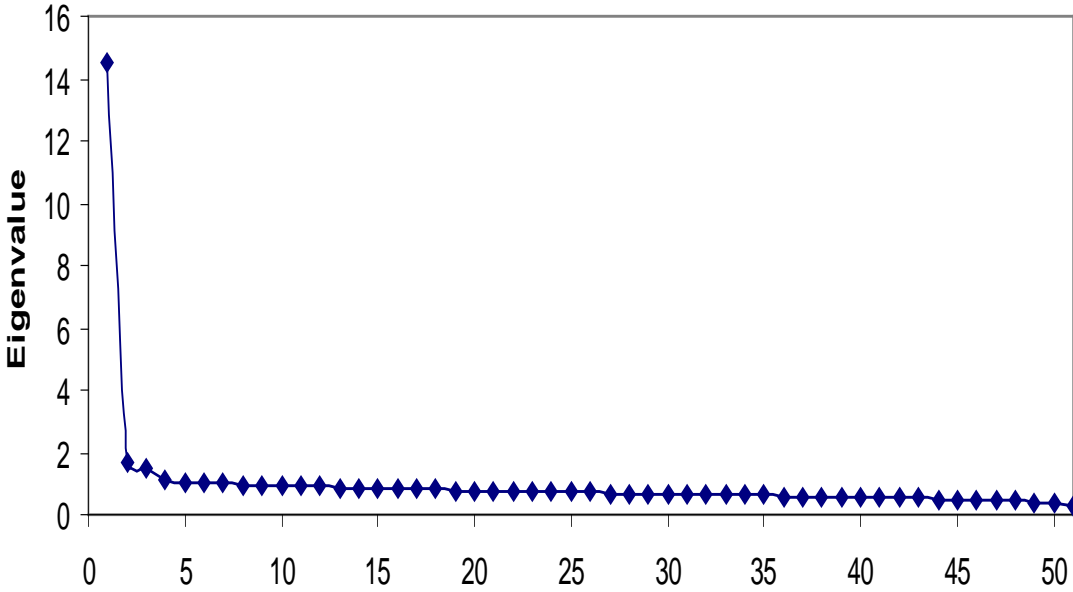
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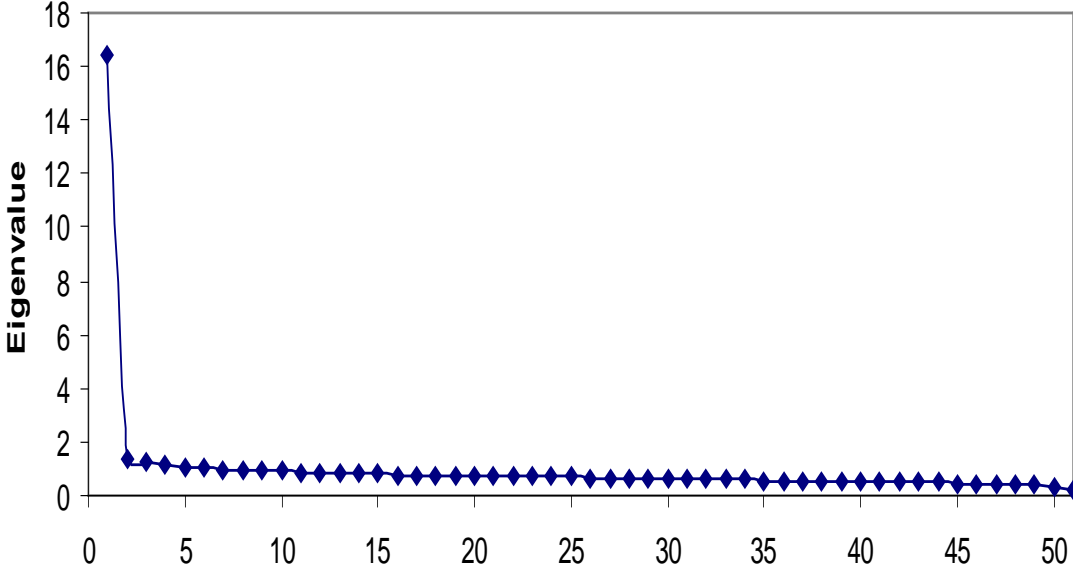
Exploratory Factor Analysis Scree Plots for Mathematics

Scree Plot for Mathematics Grade 3
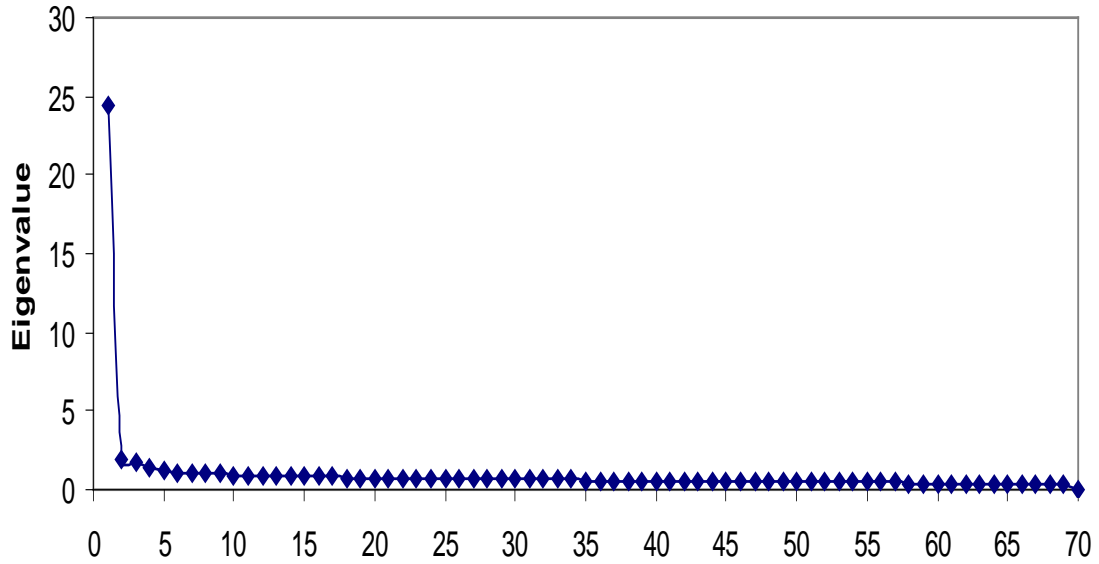
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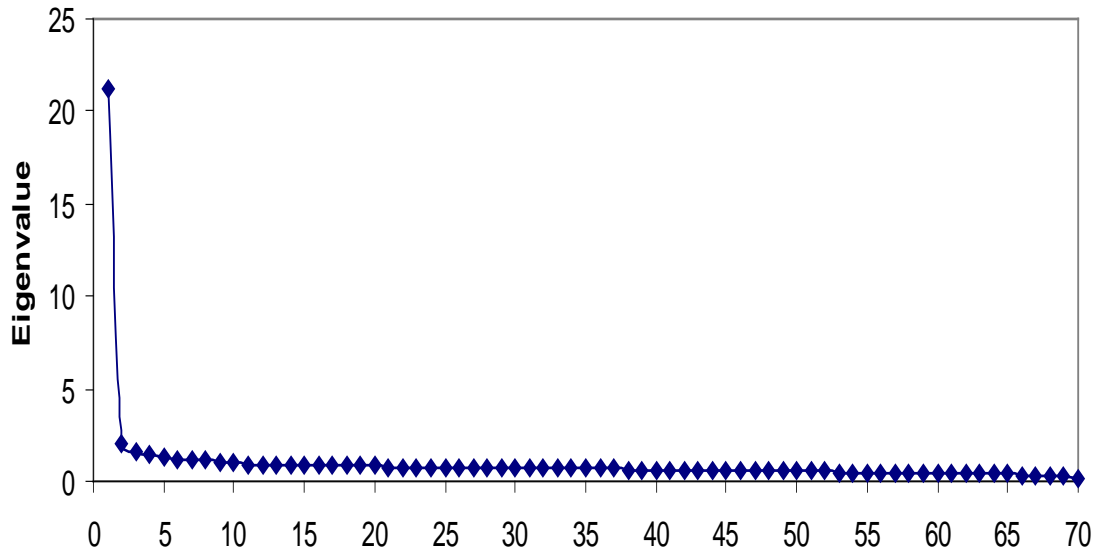
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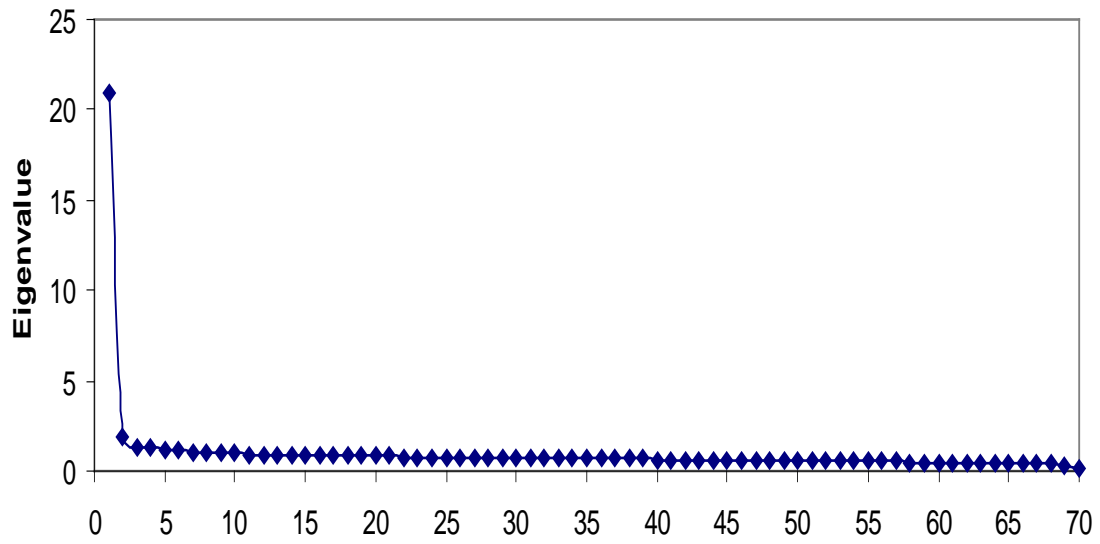
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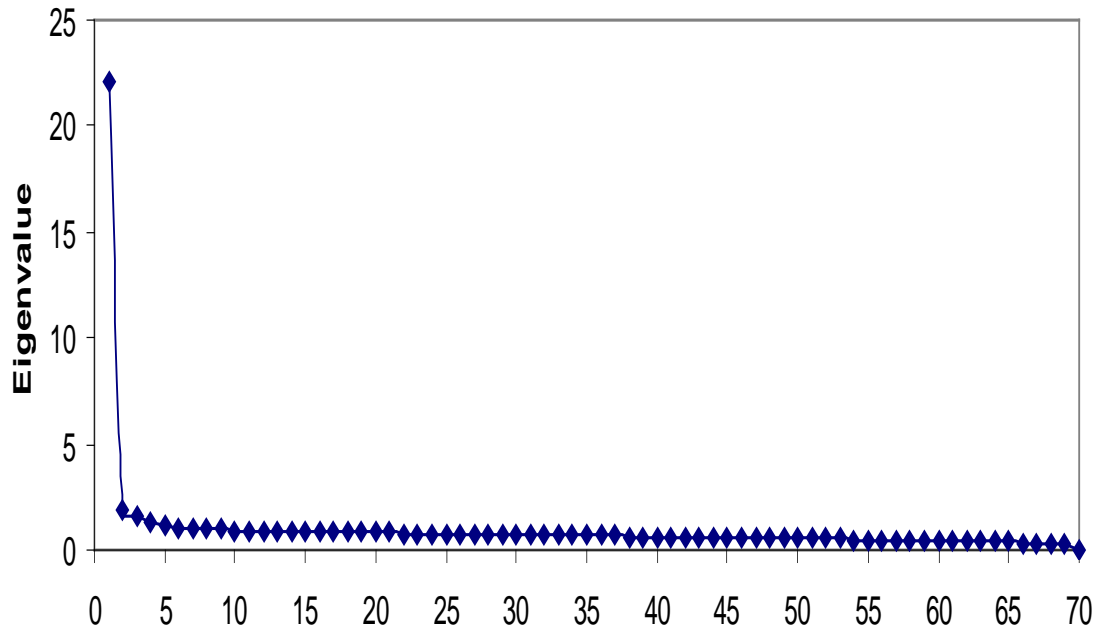
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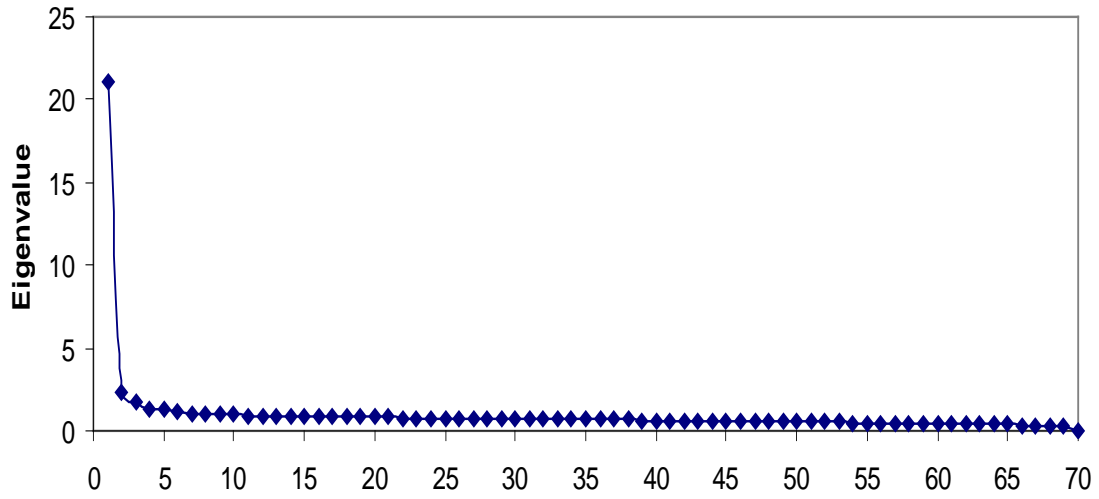
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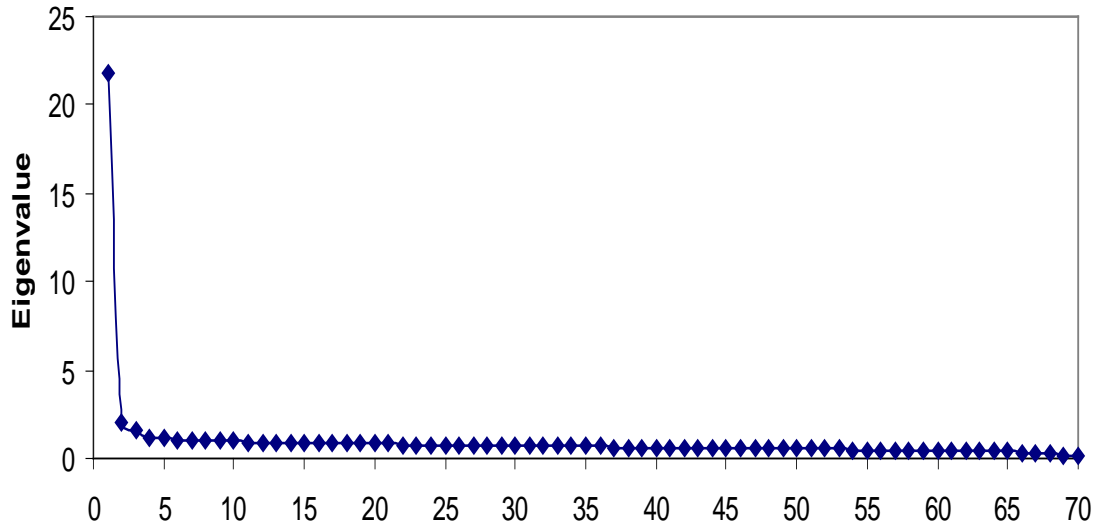
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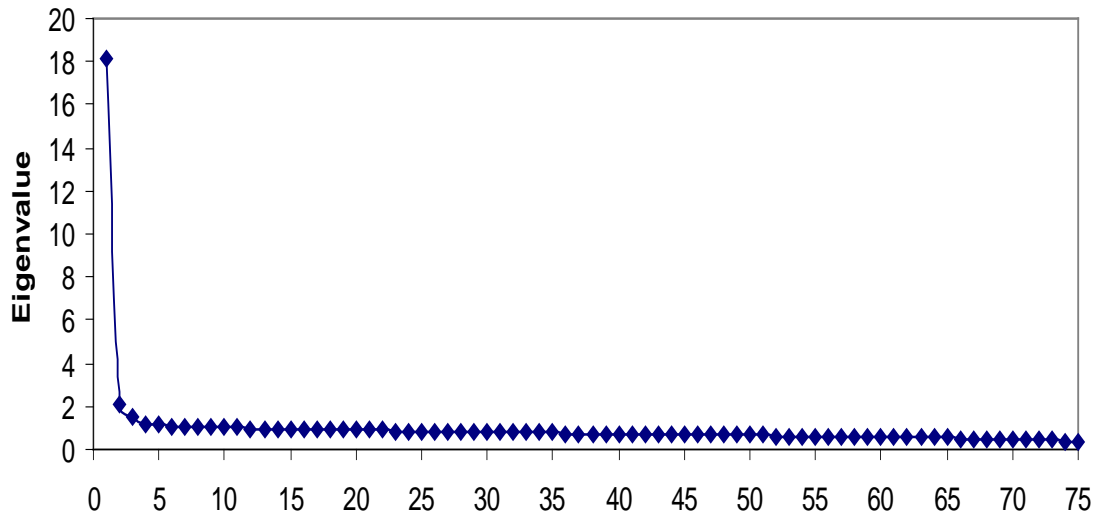
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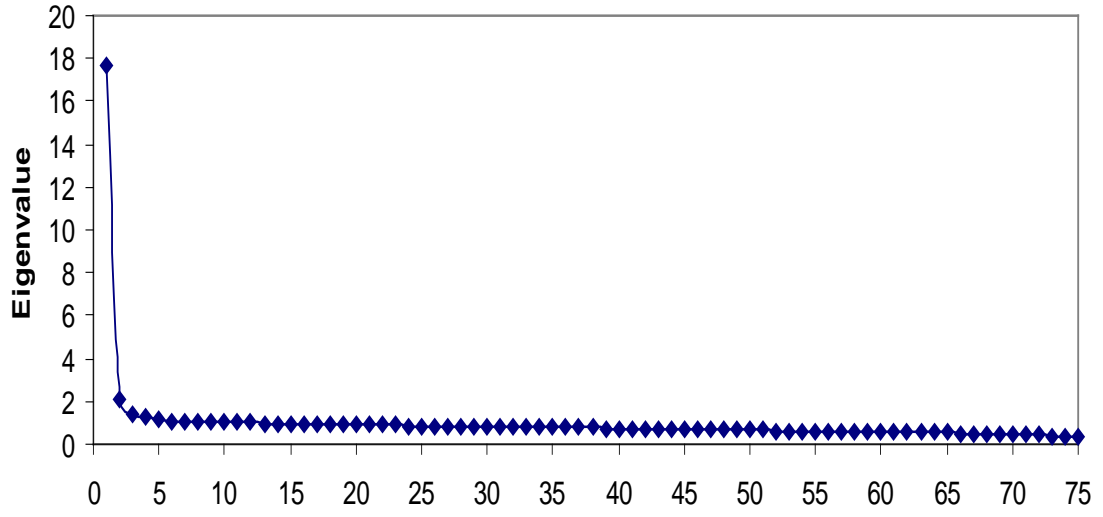
APPENDIX D: Webb Alignment Analysis of Reading, Mathematics, and Science Standards and Assessments

Alignment Analysis of Learning Goals and Assessments

Illinois Reading Grades 3-8

Norman L. Webb
October 31, 2006

Executive Summary

This is a report of the results of a three-day Alignment Analysis Institute conducted September 27-29, 2006 in Springfield, Illinois. Five people, including language arts content experts, district language arts supervisors, and language arts teachers, met to analyze the agreement between the state's reading standards and assessments for grades 3-8.

This analysis indicates that the alignment needs some improvement except for grade 8. The alignment at grade 8 was considered reasonable. The Balance criterion was not satisfied for Goal 1 across all the grades, primarily due to the over-abundance of assessment items asking for simple inferences about a passage's meaning. For Grades 3-6 the Range of Knowledge Correspondence criterion was also not satisfied, meaning that too high of a proportion of benchmarks were not addressed by assessment items. The depth-of-knowledge levels were low compared to the complexity of the benchmarks for Goal 2 at Grade 4 and Grade 7. These alignment findings were supported and detailed by reviewer debriefing comments. These alignment weaknesses could be addressed by replacing from 3-8 items at each grade level. It is the conclusion of this analysis that the alignment between the Illinois reading standards and assessments needs some improvement.

Acknowledgements

Reviewers

Introduction

The alignment of expectations for student learning with assessments for measuring students' attainment of these expectations is an essential attribute for an effective standards-based education system. Alignment is defined as the degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide an education system toward students learning what they are expected to know and do. As such, alignment is a quality of the relationship between expectations and assessments and not an attribute of any one of these two system components. Alignment describes the match between expectations and assessment that can be legitimately improved by changing either student expectations or the assessments. As a relationship between two or more system components, alignment is determined by using the multiple criteria described in detail in a National Institute of Science Education (NISE) research monograph, Criteria for Alignment of Expectations and Assessments in Mathematics and Science Education (Webb, 1997).

A three-day Alignment Analysis Institute was conducted September 27-29, 2006 in Springfield, Illinois. Five people, including language arts content experts, district language arts supervisors, and language arts teachers, met to analyze the agreement between the state's reading goals and assessments for Grades 3-8.

The State of Illinois uses the terminology of state goals, learning standards, and benchmarks for the mathematics content expectations. The state had two reading state goals (Reading and Literature). The reading state goal had three learning standards—vocabulary development, reading strategies, and reading comprehension. The literature state goal had two learning standards—literary elements and techniques and variety of literary works. Each learning goal had from 1 to 13 benchmarks (or sometimes referred to as objectives). For this analysis, data were coded using the benchmarks (objectives) and reported by the two state goals.

Reviewers were trained to identify the depth-of-knowledge of the benchmarks and assessment items. This training included reviewing the definitions of the four depth-of-knowledge (DOK) levels and then reviewing examples of each. Then for each grade, the reviewers participated in 1) a consensus process to determine the depth-of-knowledge levels of the benchmarks and 2) individual analyses of the assessment items.

To derive the results from the analysis, the reviewers' responses are averaged. Any variance among reviewers is considered legitimate, with the true depth-of-knowledge level for the item falling somewhere in between the two or more assigned values. Such variation could signify a lack of clarity in how the benchmarks were written, the robustness of an item that can legitimately correspond to more than one benchmark, and/or a depth of knowledge that falls in between two of the four defined levels. Reviewers were allowed to identify one assessment item as corresponding to up to three benchmarks—one primary hit (benchmark) and up to two secondary hits. However, reviewers could only code one depth-of-knowledge level to each assessment item even if

the item corresponded to more than one benchmark. Finally, in addition to learning the process, reviewers were asked to provide suggestions for improving the process.

Reviewers were instructed to focus primarily on the alignment between the state standards and assessments. However, they were encouraged to offer their opinion on the quality of the state goals and standards, or of the assessment activities/items, by writing a note about the item. Reviewers could also indicate whether there was a source-of-challenge issue with the item—i.e., a problem with the item that might cause the student who knows the material to give a wrong answer, or enable someone who does not have the knowledge being tested to answer the item correctly.

The results produced from the institute pertain only to the issue of agreement between the Illinois state goals and the state assessment instruments. Note that this alignment analysis does not serve as external verification of the general quality of the state's goals and standards or assessments. Rather, only the degree of alignment is discussed in these results. For these results, the averages of the reviewers' coding were used to determine whether the alignment criteria were met.

This report describes the results of an alignment study of standards and grade- level operational tests in reading for grades 3-8 in Illinois. The study addressed specific criteria related to the content agreement between the state goals and grade-level assessments. Four criteria received major attention: categorical concurrence, depth-of-knowledge consistency, range-of-knowledge correspondence, and balance of representation.

Alignment Criteria Used for This Analysis

This analysis judged the alignment between the standards and the assessments on the basis of four criteria. Information is also reported on the quality of items by identifying items with Sources-of-Challenge and other issues. For each alignment criterion, an acceptable level was defined by what would be required to assure that a student had met the standards.

Categorical Concurrence
An important aspect of alignment between standards and assessments is whether both address the same content categories. The categorical-concurrence criterion provides a very general indication of alignment if both documents incorporate the same content. The criterion of categorical concurrence between standards and assessment is met if the same or consistent categories of content appear in both documents. This criterion was judged by determining whether the assessment included items measuring content from each standard. The analysis assumed that the assessment had to have at least six items for measuring content from a standard in order for an acceptable level of categorical concurrence to exist between the standard and the assessment. The number of items, six, is based on estimating the number of items that could produce a reasonably reliable subscale for estimating students' mastery of content on that subscale. Of course, many factors have to be considered in determining what a reasonable number is, including the reliability of the subscale, the mean score, and cutoff score for determining mastery.

Using a procedure developed by Subkoviak (1988) and assuming that the cutoff score is the mean and that the reliability of one item is .1, it was estimated that six items would produce an agreement coefficient of at least .63. This indicates that about 63% of the group would be consistently classified as masters or nonmasters if two equivalent test administrations were employed. The agreement coefficient would increase if the cutoff score is increased to one standard deviation from the mean to .77 and, with a cutoff score of 1.5 standard deviations from the mean, to .88. Usually states do not report student results by standards or require students to achieve a specified cutoff score on subscales related to a standard. If a state did do this, then the state would seek a higher agreement coefficient than .63. Six items were assumed as a minimum for an assessment measuring content knowledge related to a standard, and as a basis for making some decisions about students' knowledge of that standard. If the mean for six items is 3 and one standard deviation is one item, then a cutoff score set at 4 would produce an agreement coefficient of .77. Any fewer items with a mean of one-half of the items would require a cutoff that would only allow a student to miss one item. This would be a very stringent requirement, considering a reasonable standard error of measurement on the subscale.

Depth-of-Knowledge Consistency
Standards and assessments can be aligned not only on the category of content covered by each, but also on the basis of the complexity of knowledge required by each. Depth-of-knowledge consistency between standards and assessment indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards. For consistency to exist between the assessment and the standard, as judged in this analysis, at least 50% of the items corresponding to a standard had to be at or above the level of knowledge of the standard: 50%, a conservative cutoff point, is based on the assumption that a minimal passing score for any one standard of 50% or higher would require the student to successfully answer at least some items at or above the depth-of-knowledge level of the corresponding standard. For example, assume an assessment included six items related to one standard and students were required to answer correctly four of those items to be judged proficient— i.e., 67% of the items. If three, 50%, of the six items were at or above the depth-of-knowledge level of the corresponding standards, then for a student to achieve a proficient score would require the student to answer correctly at least one item at or above the depth-of-knowledge level of one standard. Some leeway was used in this analysis on this criterion. If a standard had between 40% and 50% of items at or above the depth-of-knowledge levels of the standards, then it was reported that the criterion was "weakly" met.

Interpreting and assigning depth-of-knowledge levels to both objectives within standards and assessment items is an essential requirement of alignment analysis. These descriptions help to clarify what the different levels represent in reading

Reading Level 1
Level 1 requires students to receive or recite facts or to use simple skills or abilities. Oral reading that does not include analysis of the text, as well as basic comprehension of a text, is included. Items require only a shallow understanding of the text presented and

often consist of verbatim recall from text, slight paraphrasing of specific details from the text, or simple understanding of a single word or phrase. Some examples that represent, but do not constitute all of Level 1 performance are:

- Support ideas by reference to verbatim, or only slightly paraphrased, details from the text.
- Use a dictionary to find the meanings of words.
- Recognize figurative language in a reading passage.

Reading Level 2
Level 2 includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Inter-sentence analysis of inference is required. Some important concepts are covered, but not in a complex way. Standards and items at this level may include words such as summarize, interpret, infer, classify, organize, collect, display, compare, and determine whether fact or opinion. Literal main ideas are stressed. A Level 2 assessment item may require students to apply skills and concepts that are covered in Level 1. However, items require closer understanding of text, possibly through the item's paraphrasing of both the question and the answer. Some examples that represent, but do not constitute all of Level 2 performance are:
- Use context cues to identify the meaning of unfamiliar words, phrases, and expressions that could otherwise have multiple meanings.
- Predict a logical outcome based on information in a reading selection.
- Identify and summarize the major events in a narrative.

Reading Level 3
Deep knowledge becomes a greater focus at Level 3. Students are encouraged to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Standards and items at Level 3 involve reasoning and planning. Students must be able to support their thinking. Items may involve abstract theme identification, inference across an entire passage, or application of prior knowledge. Items may also involve more superficial connections between texts. Some examples that represent, but do not constitute all of Level 3 performance are:
- Explain or recognize how author's purpose affects the interpretation of a reading selection.
- Summarize information from multiple sources to address a specific topic.
- Analyze and describe the characteristics of various types of literature.

Reading Level 4
Higher-order thinking is central and knowledge is deep at Level 4. The standard or assessment item at this level will probably be an extended activity, with extended time provided for completing it. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require the application of significant conceptual understanding and higher-order thinking. Students take information from at least one passage of a text and are asked to apply this information to a new task. They

may also be asked to develop hypotheses and perform complex analyses of the connections among texts. Some examples that represent, but do not constitute all of Level 4 performance are:

- Analyze and synthesize information from multiple sources.
- Examine and explain alternative perspectives across a variety of sources.
- Describe and illustrate how common themes are found across texts from different cultures.

Range-of-Knowledge Correspondence

For standards and assessments to be aligned, the breadth of knowledge required on both should be comparable. The range-of-knowledge criterion is used to judge whether a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer the assessment items/activities. The criterion for correspondence between span of knowledge for a standard and an assessment considers the number of objectives within the standard with one related assessment item/activity. Fifty percent of the objectives for a standard had to have at least one related assessment item in order for the alignment on this criterion to be judged acceptable. This level is based on the assumption that students' knowledge should be tested on content from over half of the domain of knowledge for a standard. This assumes that each benchmark for a standard should be given equal weight. Depending on the balance in the distribution of items and the need to have a low number of items related to any one objective, the requirement that assessment items need to be related to more than 50% of the objectives for an standard increases the likelihood that students will have to demonstrate knowledge on more than one objective per standard to achieve a minimal passing score. As with the other criteria, a state may choose to make the acceptable level on this criterion more rigorous by requiring an assessment to include items related to a greater number of the objectives. However, any restriction on the number of items included on the test will place an upper limit on the number of objectives that can be assessed. Range-of-knowledge correspondence is more difficult to attain if the content expectations are partitioned among a greater number of standards and a large number of objectives. If 50% or more of the objectives for a standard had a corresponding assessment item, then the Range-of-knowledge correspondence criterion was met. If between 40% and 50% of the objectives for a standard had a corresponding assessment item, the criterion was "weakly" met.

Balance of Representation

In addition to comparable depth and breadth of knowledge, aligned standards and assessments require that knowledge be distributed equally in both. The range-of-knowledge criterion only considers the number of objectives within a standard hit (an standard with a corresponding item); it does not take into consideration how the hits (or assessment items/activities) are distributed among these objectives. The balance-of-representation criterion is used to indicate the degree to which one objective is given more emphasis on the assessment than another. An index is used to judge the distribution of assessment items. This index only considers the objectives for a standard that have at least one hit—i.e., one related assessment item per objective. The index is computed by considering the difference in the proportion of objectives and the proportion of hits

assigned to the objective. An index value of 1 signifies perfect balance and is obtained if the hits (corresponding items) related to a standard are equally distributed among the objectives for the given standard. Index values that approach 0 signify that a large proportion of the hits are on only one or two of all of the objectives hit. Depending on the number of objectives and the number of hits, a unimodal distribution (most items related to one objective and only one item related to each of the remaining objectives) has an index value of less than .5. A bimodal distribution has an index value of around .55 or .6. Index values of .7 or higher indicate that items/activities are distributed among all of the objectives at least to some degree (e.g., every objective has at least two items) and is used as the acceptable level on this criterion. Index values between .6 and .7 indicate the balance-of-representation criterion has only been "weakly" met.

Source-of-Challenge Criterion
The Source-of-Challenge criterion is only used to identify items on which the major cognitive demand is inadvertently placed and is other than the targeted reading objective, concept, or application. Cultural bias or specialized knowledge could be reasons for an item to have a Source-of-Challenge problem. Such item characteristics may result in some students not answering an assessment item, or answering an assessment item incorrectly, or at a lower level, even though they possess the understanding and skills being assessed.

Findings

State Goals
Table 1 shows the percentages of benchmarks at each DOK level. Around 10% of all the benchmarks were found to be at a Level 3, and there were no benchmarks at Level 4. A very slight progression can be observed as the DOK values for the benchmarks increase across the grades.

Table 1
Percent of Benchmarks by Depth-of-Knowledge (DOK) Levels for Grades 3-8
Illinois Alignment Analysis for Reading

Grade	Total number of benchmarks	DOK Level	# of benchmarks by Level	% within std by Level
3	38	1	6	15
		2	26	68
		3	6	15
4	40	1	4	10
		2	28	70
		3	8	20
5	42	1	3	7
		2	30	71
		3	9	21

Grade	Total number of benchmarks	DOK Level	# of benchmarks by Level	% within std by Level
6	39	1	3	7
		2	24	61
		3	12	30
7	39	1	1	2
		2	23	60
		3	14	36
8	38	1	1	2
		2	23	60
		3	14	36

Table 2
Items Coded to Generic Benchmarks by More Than One Reviewer,
Illinois Alignment Analysis for Reading, Grades 3-8

Grade	Assessment Item	Generic Benchmark (Number of Reviewers)
3	22	2A (4)
4	12	1B,1C (5)
5	24	1A (5)
5	25	1B,1C (5)
5	16	1C (5)
5	14	2A (4)
6	4	1B,1C (5)
6	16	1B,1C (3)
6	19	1B,1C (5)
7	3	1B,1C (5)
8	1	1B,1C (4)
8	15	1B,1C (3)

If no particular benchmark is targeted by a given assessment item, reviewers are instructed to code the item at the level of a standard or a goal. This coding to a generic benchmark sometimes indicates that the item is inappropriate for the grade level. However, if the item is grade-appropriate, then this situation may instead indicate that there is a piece of content not expressly or precisely described in the benchmarks. These items may highlight areas in the benchmarks that should be changed or made more precise. Table 2 displays the assessment items coded to generic benchmarks by more than one reviewer. Four or five of the reviewers assigned the greatest number of items, four items, to generic benchmarks at grade 5. These items should be reviewed to determine if there is some omission in the benchmarks. The reviewers' comments indicate that the item is not explicitly addressed in any of the benchmarks.

Alignment of Curriculum Standards and Assessments

The results of the analysis for each of the four alignment criteria are summarized in Tables 4.1-4.6. With each table is a description of the satisfaction of the alignment criteria for the given grade. The reviewer debriefing comments provide more detail about the individual reviewers' impressions of the alignment.

Table 3 displays the number of items and points for each assessment form. In the analysis that follows, multiple-point items are weighted extra for alignment purposes. For example, a 4-point item is counted towards the alignment as 4 identically coded 1-point items.

Table 3
Number of items and point value by grade for Illinois Assessments, Grades 3-8

Grade Level	Number of Items	Number of Four Point Items	Total Point Value
3	51	1	54
4	51	1	54
5	51	1	54
6	51	1	54
7	51	1	54
8	51	1	54

In Table 4, "YES" indicates that an acceptable level was attained between the assessment and the standard on the criterion. "WEAK" indicates that the criterion was nearly met, within a margin that could simply be due to error in the system. "NO" indicates that the criterion was not met by a noticeable margin—10% over an acceptable level for Depth-of-Knowledge Consistency, 10% over an acceptable level for Range-of-Knowledge Correspondence, and .1 under an index value of .7 for Balance of Representation.

Grade 3
The alignment criteria for Grade 3 Goal 2 (Literature) are fully satisfied (Table 4.1). However, Goal 1 has alignment weaknesses with respect to Range and Balance. The Balance weakness is caused by too many items targeting benchmark 1.3.20, and the Range weakness is caused by very few items addressing the benchmarks within the Vocabulary and Reading Strategies standards. These alignment findings are supported by the reviewers' debriefing comments. The alignment issues could be addressed by changing at least 3 of the items currently targeting benchmark 1.3.20 to target any of the untargeted benchmarks within Goal 1.

Table 4.1
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 3
Standards and Assessments for Illinois Alignment Analysis

Grade 3	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	WEAK	WEAK
Goal 2 - Literature	YES	YES	YES	YES

Grade 4

Many of the alignment criteria for Grade 4 are not satisfied (Table 4.2). The Range is not met for either goal, the DOK Consistency is weak for Goal 2, and the Balance criterion is not met for Goal 1. The Balance weakness is caused by too many items targeting benchmark 1.4.17. The Range weakness is caused by essentially no items addressing benchmarks 1, 2, 3, 5, 6, 7, 11, 12, 13, 15, 16, 18, 20, 23, and 24 within Goal 1, and benchmarks 1, 2, 4, 6, 7, 10, 12, 13, and 14 within Goal 2. Most of the targeted benchmarks within Goal 2 have DOK Level 3, while most of the items are at a DOK of 2. These alignment findings are supported by the reviewers' debriefing comments. The issues could be addressed by changing at least 8 of the items currently targeting benchmark 1.4.17 so that the new items target five of the untargeted benchmarks within Goal 1 and three of the untargeted benchmarks within Goal 2. Doing this will also likely solve the DOK issue for Goal 2, especially if the items target the benchmarks that reviewers assigned a DOK Level 2 (benchmarks 1, 2, 4, 12, 14).

Table 4.2
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 4
Standards and Assessments for Illinois Alignment Analysis

Grade 4	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	NO	NO
Goal 2 - Literature	YES	WEAK	NO	YES

Grade 5

Several of the alignment criteria for Grade 5 are not satisfied (Table 4.3). The Range is weak for both goals and the Balance criterion is not met for Goal 1. The Balance weakness is caused by too many items targeting benchmark 1.5.16. The Range weakness is caused by essentially no items addressing benchmarks 1, 4, 5, 6, 9, 10, 11, 13, 14, 15, 17, 18, 19, 23, 24, 25, and 28 within Goal 1, and benchmarks 1, 2, 4, 5, 6, 7, 10, and 13 within Goal 2. These alignment findings are supported by the reviewers' debriefing comments. The alignment issues could be addressed by changing at least 6 of the items

currently targeting benchmark 1.5.16 so that they target four of the untargeted benchmarks within Goal 1 and two of the untargeted benchmarks within Goal 2.

Table 4.3
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 5
Standards and Assessments for Illinois Alignment Analysis

Grade 5	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	WEAK	NO
Goal 2 - Literature	YES	YES	WEAK	YES

Grade 6

Several of the alignment criteria for Grade 6 are not satisfied (Table 4.4). The Range is weak for both goals and the Balance criterion is not met for Goal 1. The Balance weakness is caused by too many items targeting benchmark 1.6.14. The Range weakness is caused by essentially no items addressing benchmarks 1, 2, 6, 9, 10, 11, 13, 15, 16, 17, 20, 21, and 24 within Goal 1, and benchmarks 1, 2, 3, 5, 6, 11, 12, and 13 within Goal 2. These alignment findings, supported by the reviewers' debriefing, could be addressed by changing 4 of the items currently targeting benchmark 1.6.14. The new items should target two of benchmarks without any items within each of the two goals.

Table 4.4
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 6
Standards and Assessments for Illinois Alignment Analysis

Grade 6	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	WEAK	NO
Goal 2 - Literature	YES	YES	WEAK	YES

Grade 7

Two of the alignment criteria for Grade 7 are not satisfied (Table 4.5). The Balance criterion is weak for Goal 1 and the DOK values are low for Goal 2. The Balance weakness is caused by too many items targeting benchmark 1.7.15 and 1.7.20. Part of the issue with 1.7.20 is that item 47 is worth multiple points. However, several items targeting 1.7.15 should be changed; preferably to target some of the untargeted benchmarks in Goal 1. These alignment findings are supported by the reviewers' debriefing comments. The DOK weakness for Goal 2 is caused by too many items at a Level 2 addressing benchmarks predominately at a Level 3. At least two items should be changed to include more inference and analysis.

Table 4.5
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 7
Standards and Assessments for Illinois Alignment Analysis

Grade 7	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	YES	WEAK
Goal 2 - Literature	YES	WEAK	YES	YES

Grade 8

The alignment at grade 8 is considered reasonable. All of the alignment criteria for Grade 8 are satisfied except a minor Balance weakness for Goal 1 (Table 4.6). When all of the other alignment criteria have acceptable levels, the balance is not as critical and more of an option for the state. The balance issue could be corrected by changing a couple of the items targeting benchmark 1.8.14 so that they instead address untargeted benchmarks within Goal 1.

Table 4.6
Summary of Acceptable Levels on Alignment Criteria for Reading Grade 8
Standards and Assessments for Illinois Alignment Analysis

Grade 8	*Alignment Criteria*			
Standards	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 1 - Reading	YES	YES	YES	WEAK
Goal 2 - Literature	YES	YES	YES	YES

Reliability Among Reviewers

The overall intraclass correlation among the Reading reviewers' assignment of DOK levels to items was high (Table 5). An intraclass correlation value greater than 0.8 generally indicates a high level of agreement among the reviewers. A pairwise comparison is used to determine the degree of reliability of reviewer coding at the benchmark level and at the standard level. The standard pairwise comparison values are high, while the benchmark values are moderate and comparable to those for most of the alignment studies.

Table 5
Intraclass and Pairwise Comparisons

Grade	Intraclass Correlation	Pairwise Comparison:	Pairwise: Benchmark	Pairwise: Standard
3	.88	.70	.66	.89
4	.81	.70	62	.88
5	.88	.75	.67	.91
6	.84	.72	.67	.89
7	.88	.74	.64	.84
8	.84	.65	.60	.88

Summary

This is a report of the results of a three-day Alignment Analysis Institute conducted September 27-29, 2006 in Springfield, Illinois. Five people, including language arts content experts, district language arts supervisors, and language arts teachers, met to analyze the agreement between the state's reading standards and assessments for grades 3-8.

This analysis indicates that the alignment needs some improvement except for grade 8 where the alignment was judged to be reasonable. The Balance criterion is not satisfied for Goal 1 across all the grades, primarily due to the over-abundance of assessment items asking for simple inferences about a passage's meaning. For Grades 3-6 the Range of Representation criterion is also not satisfied, meaning that many benchmarks are not addressed by assessment items. The DOK Levels are low for Goal 2 at Grade 4 and Grade 7. These alignment findings are supported and detailed by reviewer debriefing comments. These alignment weaknesses could be addressed by replacing from 3-8 items at each grade level. It is the conclusion of this analysis that the alignment between the Illinois reading standards and assessments needs some improvement.

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Reading Standards and Group Consensus DOK Values

Level	Description	DOK
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**1**
1.3.01	Determine the meaning of an unknown word using knowledge of common prefixes, suffixes, and word roots (see Roots and Affixes List) (e.g., use knowledge of the prefix dis-to determine the meaning of disrespect).	2
1.3.02	Identify the word base of familiar words with affixes from Roots and Affixes list (e.g., misspelled, unfinished).	1
1.3.03	Identify words that begin with the same sound (including consonant digraphs, different letters having the same sound, and silent letters-e.g., knight and new).	1
1.3.04	Identify words having the same vowel sound (e.g., date and slave).	1
1.3.05	Identify rhyming words with different spelling patterns (e.g., feet and neat, light and kite).	1
1.3.06	Determine the meaning of unknown compound words by applying knowledge of individual known words (e.g., baseball).	2
1.3.07	Determine the meaning of unknown words using within-sentence clues.	2
1.3.08	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.3.09	Use synonyms to define words.	1
1.3.10	Use antonyms to define words.	1
1.3.11	Determine the word that best fits a given context.	2
1B, 1C	**READING STRATEGIES**	**2**
1.3.12	Activate prior knowledge to establish purpose for reading a given passage.	2
1.3.13	Identify probable outcomes or actions.	2
1.3.14	Use information in illustrations to help understand a reading passage.	2
1.3.15	Determine which illustrations support the meaning of a passage.	2
1.3.16	Determine which charts and graphs support the meaning of a passage.	2
1.3.17	Identify explicit and implicit main ideas.	2
1.3.18	Locate information using simple graphic organizers such as Venn diagrams.	2
1.3.19	Make comparisons across reading passages (e.g., topics, story elements).	3
1C	**READING COMPREHENSION**	**2**
1.3.20	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	2
1.3.21	Distinguish the main ideas and supporting details in informational text.	2
1.3.22	Identify the main idea of a selection when it is not explicitly stated (e.g., by choosing the best alternative title from among several suggested for a given passage).	2
1.3.23	Identify or summarize the order of events in a story.	2
1.3.24	Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge.	3
1.3.25	Differentiate between fact and opinion.	2
1.3.26	Draw conclusions from information in maps, charts, and graphs.	2
1.3.27	Determine whether a set of simple instructions or procedures is complete and, therefore, clear (e.g., if incomplete, identify what is missing	2
1.3.28	Identify the author's purpose for writing a fiction or nonfiction text, (e.g., to entertain or to inform).	2
Goal 2	**Literature**	**2**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**2**
2.3.01	Differentiate among the literary elements of plot, character, and setting.	2
2.3.02	Identify main and supporting characters.	2

Level	Description	DOK
2.3.03	Identify events important to the development of the plot.	2
2.3.04	Identify setting (i.e., place and time period).	2
2.3.05	Identify author's message.	3
2.3.06	Explain outcomes using the following literary elements: problem/conflict, resolution.	3
2.3.07	Determine what characters are like by what they say or do by how the author or illustrator portrays them.	3
2.3.08	Determine character motivation.	3
2.3.09	Identify and compare characters' attributes in a story.	2
2B	**Variety of Literary Works**	**2**
2.3.10	Identify the following forms and genres: story, poem, fairy tale, tall tale, fable, nonfiction, and essay	2
Level	**Description**	**DOK**
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**2**
1.4.01	Determine the meaning of an unknown word using knowledge of common prefixes, suffixes, and word roots (see Roots and Affixes list) (e.g., using knowledge of the suffix –ish to determine the meaning of foolish).	2
1.4.02	Identify the word base of familiar words with affixes from Roots and Affixes list (e.g., precooked, realistic).	1
1.4.03	Determine the meaning of unknown compound words by applying knowledge of known individual words (e.g., watchman).	2
1.4.04	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.4.05	Use synonyms to define words	1
1.4.06	Use antonyms to define words.	1
1.4.07	Determine the word that best fits a given context.	2
1.4.08	Determine the correct use of homonyms using context clues.	2
1B, 1C	**READING STRATEGIES**	**2**
1.4.09	Activate prior knowledge to establish purpose for reading a given passage.	2
1.4.10	Identify probable outcomes or actions.	2
1.4.11	Use information in charts, graphs, and diagrams to help understand a reading passage.	2
1.4.12	Determine the purpose of features of informational text (e.g., bold print, key words, graphics).	2
1.4.13	Distinguish between minor and significant details in a passage.	2
1.4.14	Identify explicit and implicit main ideas.	2
1.4.15	Demonstrate understanding by using graphic organizers (e.g., Venn Diagrams and semantic webs) to represent passage content.	2
1.4.16	Make comparisons across reading passages (e.g., topics, story elements).	3
1C	**READING COMPREHENSION**	**2**
1.4.17	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	2
1.4.18	Distinguish the main ideas and supporting details in informational text.	2
1.4.19	Identify the main idea of a selection when it is not explicitly stated (e.g., by choosing the best alternative title from among several suggested for a given passage).	2
1.4.20	Summarize a story passage or text, or identify the best summary.	2
1.4.21	Identify or summarize the order of events in a story.	2
1.4.22	Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge.	3

Level	Description	DOK
1.4.23	Differentiate between fact and opinion.	2
1.4.24	Draw conclusions from information in maps, charts, graphs, and diagrams.	2
1.4.25	Determine whether a set of complex instructions or procedures is complete and, therefore, clear (e.g., if incomplete, identify what is missing).	2
1.4.26	Identify the author's purpose for writing a fiction or nonfiction text (e.g., to entertain, to inform, to persuade).	2
Goal 2	**Literature**	**2**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**3**
2.4.01	Differentiate among the literary elements of plot, character, setting, and theme.	2
2.4.02	Distinguish between main and supporting characters.	2
2.4.03	Identify events important to the development of the plot and subplot.	2
2.4.04	Identify setting, including how setting affects the plot.	2
2.4.05	Identify author's message.	3
2.4.06	Compare stories to personal experience, prior knowledge, or other stories.	3
2.4.07	Explain outcomes using the following literary elements: rising action, climax.	3
2.4.08	Determine what characters are like by what they say or do by how the author or illustrator portrays them.	3
2.4.09	Determine character motivation.	3
2.4.10	Determine the causes of characters' actions (other than motivation).	3
2.4.11	Identify and interpret figurative language (e.g., metaphor, simile, idiom).	2
2.4.12	Identify examples of poetic devices using sound, (e.g., alliteration, onomatopoeia, rhyme scheme, consonance)	1
2B	**Variety of Literary Works**	**2**
2.4.13	Identify the following forms and genres: myth or legend, story, folk tale, nonfiction, poem.	2
2.4.14	Identify whether a given nonfiction passage is narrative, persuasive, or expository.	2
Level	**Description**	**DOK**
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**2**
1.5.01	Determine the meaning of an unknown word using knowledge of prefixes, suffixes, and word roots (see Roots and Affixes list) (e.g., using knowledge of the suffix –ian to determine the meaning of guardian).	2
1.5.02	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.5.03	Use synonyms to define words.	1
1.5.04	Use antonyms to define words.	1
1.5.05	Determine the meaning of a word in context when the word has multiple meanings.	2
1.5.06	Determine the correct use of homonyms, idioms, and analogies using context clues.	2
1B, 1C	**Reading Strategies**	**2**
1.5.07	Establish and adjust purposes for reading.	2
1.5.08	Identify probable outcomes or actions.	2
1.5.09	Use information in tables, maps, and charts to help understand a reading passage.	2
1.5.10	Determine the purpose of features of informational text (e.g., bold print, organization of content, key words, graphics).	2
1.5.11	Distinguish between minor and significant details in a passage.	2
1.5.12	Identify explicit and implicit main ideas.	2
1.5.13	Demonstrate understanding by using sophisticated graphic organizers (e.g., cause-effect organizers, semantic webs) to represent passage content.	3
1.5.14	Make comparisons across reading passages (e.g., topics, story elements, themes).	3

Level	Description	DOK
1.5.15	Identify cause and effect organizational patterns in fiction.	2
1C	**READING COMPREHENSION**	**2**
1.5.16	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	2
1.5.17	Distinguish the main ideas and supporting details in any text.	2
1.5.18	Identify the main idea of a selection when it is not explicitly stated (e.g., by choosing the best alternative title from among several suggested for a given passage).	2
1.5.19	Summarize a story or nonfiction passage, or identify the best summary.	2
1.5.20	Identify or summarize the order of events in a story or nonfiction account.	2
1.5.21	Identify the causes of events in a story or nonfiction account.	2
1.5.22	Draw inferences, conclusions, or generalizations about text and support them with textual evidence and prior knowledge.	3
1.5.23	Differentiate between fact and opinion.	2
1.5.24	Draw conclusions from information in maps, charts, graphs, and diagrams.	2
1.5.25	Interpret an image based on information provided in a passage.	2
1.5.26	Determine whether a set of complex instructions or procedures is complete and, therefore, clear (e.g., if incomplete, identify what is missing).	2
1.5.27	Determine the author's purpose for writing a fiction or nonfiction text (e.g., to entertain, to inform, to persuade).	2
1.5.28	Determine how authors and illustrators express their ideas.	3
Goal 2	**Literature**	**2**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**2**
2.5.01	Differentiate among the literary elements of plot, character, setting, and theme.	2
2.5.02	Identify events important to the development of the plot and subplot.	2
2.5.03	Identify setting, including how setting affects the plot.	2
2.5.04	Identify the author's message or theme.	3
2.5.05	Compare stories to personal experience, prior knowledge, or other stories.	3
2.5.06	Interpret literary passages using the following elements of literary structure: rising action, and falling action/resolution.	3
2.5.07	Recognize points of view in narratives (e.g., first person).	2
2.5.08	Determine what characters are like by what they say or do by how the author or illustrator portrays them.	3
2.5.09	Determine character motivation.	3
2.5.10	Determine the causes of characters' actions (other than motivation).	3
2.5.11	Explain the relationship between main and supporting characters.	2
2.5.12	Identify and interpret figurative language (e.g., metaphor, alliteration, personification).	2
2.5.13	Identify examples of poetic devices using sound, such as alliteration, onomatopoeia, rhyme scheme, unrhymed verse.	1
2B	**Variety of Literary works**	**2**
2.5.14	Identify the following subcategories of genres: science fiction, historical fiction, myth or legend, drama, biography/autobiography, story, poem, fairy tale, folktale, fable, nonfiction, and essay.	2
2.5.15	Identify whether a given passage is narrative, persuasive, or expository.	2
Level	**Description**	**DOK**
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**2**
1.6.01	Determine the meaning of an unknown word or content-area vocabulary using knowledge of prefixes, suffixes, and word roots (see Roots and Affixes list).	2

Level	Description	DOK
1.6.02	Given words that are spelled alike, identify them as homonyms.	1
1.6.03	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.6.04	Determine the connotation of a word using word, sentence, and cross-sentence clues.	2
1.6.05	Use synonyms and antonyms to define words.	1
1.6.06	Determine the meaning of a word in context when the word has multiple meanings.	2
1B, 1C	**Reading Strategies**	**2**
1.6.07	Make and verify predictions based on prior knowledge and text.	2
1.6.08	Identify probable outcomes or actions.	2
1.6.09	Identify the structure and format of text, including graphics and headers (e.g., persuasive, informational).	1
1.6.10	Use information in charts, graphs, diagrams, maps, and tables to help understand a reading passage.	2
1.6.11	Locate and interpret information found in headings, graphs, and charts.	2
1.6.12	Identify explicit and implicit main ideas.	2
1.6.13	Identify cause and effect organizational patterns in fiction and nonfiction.	2
1C	**READING COMPREHENSION**	**2**
1.6.14	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	2
1.6.15	Distinguish the main ideas and supporting details in any text.	2
1.6.16	Summarize a story or nonfiction passage, or identify the best summary.	2
1.6.17	Identify or summarize the order of events in a story or nonfiction account.	2
1.6.18	Identify the causes of events in a story or nonfiction account.	2
1.6.19	Draw inferences, conclusions, or generalizations about text and support them with textual evidence and prior knowledge.	3
1.6.20	Distinguish between fact and opinion.	2
1.6.21	Interpret an image based on information provided in a passage.	2
1.6.22	Determine whether a set of complex, multiple-step instructions or procedures are clear (e.g., if not clear, edit to clarify).	2
1.6.23	Explain how the author's choice of words appeals to the senses, creates imagery, suggests mood, and sets tone.	3
1.6.24	Determine how illustrators use art to express their ideas.	3
Goal 2	**Literature**	**3**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**3**
2.6.01	Identify elements of fiction: plot, character, setting, theme, character foils.	2
2.6.02	Explain how plot, setting, character, and theme contribute to the meaning of a literary selection.	3
2.6.03	Interpret literary passages using the following element of literary structure: exposition.	3
2.6.04	Identify the author's message or theme.	3
2.6.05	Compare stories to personal experience, prior knowledge, or other stories.	3
2.6.06	Recognize points of view in narratives (e.g., first person).	2
2.6.07	Determine what characters are like by what they say or do by how the author or illustrator portrays them.	3
2.6.08	Determine character motivation.	3
2.6.09	Compare or contrast the behavior of two characters.	3
2.6.10	Explain the relationship between main and supporting characters.	2
2.6.11	Identify and interpret figurative language or literary devices: (e.g., sensory detail, simile, rhyme, repetition, metaphors, alliteration, personification).	2

Level	Description	DOK
2.6.12	Explain how the literary devices (e.g., sensory detail, simile, rhyme, repetition, onomatopoeia, personification) contribute to the meaning of a literary selection.	3
2.6.13	Identify verbal irony.	3
2B	**Variety of Literary Works**	**2**
2.6.14	Identify the following subcategories of genres: science fiction, historical fiction, myth or legend, drama, biography/autobiography, story, poem, fairy tale, folktale, fable, nonfiction, and essay.	2
2.6.15	Identify whether a given passage is narrative, persuasive, or expository.	2
Level	Description	DOK
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**2**
1.7.01	Determine the meaning of an unknown word or content-area vocabulary using knowledge of prefixes, suffixes, and word roots (see Roots and Affixes list).	2
1.7.02	Use etymologies to determine the meanings of words.	2
1.7.03	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.7.04	Determine the connotation of a word using word, sentence, and cross-sentence clues.	2
1.7.05	Use synonyms and antonyms to determine the implied meanings of words.	2
1.7.06	Determine the meaning of a word in context when the word has multiple meanings.	2
1B, 1C	**Reading Strategies**	**2**
1.7.07	Make and verify predictions based on prior knowledge and text.	2
1.7.08	Identify the structure and format of text, including graphics and headers (e.g., persuasive, informational, narrative).	1
1.7.09	Use information in charts, graphs, diagrams, maps, and tables to help understand a reading passage.	2
1.7.10	Locate and interpret information found in headings, graphs, and charts.	2
1.7.11	Compare the content and organization (e.g., themes, topics, text structure, story elements) of various selections.	3
1.7.12	Relate information in the passage to other readings on the same topic.	3
1.7.13	Identify cause and effect organizational patterns in fiction and nonfiction.	2
1.7.14	Identify compare and contrast organizational patterns in fiction and nonfiction.	2
1C	**READING COMPREHENSION**	**2**
1.7.15	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	3
1.7.16	Distinguish the main ideas and supporting details in any text.	2
1.7.17	Summarize a story or nonfiction passage, or identify the best summary.	2
1.7.18	Identify or summarize the order of events in a story or nonfiction account.	2
1.7.19	Identify the causes of events in a story or nonfiction account.	2
1.7.20	Draw inferences, conclusions, or generalizations about text, and support them with textual evidence and prior knowledge.	3
1.7.21	Differentiate between fact and opinion in a persuasive essay or excerpt.	2
1.7.22	Determine whether a set of technical, multiple-step instructions or procedures are clear (e.g., if not clear, edit to clarify).	2
1.7.23	Explain how the author's choice of words appeals to the senses, creates imagery, suggests mood, and sets tone.	3
1.7.24	Determine how illustrators use art to express their ideas.	3
Goal 2	**Literature**	**3**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**3**

Level	Description	DOK
2.7.01	Identify elements of fiction: character, theme, conflict, point of view, plot, setting, and flashback.	2
2.7.02	Explain how character, theme, conflict, and point of view contribute to the meaning of a literary selection.	3
2.7.03	Identify the author's message or theme.	3
2.7.04	Compare stories to personal experience, prior knowledge, or other stories.	3
2.7.05	Recognize points of view in narratives (e.g., first person).	2
2.7.06	Determine what characters are like by what they say or do or by how the author or illustrator portrays them.	3
2.7.07	Determine character motivation.	3
2.7.08	Compare or contrast the behavior of two characters.	3
2.7.09	Explain the relationship between main and supporting characters.	2
2.7.10	Identify literary devices: (e.g., alliteration, imagery, sensory detail, simile, rhyme, repetition, subtle metaphors, alliteration, personification).	2
2.7.11	Explain how the literary devices (e.g., alliteration, imagery, metaphor) contribute to the meaning of a literary selection.	3
2.7.12	Identify varieties of irony, including situational irony.	3
2B	**Variety of Literary Works**	**2**
2.7.13	Identify various subcategories of genres: science fiction, historical fiction, myth or legend, drama, biography/autobiography, story, poem, fairy tale, folktale, fable, nonfiction, and essay.	2
2.7.14	Identify whether a given passage is narrative, persuasive, or expository.	2
Level	Description	DOK
Goal 1	**Reading**	**2**
1A	**Vocabulary Development**	**2**
1.8.01	Determine the meaning of an unknown word or content-area vocabulary using knowledge of prefixes, suffixes, and word roots (see Roots and Affixes list).	2
1.8.02	Use etymologies to determine the meanings of words.	2
1.8.03	Determine the meaning of an unknown word using word, sentence, and cross-sentence clues.	2
1.8.04	Determine the connotation of a word using word, sentence, and cross-sentence clues.	2
1.8.05	Determine the meaning of a word in context when the word has multiple meanings.	2
1B, 1C	**Reading Strategies**	**2**
1.8.06	Make and verify predictions based on prior knowledge and understanding of genres.	2
1.8.07	Clarify an understanding of text by creating outlines, notes, or other visual representations.	2
1.8.08	Use information in charts, graphs, diagrams, maps, and tables to help understand a reading passage.	2
1.8.09	Compare the content and organization (e.g., themes, topics, text structure, story elements) of various selections.	3
1.8.10	Relate information in the passage to other readings.	3
1.8.11	Identify cause and effect organizational patterns in fiction and nonfiction.	2
1.8.12	Identify compare and contrast organizational patterns in fiction and nonfiction.	2
1.8.13	Identify proposition and support organizational patterns in fiction and nonfiction.	2
1C	**READING COMPREHENSION**	**2**
1.8.14	Determine the answer to a literal or simple inference question regarding the meaning of a passage.	2
1.8.15	Compare an original text to a summary to determine whether the summary accurately captures the key ideas.	2

Level	Description	DOK
1.8.16	Summarize a story or nonfiction passage, or identify the best summary.	2
1.8.17	Identify the outcome or conclusion of a story or nonfiction account, based on previous occurrences or events.	2
1.8.18	Identify the causes of events in a story or nonfiction account.	2
1.8.19	Draw inferences, conclusions, or generalizations about text and support them with textual evidence and prior knowledge.	3
1.8.20	Differentiate between conclusions that are based on fact and those that are based on opinion.	2
1.8.21	Explain information presented in a nonfiction passage using evidence from the passage.	3
1.8.22	Use information from a variety of sources to explain a situation or decision or to solve a problem.	3
1.8.23	Determine whether a set of technical, multiple-step instructions or procedures are clear (e.g., if not clear, edit to clarify).	2
1.8.24	Determine the author's purpose as represented by the choice of genre, and literary devices employed.	3
1.8.25	Determine why some points are illustrated.	2
Goal 2	**Literature**	**3**
2A	**LITERARY ELEMENTS AND TECHNIQUES**	**3**
2.8.01	Identify elements of fiction: theme, rising action, falling action, conflict, point of view, resolution, and flashback.	2
2.8.02	Explain how theme, rising action, falling action, conflict, point of view, and resolution contribute to the meaning and a reader's interpretation of a literary selection.	3
2.8.03	Identify the author's message or theme.	3
2.8.04	Compare stories to personal experience, prior knowledge, or other stories	3
2.8.05	Recognize points of view in narratives. (e.g., first person).	2
2.8.06	Determine what characters are like by their words, thoughts, and actions, as well as how other characters react to them.	3
2.8.07	Determine character motivation.	3
2.8.08	Identify conflict or contradiction within a character or a character's behavior.	3
2.8.09	Explain the relationship between main and supporting characters.	2
2.8.10	Identify literary devices: (e.g., figurative language, hyperbole, understatement, symbols, dialogue).	1
2.8.11	Explain how the literary devices (e.g., imagery, metaphor, figurative language dialogue) contribute to the meaning of a literary selection.	3
2.8.12	Identify varieties of irony, including dramatic irony.	3
2B	**Variety of Literary Works**	**2**
2.8.13	Identify various subcategories of genres: poetry, drama (comedy and tragedy), science fiction, historical fiction, myth or legend, drama, biography/autobiography, story, poem, fairy tale, folktale, fable, nonfiction, and essay	2

Data Analysis Tables

Brief Explanation of Data in the Alignment Tables by Column

Table 1

Standards #	Number of standards plus one for a generic standard for each standard.
Standards #	Average number of standards for reviewers. If the number is greater than the actual number in the standard, then at least one reviewer coded an item for the standard/standard but did not find any standard in the standard that corresponded to the item.
Level	The Depth-of-Knowledge level coded by the reviewers for the standards for each standard.
# of standards by Level	The number of standards coded at each level
% w/in std by Level	The percent of standards coded at each level
Hits Mean & SD	Mean and standard deviation number of items reviewers coded as corresponding to standard. The total is the total number of coded hits.
Cat. Conc. Accept.	"Yes" indicates that the standard met the acceptable level for criterion. "Yes" if mean is six or more. "Weak" if mean is five to six. "No" if mean is less than five.

Table 2

	First five columns repeat columns from Table 1.
Level of Item w.r.t. Stand	Mean percent and standard deviation of items coded as "under" the Depth-of-Knowledge level of the corresponding standard, as "at" (the same) the Depth-of-Knowledge level of the corresponding standard, and as "above" the Depth-of-Knowledge level of the corresponding standard.
Depth-of-Know. Consistency Accept.	"Yes" indicates that 50% or more of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards. "Weak" indicates that 40% to 50% of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards. "No" indicates that less than 40% items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

Table 3

First five columns repeat columns from Table 1 and 2.

Range of Stds

\# Stds Hit   Average number and standard deviation of the standards hit coded by reviewers.

% of Total   Average percent and standard deviation of the total standards that had at least one item coded.

Range of

Know.Accept.   "Yes" indicates that 50% or more of the standards had at least one coded standard.

                "Weak" indicates that 40% to 50% of the standards had at least one coded standard.

                "No" indicates that 40% or less of the standards had at least one coded standard.

Balance Index
% Hits in Std

/Ttl Hits   Average and standard deviation of the percent of the items hit for a standard of total number of hits (see total under the Hits column).

Index   Average and standard deviation of the Balance Index.

Note: BALANCE INDEX $\quad 1 - (\sum_{k=1} \left| 1/(O) - I_{(k)}/(H) \right|)/2$

Where O   = Total number of standards hit for the standard

$I_{(k)}$ = Number of items hit corresponding to standard (k)

H   = Total number of items hit for the standard

Bal. of Rep

Accept.   "Yes" indicates that the Balance Index was .7 or above (items evenly distributed among standards).

                "Weak" indicates that the Balance Index was .6 to .7 (a high percentage of items coded as corresponding to two or three standards).

                "No" indicates that the Balance Index was .6 or less (a high percentage of items coded as corresponding to one standard.)

Categorical Concurrence Between Standards and Assessment for Grade 3

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 - Reading	3	28	1 2 3	6 20 2	21 71 7	42.2	2.56	YES
Goal 2 - Literature	2	10.8	2 3	6 4	60 40	12.6	1.74	YES
Total	5	38.8	1 2 3	6 26 6	15 68 15	54.8	1.6	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 3

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	3	28	42.2	2.56	18	33	77	36	4	19	YES
Goal 2 - Literature	2	10.8	12.6	1.74	44	46	56	46	0	0	YES
Total	5	38.8	54.8	1.6	26	39	71	40	3	16	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 3

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	3	28	42.2	2.56	13.6	0.8	49	3	WEAK	77	3	0.60	0.04	WEAK
Goal 2 - Literature	2	10.8	12.6	1.74	6	0.63	56	6	YES	23	3	0.70	0.03	YES
Total	5	38.8	54.8	1.6	9.8	3.87	52	6		50	27	0.65	0.06	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 3

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	WEAK	WEAK
Goal 2 - Literature	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 3 Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	1	1	1	1	1
2	1	2	1	1	1
3	2	2	1	2	2
4	2	2	1	2	2
5	1	1	1	1	1
6	1	1	1	1	1
7	2	1	2	2	1
8	2	2	2	2	2
9	2	2	2	2	2
10	2	2	3	3	2
11	1	2	1	1	1
12	2	2	2	2	2
13	2	1	2	2	2
14	2	3	3	3	2
15	2	2	3	3	2
16	2	1	2	1	1
17	2	2	2	1	1
18	2	2	2	2	2
19	1	2	2	1	1
20	2	2	2	2	2
21	2	2	2	2	1
22	1	1	2	2	1
23	2	2	2	2	2
24	2	2	2	2	2
25	2	2	2	2	2
26	2	2	2	2	1
27	2	2	2	3	2
28	1	1	2	1	1
29	1	1	2	1	1
30	2	2	2	2	3
31	2	1	3	2	2
32	2	2	2	2	1
33	1	1	2	2	1
34	2	1	2	2	1
35	1	1	1	1	1
36	2	2	2	2	2
37	3	2	3	2	3
38	2	2	2	2	2
39	1	1	2	1	1
40	2	2	3	2	2
41	2	2	2	2	2
42	2	2	2	2	2
43	1	1	2	2	1
44	1	1	1	1	1
45	2	2	2	2	3
46	2	2	2	2	2
47	3	3	3	3	3
48	1	1	2	1	1
49	2	2	2	3	2
50	2	1	2	1	2
51	1	1	1	1	1

Intraclass Correlation: 0.8796
Pairwise Comparison: 0.7

DOK Levels and Objectives Coded by Each Reviewer for Grade 3

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	1.3.20		1	1.3.20		1	1.3.13		1	1.3.20		1	1.3.20	
2	1	1.3.20		2	1.3.20		1	1.3.20		1	1.3.20		1	1.3.18	
3	2	1.3.28		2	1.3.28		1	1.3.20		2	1.3.28		2	1.3.20	
4	2	1.3.20		2	1.3.20		1	1.3.20		2	1.3.20		2	1.3.17	
5	1	1.3.20		1	1.3.20		1	1.3.21		1	1.3.20		1	1.3.20	
6	1	1.3.20		1	1.3.20		1	1.3.20		1	1.3.20		1	1.3.20	
7	2	1.3.20		1	1.3.20		2	1.3.20		2	1.3.20		1	1.3.20	
8	2	1.3.25		2	1.3.25		2	1.3.25		2	1.3.25		2	1.3.25	
9	2	2.3.05		2	1.3.28		2	1.3.28		2	1.3.28		2	1.3.28	
10	2	1.3.12		2	1.3.13		3	1.3.24		3	1.3.24		2	1.3.24	
11	1	1.3.20		2	1.3.20		1	1.3.20		1	1.3.20		1	2.3.08	
12	2	1.3.13		2	1.3.13		2	1.3.17		2	1.3.13		2	2.3.07	
13	2	1.3.23		1	1.3.23		2	1.3.23		2	1.3.23		2	1.3.23	
14	2	2.3.05		3	2.3.05		3	1.3.24		3	2.3.05		2	2.3.05	
15	2	1.3.24		2	1.3.24		3	1.3.24		3	1.3.24		2	2.3.03	
16	2	1.3.20		1	1.3.20		2	1.3.20		1	1.3.20		1	1.3.20	
17	2	1.3.12		2	2.3.04		2	1.3.20		1	1.3.20		1	1.3.20	
18	2	1.3.17		2	1.3.17		2	1.3.17		2	1.3.17		2	1.3.17	
19	1	1.3.20		2	1.3.20		2	1.3.21		1	1.3.20		1	1.3.20	
20	2	1.3.13		2	1.3.13		2	1.3.13		2	1.3.13		2	1.3.13	
21	2	1.3.20		2	1.3.20		2	1.3.20		2	1.3.20		1	1.3.20	
22	1	2A		1	2.3.10		2	2A		2	2A		1	2A	
23	2	1.3.08		2	1.3.07		2	1.3.08		2	1.3.08		2	1.3.08	
24	2	1.3.20		2	1.3.13		2	1.3.20		2	1.3.20		2	1.3.20	
25	2	1.3.24		2	1.3.28		2	1.3.22		2	1.3.22		2	1.3.22	
26	2	1.3.20		2	1.3.20		2	1.3.20		2	1.3.20		1	1.3.20	
27	2	1.3.22		2	1.3.22		2	1.3.22		3	1.3.22		2	1.3.22	
28	1	1.3.20		1	1.3.20		2	1.3.23		1	1.3.20		1	1.3.20	
29	1	1.3.20		1	1.3.20		2	1.3.20		1	1.3.20		1	1.3.20	
30	2	1.3.12		2	1.3.12		2	1.3.12		2	1.3.12		3	1.3.12	
31	2	1.3.20		1	1.3.20		3	2.3.07		2	2.3.07		2	2.3.07	
32	2	1.3.07		2	1.3.07		2	1.3.07		2	2.3.03		1	1.3.07	
33	1	1.3.23		1	1.3.23		2	1.3.23		2	1.3.23		1	1.3.23	
34	2	1.3.20		1	1.3.20		2	1.3.20		2	1.3.20		1	2.3.07	
35	1	1.3.20		1	1.3.20		1	2.3.07		1	1.3.20		1	1.3.20	
36	2	1.3.08		2	1.3.08		2	1.3.09		2	1.3.08		2	1.3.08	
37	3	2.3.08		2	2.3.08		3	2.3.08		2	2.3.08		3	2.3.08	
38	2	1.3.07		2	1.3.07		2	1.3.08		2	1.3.07		2	1.3.07	
39	1	1.3.20		1	1.3.20		2	1.3.20		1	1.3.20		1	1.3.20	
40	2	2.3.07		2	2.3.07		3	2.3.08		2	2.3.08		2	2.3.07	
41	2	1.3.08		2	1.3.08		2	1.3.07		2	1.3.08		2	1.3.08	
42	2	2.3.06		2	1.3.20		2	2.3.06		2	2.3.06		2	2.3.08	

DOK Levels and Objectives Coded by Each Reviewer for Grade 3

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	1	1.3.03		1	1.3.01		2	1.3.01		2	1.3.01		1	1.3.01	
44	1	2.3.06		1	2.3.06		1	2.3.06		1	2.3.07		1	2.3.08	
45	2	1.3.28		2	1.3.28		2	1.3.28		2	1.3.28		3	1.3.28	
46	2	2.3.10		2	2.3.10		2	2.3.10		2	1.3.27		2	2.3.10	
47	3	2.3.07	1.3.24	3	2.3.07		3	2.3.07		3	2.3.07		3	2.3.06	
48	1	1.3.20		1	1.3.27		2	1.3.20		1	1.3.20		1	1.3.20	
49	2	1.3.27		2	1.3.27		2	1.3.27		3	1.3.24		2	1.3.27	
50	2	1.3.27		1	1.3.20		2	1.3.27		1	1.3.20		2	1.3.20	
51	1	1.3.20		1	1.3.20		1	1.3.20		1	1.3.20		1	1.3.20	

Objective Pairwise Comparison: 0.6583
Standard Pairwise Comparison: 0.8949

Objectives Coded to Each Item by Reviewers for Grade 3

Low		Medium		High
5		5.372549		24

1	1.3.13	1.3.20	1.3.20	1.3.20	1.3.20				
2	1.3.18	1.3.20	1.3.20	1.3.20	1.3.20				
3	1.3.20	1.3.20	1.3.28	1.3.28	1.3.28				
4	1.3.17	1.3.20	1.3.20	1.3.20	1.3.20				
5	1.3.20	1.3.20	1.3.20	1.3.20	1.3.21				
6	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
7	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
8	1.3.25	1.3.25	1.3.25	1.3.25	1.3.25				
9	1.3.28	1.3.28	1.3.28	1.3.28	2.3.05				
10	1.3.12	1.3.13	1.3.24	1.3.24	1.3.24				
11	1.3.20	1.3.20	1.3.20	1.3.20	2.3.08				
12	1.3.13	1.3.13	1.3.13	1.3.17	2.3.07				
13	1.3.23	1.3.23	1.3.23	1.3.23	1.3.23				
14	1.3.24	2.3.05	2.3.05	2.3.05	2.3.05				
15	1.3.24	1.3.24	1.3.24	1.3.24	2.3.03				
16	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
17	1.3.12	1.3.20	1.3.20	1.3.20	2.3.04				
18	1.3.17	1.3.17	1.3.17	1.3.17	1.3.17				
19	1.3.20	1.3.20	1.3.20	1.3.20	1.3.21				
20	1.3.13	1.3.13	1.3.13	1.3.13	1.3.13				
21	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
22	2A	2A	2A	2A	2.3.10				
23	1.3.07	1.3.08	1.3.08	1.3.08	1.3.08				
24	1.3.13	1.3.20	1.3.20	1.3.20	1.3.20				
25	1.3.22	1.3.22	1.3.22	1.3.24	1.3.28				
26	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
27	1.3.22	1.3.22	1.3.22	1.3.22	1.3.22				
28	1.3.20	1.3.20	1.3.20	1.3.20	1.3.23				
29	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
30	1.3.12	1.3.12	1.3.12	1.3.12	1.3.12				
31	1.3.20	1.3.20	2.3.07	2.3.07	2.3.07				
32	1.3.07	1.3.07	1.3.07	1.3.07	2.3.03				
33	1.3.23	1.3.23	1.3.23	1.3.23	1.3.23				
34	1.3.20	1.3.20	1.3.20	1.3.20	2.3.07				
35	1.3.20	1.3.20	1.3.20	1.3.20	2.3.07				
36	1.3.08	1.3.08	1.3.08	1.3.08	1.3.09				
37	2.3.08	2.3.08	2.3.08	2.3.08	2.3.08				
38	1.3.07	1.3.07	1.3.07	1.3.07	1.3.08				
39	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				
40	2.3.07	2.3.07	2.3.07	2.3.08	2.3.08				
41	1.3.07	1.3.08	1.3.08	1.3.08	1.3.08				
42	1.3.20	2.3.06	2.3.06	2.3.06	2.3.08				
43	1.3.01	1.3.01	1.3.01	1.3.01	1.3.03				
44	2.3.06	2.3.06	2.3.06	2.3.07	2.3.08				
45	1.3.28	1.3.28	1.3.28	1.3.28	1.3.28				
46	1.3.27	2.3.10	2.3.10	2.3.10	2.3.10				
47	1.3.24	1.3.24	1.3.24	1.3.24	2.3.06	2.3.06	2.3.06	2.3.06	2.3.07	2.3.07
	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07	
	2.3.07	2.3.07	2.3.07	2.3.07	2.3.07				
48	1.3.20	1.3.20	1.3.20	1.3.20	1.3.27				
49	1.3.24	1.3.27	1.3.27	1.3.27	1.3.27				
50	1.3.20	1.3.20	1.3.20	1.3.27	1.3.27				
51	1.3.20	1.3.20	1.3.20	1.3.20	1.3.20				

Items Coded by Reviewers to Each Objective for Grade 3

Low		Medium		High
0		5.956522		95

Goal 1																				
1A																				
1.3.01	43	43	43	43																
1.3.02																				
1.3.03	43																			
1.3.04																				
1.3.05																				
1.3.06																				
1.3.07	23	32	32	32	32	38	38	38	38	41										
1.3.08	23	23	23	23	36	36	36	36	38	41	41	41	41							
1.3.09	36																			
1.3.10																				
1.3.11																				
1B, 1C																				
1.3.12	10	17	30	30	30	30	30													
1.3.13	1	10	12	12	12	20	20	20	20	20	24									
1.3.14																				
1.3.15																				
1.3.16																				
1.3.17	4	12	18	18	18	18	18													
1.3.18	2																			
1.3.19																				
1C																				
1.3.20	1	1	1	1	2	2	2	2	3	3	4	4	4	4	5	5	5	5	6	6
	6	6	6	7	7	7	7	7	11	11	11	11	16	16	16	16	16	17	17	
	17	19	19	19	19	21	21	21	21	21	24	24	24	24	26	26	26	26	26	
	28	28	28	28	29	29	29	29	29	31	31	34	34	34	34	35	35	35	35	
	39	39	39	39	39	42	48	48	48	48	50	50	50	51	51	51	51	51		
1.3.21	5	19																		
1.3.22	25	25	25	27	27	27	27	27												
1.3.23	13	13	13	13	13	28	33	33	33	33	33									
1.3.24	10	10	10	14	15	15	15	15	25	47	47	47	47	49						
1.3.25	8	8	8	8	8															
1.3.26																				
1.3.27	46	48	49	49	49	49	50	50												
1.3.28	3	3	3	9	9	9	9	25	45	45	45	45	45							
Goal 2																				
2A	22	22	22	22																
2.3.01																				
2.3.02																				
2.3.03	15	32																		
2.3.04	17																			
2.3.05	9	14	14	14	14															
2.3.06	42	42	42	44	44	44	47	47	47	47										
2.3.07	12	31	31	31	34	35	40	40	40	44	47	47	47	47	47	47	47	47	47	47
	47	47	47	47	47	47														
2.3.08	11	37	37	37	37	37	40	40	42	44										
2.3.09																				
2B																				
2.3.10	22	46	46	46	46															

Number of Reviewers Coding an Item by Objective for Grade 3
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 1												
1A												
1.3.01	43:4											
1.3.02												
1.3.03	43:1											
1.3.04												
1.3.05												
1.3.06												
1.3.07	23:1	32:4	38:4	41:1								
1.3.08	23:4	36:4	38:1	41:4								
1.3.09	36:1											
1.3.10												
1.3.11												
1B, 1C												
1.3.12	10:1	17:1	30:5									
1.3.13	1:1	10:1	12:3	20:5	24:1							
1.3.14												
1.3.15												
1.3.16												
1.3.17	4:1	12:1	18:5									
1.3.18	2:1											
1.3.19												
1C												
1.3.20	1:4	2:4	3:2	4:4	5:4	6:5	7:5	11:4	16:5	17:3	19:4	21:5	24:4
	26:5	28:4	29:5	31:2	34:4	35:4	39:5	42:1	48:4	50:3	51:5		
1.3.21	5:1	19:1										
1.3.22	25:3	27:5										
1.3.23	13:5	28:1	33:5									
1.3.24	10:3	14:1	15:4	25:1	47:1	49:1						
1.3.25	8:5											
1.3.26												
1.3.27	46:1	48:1	49:4	50:2								
1.3.28	3:3	9:4	25:1	45:5								
Goal 2												
2A	22:4											
2.3.01												
2.3.02												
2.3.03	15:1	32:1										
2.3.04	17:1											
2.3.05	9:1	14:4										
2.3.06	42:3	44:3	47:1									
2.3.07	12:1	31:3	34:1	35:1	40:3	44:1	47:4					
2.3.08	11:1	37:5	40:2	42:1	44:1							
2.3.09												
2B												
2.3.10	22:1	46:4										

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Number of Reviewers Coding an Objective by Item for Grade 3
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item			
1	1.3.13:1	1.3.20:4	
2	1.3.18:1	1.3.20:4	
3	1.3.20:2	1.3.28:3	
4	1.3.17:1	1.3.20:4	
5	1.3.20:4	1.3.21:1	
6	1.3.20:5		
7	1.3.20:5		
8	1.3.25:5		
9	1.3.28:4	2.3.05:1	
10	1.3.12:1	1.3.13:1	1.3.24:3
11	1.3.20:4	2.3.08:1	
12	1.3.13:3	1.3.17:1	2.3.07:1
13	1.3.23:5		
14	1.3.24:1	2.3.05:4	
15	1.3.24:4	2.3.03:1	
16	1.3.20:5		
17	1.3.12:1	1.3.20:3	2.3.04:1
18	1.3.17:5		
19	1.3.20:4	1.3.21:1	
20	1.3.13:5		
21	1.3.20:5		
22	2A:4	2.3.10:1	
23	1.3.07:1	1.3.08:4	
24	1.3.13:1	1.3.20:4	
25	1.3.22:3	1.3.24:1	1.3.28:1
26	1.3.20:5		
27	1.3.22:5		
28	1.3.20:4	1.3.23:1	
29	1.3.20:5		
30	1.3.12:5		
31	1.3.20:2	2.3.07:3	
32	1.3.07:4	2.3.03:1	
33	1.3.23:5		
34	1.3.20:4	2.3.07:1	
35	1.3.20:4	2.3.07:1	
36	1.3.08:4	1.3.09:1	
37	2.3.08:5		
38	1.3.07:4	1.3.08:1	
39	1.3.20:5		
40	2.3.07:3	2.3.08:2	
41	1.3.07:1	1.3.08:4	
42	1.3.20:1	2.3.06:3	2.3.08:1
43	1.3.01:4	1.3.03:1	
44	2.3.06:3	2.3.07:1	2.3.08:1
45	1.3.28:5		
46	1.3.27:1	2.3.10:4	
47	1.3.24:1	2.3.06:1	2.3.07:4
48	1.3.20:4	1.3.27:1	
49	1.3.24:1	1.3.27:4	
50	1.3.20:3	1.3.27:2	
51	1.3.20:5		

Assessment Item DOK vs. Consensus DOK for Grade 3
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:													
1A [1]:													
1.3.01 [2]:	43:4 [1.5]												
1.3.02 [1]:													
1.3.03 [1]:	43:1 [1]												
1.3.04 [1]:													
1.3.05 [1]:													
1.3.06 [2]:													
1.3.07 [2]:	23:1 [2]	32:4 [1.75]	38:4 [2]	41:1 [2]									
1.3.08 [2]:	23:4 [2]	36:4 [2]	38:1 [2]	41:4 [2]									
1.3.09 [1]:	36:1 [2]												
1.3.10 [1]:													
1.3.11 [2]:													
1B, 1C [2]:													
1.3.12 [2]:	10:1 [2]	17:1 [2]	30:5 [2.2]										
1.3.13 [2]:	1:1 [1]	10:1 [2]	12:3 [2]	20:5 [2]	24:1 [2]								
1.3.14 [2]:													
1.3.15 [2]:													
1.3.16 [2]:													
1.3.17 [2]:	4:1 [2]	12:1 [2]	18:5 [2]										
1.3.18 [2]:	2:1 [1]												
1.3.19 [3]:													
1C [2]:													
1.3.20 [2]:	1:4 [1]	2:4 [1.25]	3:2 [1.5]	4:4 [1.75]	5:4 [1]	6:5 [1]	7:5 [1.6]	11:4 [1.25]	16:5 [1.4]	17:3 [1.33]	19:4 [1.25]	21:5 [1.8]	24:4 [2]
	26:5 [1.8]	28:4 [1]	29:5 [1.2]	31:2 [1.5]	34:4 [1.75]	35:4 [1]	39:5 [1.2]	42:1 [2]	48:4 [1.25]	50:3 [1.33]	51:5 [1]		
1.3.21 [2]:	5:1 [1]	19:1 [2]											
1.3.22 [2]:	25:3 [2]	27:5 [2.2]											

1.3.23 [2]:	13:5 [1.8]	28:1 [2]	33:5 [1.4]			
1.3.24 [3]:	10:3 [2.67]	14:1 [3]	15:4 [2.5]	25:1 [2]	47:1 [3]	49:1 [3]
1.3.25 [2]:	8:5 [2]					
1.3.26 [2]:						
1.3.27 [2]:	46:1 [2]	48:1 [1]	49:4 [2]	50:2 [2]		
1.3.28 [2]:	3:3 [2]	9:4 [2]	25:1 [2]	45:5 [2.2]		
Goal 2 [2]:						
2A [2]:	22:4 [1.5]					
2.3.01 [2]:						
2.3.02 [2]:						
2.3.03 [2]:	15:1 [2]	32:1 [2]				
2.3.04 [2]:	17:1 [2]					
2.3.05 [3]:	9:1 [2]	14:4 [2.5]				
2.3.06 [3]:	42:3 [2]	44:3 [1]	47:1 [3]			
2.3.07 [3]:	12:1 [2]	31:3 [2.33]	34:1 [1]	35:1 [1]	40:3 [2]	44:1 [1]	47:4 [3]
2.3.08 [3]:	11:1 [1]	37:5 [2.6]	40:2 [2.5]	42:1 [2]	44:1 [1]	
2.3.09 [2]:						
2B [2]:						
2.3.10 [2]:	22:1 [1]	46:4 [2]				

Categorical Concurrence Between Standards and Assessment for Grade 4

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 – Reading	3	27	1	3	11	42	2.68	YES
			2	21	80			
			3	2	7			
Goal 2 - Literature	2	14	1	1	7	13.6	2.8	YES
			2	7	50			
			3	6	42			
Total	5	41	1	4	10	55.6	1.96	
			2	28	70			
			3	8	20			

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 4

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	3	27	42	2.68	15	27	82	30	4	17	YES
Goal 2 - Literature	2	14	13.6	2.8	55	46	31	42	15	34	WEAK
Total	5	41	55.6	1.96	28	39	65	42	7	24	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 4

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	3	27	42	2.68	10.4	0.49	39	2	NO	76	5	0.57	0.03	NO
Goal 2 - Literature	2	14	13.6	2.8	5	0.63	36	5	NO	24	5	0.82	0.07	YES
Total	5	41	55.6	1.96	7.7	2.76	37	4		50	26	0.69	0.14	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 4

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	NO	NO
Goal 2 - Literature	YES	WEAK	NO	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 4
Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	2	2	2	2	2
2	2	2	2	2	2
3	2	2	2	2	2
4	2	2	2	2	2
5	2	2	2	2	2
6	2	2	2	2	1
7	2	2	2	2	2
8	2	2	2	2	2
9	2	2	2	2	2
10	1	1	2	2	1
11	2	2	2	3	2
12	2	2	2	3	2
13	1	2	2	1	1
14	1	1	2	1	1
15	1	1	2	2	1
16	1	2	2	2	1
17	2	2	2	1	2
18	2	2	2	2	2
19	2	2	2	2	2
20	2	2	2	2	2
21	2	2	2	3	2
22	1	1	2	1	1
23	2	2	2	2	2
24	1	1	2	1	1
25	3	2	2	3	2
26	2	2	2	3	2
27	2	2	2	3	2
28	2	2	2	3	2
29	2	2	2	3	2
30	2	2	2	3	2
31	2	2	2	1	1
32	2	2	2	2	2
33	1	1	2	1	1
34	1	2	2	1	1
35	1	2	2	2	1
36	2	2	2	2	2
37	2	1	2	1	2
38	2	1	2	1	1
39	2	2	2	2	2
40	1	2	3	2	1
41	2	2	2	2	1
42	2	2	2	2	2
43	2	2	2	2	1
44	2	2	2	2	2
45	2	2	2	2	3
46	3	3	2	3	3
47	3	3	3	3	3
48	2	2	2	2	2
49	2	2	2	3	2
50	1	1	2	1	1
51	2	2	2	1	2

Intraclass Correlation: 0.8111
Pairwise Comparison: 0.702

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17	
2	2	1.4.04		2	1.4.04		2	1.4.04		2	1.4.04		2	1.4.04	
3	2	1.4.10		2	1.4.10		2	1.4.10		2	1.4.10		2	1.4.17	
4	2	1.4.21		2	1.4.21		2	1.4.21		2	1.4.21		2	1.4.21	
5	2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17	
6	2	2.4.11		2	1.4.17		2	1.4.17		2	2.4.11		1	1.4.17	
7	2	2.4.11		2	2.4.11		2	1.4.17		2	2.4.11		2	2.4.11	
8	2	1.4.22		2	1.4.22		2	1.4.22		2	1.4.22		2	1.4.22	
9	2	2.4.11		2	2.4.11		2	1.4.22		2	2.4.11		2	2.4.11	
10	1	1.4.04		1	1.4.17		2	1.4.17		2	1.4.04		1	1.4.17	
11	2	2.4.05		2	2.4.05		2	2.4.05		3	2.4.05		2	2.4.05	
12	2	1B, 1C		2	1B, 1C		2	1B, 1C		3	1B, 1C		2	1B, 1C	
13	1	1.4.17		2	1.4.17		2	1.4.17		1	1.4.17		1	1.4.17	
14	1	1.4.17		1	1.4.17		2	1.4.18		1	1.4.17		1	1.4.17	
15	1	1.4.22		1	1.4.17		2	1.4.18		2	1.4.17		1	1.4.17	
16	1	1.4.14		2	1.4.14		2	1.4.14		2	1.4.14		1	1.4.17	
17	2	1.4.17		2	1.4.17		2	1.4.17		1	1.4.17		2	1.4.17	
18	2	1.4.12		2	1.4.25		2	1.4.21		2	1.4.25		2	1.4.21	
19	2	2.4.13		2	1.4.19		2	1.4.22		2	1.4.19		2	1.4.19	
20	2	1.4.04		2	1.4.04		2	1.4.26		2	1.4.04		2	1.4.04	
21	2	1.4.22		2	1.4.17		2	1.4.26		3	1.4.22		2	1.4.17	
22	1	1.4.17		1	1.4.17		2	1.4.17		1	1.4.17		1	1.4.17	
23	2	1.4.09		2	1.4.09		2	1.4.26		2	1.4.22		2	1.4.09	
24	1	1.4.17		1	1.4.17		2	1.4.17		1	1.4.17		1	1.4.17	
25	3	1.4.22		2	1.4.26		2	1.4.26		3	1.4.22		2	1.4.26	
26	2	1.4.10		2	1.4.10		2	1.4.17		3	1.4.22		2	1.4.17	
27	2	1.4.22		2	1.4.17		2	1.4.22		3	1.4.22		2	1.4.17	
28	2	1.4.10		2	1.4.17		2	1.4.17		3	1.4.22		2	1.4.17	
29	2	1.4.25		2	1.4.09		2	1.4.09		3	1.4.22		2	1.4.09	
30	2	1.4.17		2	1.4.17		2	1.4.26		3	1.4.26		2	1.4.17	
31	2	1.4.21		2	1.4.21		2	1.4.21		1	1.4.21		1	1.4.21	
32	2	2.4.09		2	2.4.09		2	2.4.09		2	2.4.09		2	2.4.09	
33	1	1.4.17		1	1.4.17		2	2.4.09		1	1.4.17		1	1.4.17	
34	1	1.4.17		2	1.4.17		2	1.4.17		1	1.4.17		1	1.4.17	
35	1	1.4.21		2	1.4.21		2	1.4.17		2	1.4.17		1	2.4.03	
36	2	2.4.09		2	2.4.09		2	2.4.08		2	1.4.17		2	2.4.09	
37	2	2.4.09		1	2.4.09		2	2.4.09		1	2.4.09		2	2.4.09	
38	2	1.4.17		1	1.4.17		2	2.4.03		1	1.4.17		1	1.4.17	

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
39	2	1.4.10		2	1.4.10		2	2.4.10		2	1.4.10		2	1.4.10	
40	1	1.4.17		2	1.4.22		3	2.4.03		2	1.4.17		1	2.4.08	
41	2	1.4.04		2	1.4.04		2	1.4.04		2	1.4.04		1	1.4.04	
42	2	2.4.09		2	1.4.22		2	2.4.09		2	2.4.08		2	2.4.08	
43	2	1.4.04		2	1.4.04		2	2.4.05		2	1.4.04		1	1.4.05	
44	2	2.4.08		2	2.4.08		2	2.4.09		2	2.4.08		2	2.4.08	
45	2	1.4.26		2	1.4.26		2	2.4.05		2	1.4.26		3	1.4.26	
46	3	2.4.05		3	2.4.05		2	2.4.05		3	2.4.05		3	2.4.05	
47	3	1.4.22	2.4.03	3	2.4.03		3	2.4.03		3	1.4.22		3	1.4.22	2.4.03
48	2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17		2	1.4.17	
49	2	1.4.17		2	1.4.17		2	1.4.17		3	1.4.22		2	1.4.17	
50	1	1.4.17		1	1.4.17		2	1.4.17		1	1.4.17		1	1.4.21	
51	2	1.4.17		2	1.4.17		2	1.4.22		1	1.4.17		2	1.4.17	

Objective Pairwise Comparison: 0.6197
Standard Pairwise Comparison: 0.8762

Objectives Coded to Each Item by Reviewers for Grade 4

Low		Medium		High
5		5.45098		28

1	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
2	1.4.04	1.4.04	1.4.04	1.4.04	1.4.04				
3	1.4.10	1.4.10	1.4.10	1.4.10	1.4.17				
4	1.4.21	1.4.21	1.4.21	1.4.21	1.4.21				
5	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
6	1.4.17	1.4.17	1.4.17	2.4.11	2.4.11				
7	1.4.17	2.4.11	2.4.11	2.4.11	2.4.11				
8	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22				
9	1.4.22	2.4.11	2.4.11	2.4.11	2.4.11				
10	1.4.04	1.4.04	1.4.17	1.4.17	1.4.17				
11	2.4.05	2.4.05	2.4.05	2.4.05	2.4.05				
12	1B, 1C	1B, 1C	1B, 1C	1B, 1C	1B, 1C				
13	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
14	1.4.17	1.4.17	1.4.17	1.4.17	1.4.18				
15	1.4.17	1.4.17	1.4.17	1.4.18	1.4.22				
16	1.4.14	1.4.14	1.4.14	1.4.14	1.4.17				
17	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
18	1.4.12	1.4.21	1.4.21	1.4.25	1.4.25				
19	1.4.19	1.4.19	1.4.19	1.4.22	2.4.13				
20	1.4.04	1.4.04	1.4.04	1.4.04	1.4.26				
21	1.4.17	1.4.17	1.4.22	1.4.22	1.4.26				
22	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
23	1.4.09	1.4.09	1.4.09	1.4.22	1.4.26				
24	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
25	1.4.22	1.4.22	1.4.26	1.4.26	1.4.26				
26	1.4.10	1.4.10	1.4.17	1.4.17	1.4.22				
27	1.4.17	1.4.17	1.4.22	1.4.22	1.4.22				
28	1.4.10	1.4.17	1.4.17	1.4.17	1.4.22				
29	1.4.09	1.4.09	1.4.09	1.4.22	1.4.25				
30	1.4.17	1.4.17	1.4.17	1.4.26	1.4.26				
31	1.4.21	1.4.21	1.4.21	1.4.21	1.4.21				
32	2.4.09	2.4.09	2.4.09	2.4.09	2.4.09				
33	1.4.17	1.4.17	1.4.17	1.4.17	2.4.09				
34	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
35	1.4.17	1.4.17	1.4.21	1.4.21	2.4.03				
36	1.4.17	2.4.08	2.4.09	2.4.09	2.4.09				
37	2.4.09	2.4.09	2.4.09	2.4.09	2.4.09				
38	1.4.17	1.4.17	1.4.17	1.4.17	2.4.03				
39	1.4.10	1.4.10	1.4.10	1.4.10	2.4.10				
40	1.4.17	1.4.17	1.4.22	2.4.03	2.4.08				
41	1.4.04	1.4.04	1.4.04	1.4.04	1.4.04				
42	1.4.22	2.4.08	2.4.08	2.4.09	2.4.09				
43	1.4.04	1.4.04	1.4.04	1.4.05	2.4.05				
44	2.4.08	2.4.08	2.4.08	2.4.08	2.4.09				
45	1.4.26	1.4.26	1.4.26	1.4.26	2.4.05				
46	2.4.05	2.4.05	2.4.05	2.4.05	2.4.05				
47	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22	1.4.22
	1.4.22	1.4.22	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	
	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	2.4.03	
48	1.4.17	1.4.17	1.4.17	1.4.17	1.4.17				
49	1.4.17	1.4.17	1.4.17	1.4.17	1.4.22				
50	1.4.17	1.4.17	1.4.17	1.4.17	1.4.21				
51	1.4.17	1.4.17	1.4.17	1.4.17	1.4.22				

Items Coded by Reviewers to Each Objective for Grade 4

Low		Medium		High
0		5.791667		93

Objective																			
Goal 1																			
1A																			
1.4.01																			
1.4.02																			
1.4.03																			
1.4.04	2	2	2	2	2	10	10	20	20	20	20	41	41	41	41	41	43	43	43
1.4.05	43																		
1.4.06																			
1.4.07																			
1.4.08																			
1B, 1C	12	12	12	12	12														
1.4.09	23	23	23	29	29	29													
1.4.10	3	3	3	3	26	26	28	39	39	39	39								
1.4.11																			
1.4.12	18																		
1.4.13																			
1.4.14	16	16	16	16															
1.4.15																			
1.4.16																			
1C																			
1.4.17	1	1	1	1	1	3	5	5	5	5	5	6	6	6	7	10	10	10	13	13
	13	13	13	14	14	14	14	15	15	15	16	17	17	17	17	17	21	21	22
	22	22	22	22	24	24	24	24	24	26	26	27	27	28	28	28	30	30	30
	33	33	33	33	34	34	34	34	34	35	35	36	38	38	38	38	40	40	48
	48	48	48	48	49	49	49	49	50	50	50	50	51	51	51	51			
1.4.18	14	15																	
1.4.19	19	19	19																
1.4.20																			
1.4.21	4	4	4	4	4	18	18	31	31	31	31	31	35	35	50				
1.4.22	8	8	8	8	8	9	15	19	21	21	23	25	25	26	27	27	27	28	29	40
	42	47	47	47	47	47	47	47	47	47	47	47	47	49	51				
1.4.23																			
1.4.24																			
1.4.25	18	18	29																
1.4.26	20	21	23	25	25	25	30	30	45	45	45	45							
Goal 2																			
2A																			
2.4.01																			
2.4.02																			
2.4.03	35	38	40	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
2.4.04																			
2.4.05	11	11	11	11	11	43	45	46	46	46	46	46							
2.4.06																			
2.4.07																			
2.4.08	36	40	42	42	44	44	44	44											
2.4.09	32	32	32	32	32	33	36	36	36	37	37	37	37	37	42	42	44		
2.4.10	39																		
2.4.11	6	6	7	7	7	7	9	9	9	9									
2.4.12																			
2B																			
2.4.13	19																		
2.4.14																			

Number of Reviewers Coding an Item by Objective for Grade 4
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective	Items
Goal 1	
1A	
1.4.01	
1.4.02	
1.4.03	
1.4.04	2:5 10:2 20:4 41:5 43:3
1.4.05	43:1
1.4.06	
1.4.07	
1.4.08	
1B, 1C	12:5
1.4.09	23:3 29:3
1.4.10	3:4 26:2 28:1 39:4
1.4.11	
1.4.12	18:1
1.4.13	
1.4.14	16:4
1.4.15	
1.4.16	
1C	
1.4.17	1:5 3:1 5:5 6:3 7:1 10:3 13:5 14:4 15:3 16:1 17:5 21:2 22:5
	24:5 26:2 27:2 28:3 30:3 33:4 34:5 35:2 36:1 38:4 40:2 48:5 49:4
	50:4 51:4
1.4.18	14:1 15:1
1.4.19	19:3
1.4.20	
1.4.21	4:5 18:2 31:5 35:2 50:1
1.4.22	8:5 9:1 15:1 19:1 21:2 23:1 25:2 26:1 27:3 28:1 29:1 40:1 42:1
	47:3 49:1 51:1
1.4.23	
1.4.24	
1.4.25	18:2 29:1
1.4.26	20:1 21:1 23:1 25:3 30:2 45:4
Goal 2	
2A	
2.4.01	
2.4.02	
2.4.03	35:1 38:1 40:1 47:4
2.4.04	
2.4.05	11:5 43:1 45:1 46:5
2.4.06	
2.4.07	
2.4.08	36:1 40:1 42:2 44:4
2.4.09	32:5 33:1 36:3 37:5 42:2 44:1
2.4.10	39:1
2.4.11	6:2 7:4 9:4
2.4.12	
2B	
2.4.13	19:1
2.4.14	

Number of Reviewers Coding an Objective by Item for Grade 4
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item				
1	1.4.17:5			
2	1.4.04:5			
3	1.4.10:4	1.4.17:1		
4	1.4.21:5			
5	1.4.17:5			
6	1.4.17:3	2.4.11:2		
7	1.4.17:1	2.4.11:4		
8	1.4.22:5			
9	1.4.22:1	2.4.11:4		
10	1.4.04:2	1.4.17:3		
11	2.4.05:5			
12	1B, 1C:5			
13	1.4.17:5			
14	1.4.17:4	1.4.18:1		
15	1.4.17:3	1.4.18:1	1.4.22:1	
16	1.4.14:4	1.4.17:1		
17	1.4.17:5			
18	1.4.12:1	1.4.21:2	1.4.25:2	
19	1.4.19:3	1.4.22:1	2.4.13:1	
20	1.4.04:4	1.4.26:1		
21	1.4.17:2	1.4.22:2	1.4.26:1	
22	1.4.17:5			
23	1.4.09:3	1.4.22:1	1.4.26:1	
24	1.4.17:5			
25	1.4.22:2	1.4.26:3		
26	1.4.10:2	1.4.17:2	1.4.22:1	
27	1.4.17:2	1.4.22:3		
28	1.4.10:1	1.4.17:3	1.4.22:1	
29	1.4.09:3	1.4.22:1	1.4.25:1	
30	1.4.17:3	1.4.26:2		
31	1.4.21:5			
32	2.4.09:5			
33	1.4.17:4	2.4.09:1		
34	1.4.17:5			
35	1.4.17:2	1.4.21:2	2.4.03:1	
36	1.4.17:1	2.4.08:1	2.4.09:3	
37	2.4.09:5			
38	1.4.17:4	2.4.03:1		
39	1.4.10:4	2.4.10:1		
40	1.4.17:2	1.4.22:1	2.4.03:1	2.4.08:1
41	1.4.04:5			
42	1.4.22:1	2.4.08:2	2.4.09:2	
43	1.4.04:3	1.4.05:1	2.4.05:1	
44	2.4.08:4	2.4.09:1		
45	1.4.26:4	2.4.05:1		
46	2.4.05:5			
47	1.4.22:3	2.4.03:4		
48	1.4.17:5			
49	1.4.17:4	1.4.22:1		
50	1.4.17:4	1.4.21:1		
51	1.4.17:4	1.4.22:1		

Assessment Item DOK vs. Consensus DOK for Grade 4
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:													
1A [2]:													
1.4.01 [2]:													
1.4.02 [1]:													
1.4.03 [2]:													
1.4.04 [2]:	2:5 [2]	10:2 [1.5]	20:4 [2]	41:5 [1.8]	43:3 [2]								
1.4.05 [1]:	43:1 [1]												
1.4.06 [1]:													
1.4.07 [2]:													
1.4.08 [2]:													
1B, 1C [2]:	12:5 [2.2]												
1.4.09 [2]:	23:3 [2]	29:3 [2]											
1.4.10 [2]:	3:4 [2]	26:2 [2]	28:1 [2]	39:4 [2]									
1.4.11 [2]:													
1.4.12 [2]:	18:1 [2]												
1.4.13 [2]:													
1.4.14 [2]:	16:4 [1.75]												
1.4.15 [2]:													
1.4.16 [3]:													
1C [2]:													
1.4.17 [2]:	1:5 [2]	3:1 [2]	5:5 [2]	6:3 [1.67]	7:1 [2]	10:3 [1.33]	13:5 [1.4]	14:4 [1]	15:3 [1.33]	16:1 [1]	17:5 [1.8]	21:2 [2]	22:5 [1.2]
	24:5 [1.2]	26:2 [2]	27:2 [2]	28:3 [2]	30:3 [2]	33:4 [1]	34:5 [1.4]	35:2 [2]	36:1 [2]	38:4 [1.25]	40:2 [1.5]	48:5 [2]	49:4 [2]

	50:4 [1.25]	51:4 [1.75]											
1.4.18 [2]:	14:1 [2]	15:1 [2]											
1.4.19 [2]:	19:3 [2]												
1.4.20 [2]:													
1.4.21 [2]:	4:5 [2]	18:2 [2]	31:5 [1.6]	35:2 [1.5]	50:1 [1]								
1.4.22 [3]:	8:5 [2]	9:1 [2]	15:1 [1]	19:1 [2]	21:2 [2.5]	23:1 [2]	25:2 [3]	26:1 [3]	27:3 [2.33]	28:1 [3]	29:1 [3]	40:1 [2]	42:1 [2]
	47:3 [3]	49:1 [3]	51:1 [2]										
1.4.23 [2]:													
1.4.24 [2]:													
1.4.25 [2]:	18:2 [2]	29:1 [2]											
1.4.26 [2]:	20:1 [2]	21:1 [2]	23:1 [2]	25:3 [2]	30:2 [2.5]	45:4 [2.25]							
Goal 2 [2]:													
2A [3]:													
2.4.01 [2]:													
2.4.02 [2]:													
2.4.03 [2]:	35:1 [1]	38:1 [2]	40:1 [3]	47:4 [3]									
2.4.04 [2]:													
2.4.05 [3]:	11:5 [2.2]	43:1 [2]	45:1 [2]	46:5 [2.8]									
2.4.06 [3]:													
2.4.07 [3]:													
2.4.08 [3]:	36:1 [2]	40:1 [1]	42:2 [2]	44:4 [2]									
2.4.09 [3]:	32:5 [2]	33:1 [2]	36:3 [2]	37:5 [1.6]	42:2 [2]	44:1 [2]							
2.4.10 [3]:	39:1 [2]												
2.4.11 [2]:	6:2 [2]	7:4 [2]	9:4 [2]										
2.4.12 [1]:													
2B [2]:													

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2.4.13 [2]:	19:1 [2]
2.4.14 [2]:	

Categorical Concurrence Between Standards and Assessment for Grade 5

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 - Reading	4	30.2	1 2 3	2 22 3	7 81 11	41.8	1.17	YES
Goal 2 - Literature	2	15.8	1 2 3	1 8 6	6 53 40	15.2	2.14	YES
Total	6	46	1 2 3	3 30 9	7 71 21	57	1.79	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 5

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	4	30.2	41.8	1.17	22	37	75	38	2	14	YES
Goal 2 - Literature	2	15.8	15.2	2.14	39	44	61	44	0	0	YES
Total	6	46	57	1.79	28	41	70	41	1	11	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 5

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	4	30.2	41.8	1.17	12.8	1.47	42	5	WEAK	73	3	0.53	0.05	NO
Goal 2 - Literature	2	15.8	15.2	2.14	7.6	1.2	48	7	WEAK	27	3	0.71	0.03	YES
Total	6	46	57	1.79	10.2	2.93	45	7		50	24	0.62	0.10	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 5

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	WEAK	NO
Goal 2 - Literature	YES	YES	WEAK	YES

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Depth-of-Knowledge Levels by Item and Reviewers for Grade 5 Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	1	2	1	1	1
2	2	2	2	2	2
3	2	2	2	2	2
4	2	2	2	2	2
5	2	2	2	3	3
6	1	2	1	1	1
7	2	2	2	2	2
8	1	1	1	1	1
9	2	2	2	2	1
10	2	2	2	2	2
11	1	1	1	2	1
12	2	2	2	2	2
13	2	1	2	2	2
14	2	2	1	2	2
15	2	2	2	2	3
16	2	2	2	2	2
17	1	1	1	1	1
18	2	2	2	3	2
19	2	2	1	1	2
20	1	1	1	2	1
21	2	2	2	2	2
22	1	2	1	1	1
23	2	2	2	3	2
24	2	2	2	2	1
25	2	2	2	2	2
26	1	1	1	1	1
27	2	2	2	2	1
28	3	2	2	2	2
29	1	2	2	1	1
30	1	1	1	1	1
31	1	1	1	1	1
32	2	2	2	2	2
33	2	2	2	2	2
34	2	2	2	2	1
35	2	2	2	2	1
36	1	3	3	2	2
37	1	1	1	1	1
38	2	2	2	1	1
39	1	1	1	2	1
40	2	2	2	2	2
41	2	2	2	2	1
42	2	2	2	2	1
43	2	2	2	2	2
44	1	2	2	2	1
45	2	2	2	2	2
46	2	2	2	2	2
47	3	3	3	3	3
48	1	1	1	1	1
49	1	1	2	1	1
50	2	2	1	2	1
51	1	1	2	1	1

Intraclass Correlation: 0.8807
Pairwise Comparison: 0.749

DOK Levels and Objectives Coded by Each Reviewer for Grade 5

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	1.5.16		2	1.5.17		1	1.5.16		1	1.5.16		1	1.5.16	
2	2	2.5.09		2	2.5.09		2	2.5.09		2	2.5.09		2	2.5.09	
3	2	2.5.08		2	2.5.08		2	2.5.08		2	2.5.08		2	2.5.08	
4	2	1.5.28		2	1.5.27		2	1.5.27		2	1.5.27		2	1.5.28	
5	2	1.5.22		2	1.5.16		2	1.5.22		3	1.5.22		3	1.5.22	
6	1	1.5.16		2	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
7	2	1.5.07		2	1.5.07		2	1.5.07		2	1.5.07		2	1.5.07	
8	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
9	2	1.5.16		2	1.5.16		2	1.5.18		2	1.5.16		1	1.5.16	
10	2	1.5.08		2	1.5.07		2	1.5.22		2	1.5.08		2	1.5.08	
11	1	1.5.16		1	1.5.16		1	1.5.16		2	1.5.16		1	1.5.16	
12	2	1.5.16		2	1.5.16		2	1.5.16		2	1.5.16		2	1.5.16	
13	2	2.5.14		1	2.5.14		2	2.5.14		2	1.5.13		2	2.5.14	
14	2	2A		2	2.5.03		1	2A		2	2A		2	2A	
15	2	IB, IC		2	1.5.07		2	1.5.27		2	1.5.22		3	1.5.22	
16	2	1C		2	1C		2	1C		2	1C		2	1C	
17	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
18	2	1.5.27		2	1.5.18		2	1.5.27		3	1.5.27		2	1.5.07	
19	2	1.5.16		2	1.5.22	1.5.08	1	1.5.16		1	1.5.16		2	1.5.16	
20	1	1.5.16		1	1.5.16		1	1.5.12		2	1.5.16		1	1.5.16	
21	2	2.5.12		2	1.5.12		2	1.5.22		2	1.5.12		2	1.5.12	
22	1	1.5.16		2	1.5.21		1	1.5.16		1	1.5.20		1	1.5.21	
23	2	2.5.04		2	1.5.27		2	1.5.27		3	1.5.27		2	1.5.17	
24	2	1A		2	1A		2	1A		2	1A		1	1A	
25	2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC	
26	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
27	2	1.5.12		2	1.5.12		2	1.5.12		2	1.5.12		1	1.5.12	
28	3	1.5.22		2	1.5.27		2	1.5.27		2	1.5.27		2	1.5.27	
29	1	1.5.16		2	1.5.26		2	1.5.26		1	1.5.16		1	1.5.16	
30	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
31	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16	
32	2	2.5.03		2	2.5.08		2	2.5.08		2	2.5.08		2	2.5.08	
33	2	2.5.12		2	2.5.12		2	2.5.08		2	2.5.12		2	2.5.12	
34	2	2.5.09		2	1.5.21	2.5.09	2	2.5.09		2	2.5.09		1	2.5.09	
35	2	1.5.02		2	1.5.02		2	1.5.02		2	1.5.03		1	1.5.03	
36	1	1.5.16	2.5.09	3	2.5.08		3	2.5.09		2	2.5.09		2	2.5.09	
37	1	1.5.16		1	2.5.12		1	1.5.16		1	1.5.16		1	1.5.16	
38	2	1.5.16		2	1.5.16		2	2.5.11		1	1.5.16		1	2.5.10	

DOK Levels and Objectives Coded by Each Reviewer for Grade 5

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
39	1	2.5.03		1	1.5.16		1	1.5.16		2	1.5.16		1	2.5.03	
40	2	2.5.12		2	1.5.06		2	2.5.12		2	2.5.12		2	2.5.12	
41	2	1.5.02		2	1.5.02		2	1.5.02		2	1.5.03		1	1.5.03	
42	2	1.5.22		2	1.5.22		2	1.5.22		2	1.5.22		1	1.5.22	
43	2	1.5.16		2	1.5.16		2	1.5.16		2	1.5.16		2	1.5.16	
44	1	2.5.11		2	2.5.11		2	2.5.11		2	2.5.11		1	2.5.11	
45	2	1.5.22		2	1.5.22		2	1.5.22		2	1.5.22		2	1.5.22	
46	2	2.5.15		2	2.5.15		2	2.5.15		2	2.5.14		2	2.5.15	
47	3	1.5.22	2.5.08	3	2.5.08		3	1.5.22		3	1.5.22	2.5.08	3	1.5.22	2.5.08
48	1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.16		1	1.5.21	
49	1	1.5.16		1	1.5.16		2	1.5.20		1	1.5.20		1	1.5.20	
50	2	1.5.16		2	1.5.16		1	1.5.16		2	1.5.16		1	1.5.21	
51	1	1.5.16		1	1.5.16		2	1.5.26		1	1.5.16		1	1.5.16	

Objective Pairwise Comparison: 0.6667
Standard Pairwise Comparison: 0.9108

Objectives Coded to Each Item by Reviewers for Grade 5

Low		Medium		High
5		5.588235		32

#										
1	1.5.16	1.5.16	1.5.16	1.5.16	1.5.17					
2	2.5.09	2.5.09	2.5.09	2.5.09	2.5.09					
3	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08					
4	1.5.27	1.5.27	1.5.27	1.5.28	1.5.28					
5	1.5.16	1.5.22	1.5.22	1.5.22	1.5.22					
6	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
7	1.5.07	1.5.07	1.5.07	1.5.07	1.5.07					
8	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
9	1.5.16	1.5.16	1.5.16	1.5.16	1.5.18					
10	1.5.07	1.5.08	1.5.08	1.5.08	1.5.22					
11	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
12	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
13	1.5.13	2.5.14	2.5.14	2.5.14	2.5.14					
14	2A	2A	2A	2A	2.5.03					
15	IB, IC	1.5.07	1.5.22	1.5.22	1.5.27					
16	1C	1C	1C	1C	1C					
17	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
18	1.5.07	1.5.18	1.5.27	1.5.27	1.5.27					
19	1.5.08	1.5.16	1.5.16	1.5.16	1.5.16	1.5.22				
20	1.5.12	1.5.16	1.5.16	1.5.16	1.5.16					
21	1.5.12	1.5.12	1.5.12	1.5.22	2.5.12					
22	1.5.16	1.5.16	1.5.20	1.5.21	1.5.21					
23	1.5.17	1.5.27	1.5.27	1.5.27	2.5.04					
24	1A	1A	1A	1A	1A					
25	IB, IC	IB, IC	IB, IC	IB, IC	IB, IC					
26	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
27	1.5.12	1.5.12	1.5.12	1.5.12	1.5.12					
28	1.5.22	1.5.27	1.5.27	1.5.27	1.5.27					
29	1.5.16	1.5.16	1.5.16	1.5.26	1.5.26					
30	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
31	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
32	2.5.03	2.5.08	2.5.08	2.5.08	2.5.08					
33	2.5.08	2.5.12	2.5.12	2.5.12	2.5.12					
34	1.5.21	2.5.09	2.5.09	2.5.09	2.5.09	2.5.09				
35	1.5.02	1.5.02	1.5.02	1.5.03	1.5.03					
36	1.5.16	2.5.08	2.5.09	2.5.09	2.5.09	2.5.09				
37	1.5.16	1.5.16	1.5.16	1.5.16	2.5.12					
38	1.5.16	1.5.16	1.5.16	2.5.10	2.5.11					
39	1.5.16	1.5.16	1.5.16	2.5.03	2.5.03					
40	1.5.06	2.5.12	2.5.12	2.5.12	2.5.12					
41	1.5.02	1.5.02	1.5.02	1.5.03	1.5.03					
42	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22					
43	1.5.16	1.5.16	1.5.16	1.5.16	1.5.16					
44	2.5.11	2.5.11	2.5.11	2.5.11	2.5.11					
45	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22					
46	2.5.14	2.5.15	2.5.15	2.5.15	2.5.15					
47	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22
	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	1.5.22	2.5.08	2.5.08	2.5.08	
	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08	2.5.08	
	2.5.08	2.5.08	2.5.08	2.5.08						
48	1.5.16	1.5.16	1.5.16	1.5.16	1.5.21					
49	1.5.16	1.5.16	1.5.20	1.5.20	1.5.20					
50	1.5.16	1.5.16	1.5.16	1.5.16	1.5.21					
51	1.5.16	1.5.16	1.5.16	1.5.16	1.5.26					

Items Coded by Reviewers to Each Objective for Grade 5

Low		Medium		High
0		5.588235		92

Goal 1																				
1A	24	24	24	24	24															
1.5.01																				
1.5.02	35	35	35	41	41	41														
1.5.03	35	35	41	41																
1.5.04																				
1.5.05																				
1.5.06	40																			
IB, IC	15	25	25	25	25	25														
1.5.07	7	7	7	7	7	10	15	18												
1.5.08	10	10	10	19																
1.5.09																				
1.5.10																				
1.5.11																				
1.5.12	20	21	21	21	27	27	27	27	27											
1.5.13	13																			
1.5.14																				
1.5.15																				
1C	16	16	16	16	16															
1.5.16	1	1	1	1	5	6	6	6	6	6	8	8	8	8	8	9	9	9	9	11
	11	11	11	11	12	12	12	12	12	17	17	17	17	17	19	19	19	19	20	
	20	20	20	22	22	26	26	26	26	26	29	29	29	30	30	30	30	30	31	
	31	31	31	31	36	37	37	37	37	38	38	38	39	39	39	43	43	43	43	
	43	48	48	48	48	49	49	50	50	50	50	51	51	51	51					
1.5.17	1	23																		
1.5.18	9	18																		
1.5.19																				
1.5.20	22	49	49	49																
1.5.21	22	22	34	48	50															
1.5.22	5	5	5	5	10	15	15	19	21	28	42	42	42	42	42	45	45	45	45	45
	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47				
1.5.23																				
1.5.24																				
1.5.25																				
1.5.26	29	29	51																	
1.5.27	4	4	4	15	18	18	18	23	23	23	28	28	28	28						
1.5.28	4	4																		
Goal 2																				
2A	14	14	14	14																
2.5.01																				
2.5.02																				
2.5.03	14	32	39	39																
2.5.04	23																			
2.5.05																				
2.5.06																				
2.5.07																				
2.5.08	3	3	3	3	3	32	32	32	32	33	36	47	47	47	47	47	47	47	47	47
	47	47	47	47	47	47	47													
2.5.09	2	2	2	2	2	34	34	34	34	34	36	36	36	36						
2.5.10	38																			
2.5.11	38	44	44	44	44	44														
2.5.12	21	33	33	33	33	37	40	40	40	40										
2.5.13																				
2B																				
2.5.14	13	13	13	13	46															
2.5.15	46	46	46	46																

Number of Reviewers Coding an Item by Objective for Grade 5
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective													
Goal 1													
1A	24:5												
1.5.01													
1.5.02	35:3	41:3											
1.5.03	35:2	41:2											
1.5.04													
1.5.05													
1.5.06	40:1												
IB, IC	15:1	25:5											
1.5.07	7:5	10:1	15:1	18:1									
1.5.08	10:3	19:1											
1.5.09													
1.5.10													
1.5.11													
1.5.12	20:1	21:3	27:5										
1.5.13	13:1												
1.5.14													
1.5.15													
1C	16:5												
1.5.16	1:4	5:1	6:5	8:5	9:4	11:5	12:5	17:5	19:4	20:4	22:2	26:5	29:3
	30:5	31:5	36:1	37:4	38:3	39:3	43:5	48:4	49:2	50:4	51:4		
1.5.17	1:1	23:1											
1.5.18	9:1	18:1											
1.5.19													
1.5.20	22:1	49:3											
1.5.21	22:2	34:1	48:1	50:1									
1.5.22	5:4	10:1	15:2	19:1	21:1	28:1	42:5	45:5	47:4				
1.5.23													
1.5.24													
1.5.25													
1.5.26	29:2	51:1											
1.5.27	4:3	15:1	18:3	23:3	28:4								
1.5.28	4:2												
Goal 2													
2A	14:4												
2.5.01													
2.5.02													
2.5.03	14:1	32:1	39:2										
2.5.04	23:1												
2.5.05													
2.5.06													
2.5.07													
2.5.08	3:5	32:4	33:1	36:1	47:4								
2.5.09	2:5	34:5	36:4										
2.5.10	38:1												
2.5.11	38:1	44:5											
2.5.12	21:1	33:4	37:1	40:4									
2.5.13													
2B													
2.5.14	13:4	46:1											
2.5.15	46:4												

Number of Reviewers Coding an Objective by Item for Grade 5
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	1.5.16:4	1.5.17:1		
2	2.5.09:5			
3	2.5.08:5			
4	1.5.27:3	1.5.28:2		
5	1.5.16:1	1.5.22:4		
6	1.5.16:5			
7	1.5.07:5			
8	1.5.16:5			
9	1.5.16:4	1.5.18:1		
10	1.5.07:1	1.5.08:3	1.5.22:1	
11	1.5.16:5			
12	1.5.16:5			
13	1.5.13:1	2.5.14:4		
14	2A:4	2.5.03:1		
15	IB, IC:1	1.5.07:1	1.5.22:2	1.5.27:1
16	1C:5			
17	1.5.16:5			
18	1.5.07:1	1.5.18:1	1.5.27:3	
19	1.5.08:1	1.5.16:4	1.5.22:1	
20	1.5.12:1	1.5.16:4		
21	1.5.12:3	1.5.22:1	2.5.12:1	
22	1.5.16:2	1.5.20:1	1.5.21:2	
23	1.5.17:1	1.5.27:3	2.5.04:1	
24	1A:5			
25	IB, IC:5			
26	1.5.16:5			
27	1.5.12:5			
28	1.5.22:1	1.5.27:4		
29	1.5.16:3	1.5.26:2		
30	1.5.16:5			
31	1.5.16:5			
32	2.5.03:1	2.5.08:4		
33	2.5.08:1	2.5.12:4		
34	1.5.21:1	2.5.09:5		
35	1.5.02:3	1.5.03:2		
36	1.5.16:1	2.5.08:1	2.5.09:4	
37	1.5.16:4	2.5.12:1		
38	1.5.16:3	2.5.10:1	2.5.11:1	
39	1.5.16:3	2.5.03:2		
40	1.5.06:1	2.5.12:4		
41	1.5.02:3	1.5.03:2		
42	1.5.22:5			
43	1.5.16:5			
44	2.5.11:5			
45	1.5.22:5			
46	2.5.14:1	2.5.15:4		
47	1.5.22:4	2.5.08:4		
48	1.5.16:4	1.5.21:1		
49	1.5.16:2	1.5.20:3		
50	1.5.16:4	1.5.21:1		
51	1.5.16:4	1.5.26:1		

**Assessment Item DOK vs. Consensus DOK for Grade 5
(Item Number: Number of Reviewers [Average DOK])**

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:												
1A [2]:	24:5 [1.8]											
1.5.01 [2]:												
1.5.02 [2]:	35:3 [2]	41:3 [2]										
1.5.03 [1]:	35:2 [1.5]	41:2 [1.5]										
1.5.04 [1]:												
1.5.05 [2]:												
1.5.06 [2]:	40:1 [2]											
IB, IC [2]:	15:1 [2]	25:5 [2]										
1.5.07 [2]:	7:5 [2]	10:1 [2]	15:1 [2]	18:1 [2]								
1.5.08 [2]:	10:3 [2]	19:1 [2]										
1.5.09 [2]:												
1.5.10 [2]:												
1.5.11 [2]:												
1.5.12 [2]:	20:1 [1]	21:3 [2]	27:5 [1.8]									
1.5.13 [3]:	13:1 [2]											
1.5.14 [3]:												
1.5.15 [2]:												
1C [2]:	16:5 [2]											
1.5.16 [2]:	1:4 [1]	5:1 [2]	6:5 [1.2]	8:5 [1]	9:4 [1.75]	11:5 [1.2]	12:5 [2]	17:5 [1]	19:4 [1.5]	20:4 [1.25]	22:2 [1]	26:5 [1]	29:3 [1]
	30:5 [1]	31:5 [1]	36:1 [1]	37:4 [1]	38:3 [1.67]	39:3 [1.33]	43:5 [2]	48:4 [1]	49:2 [1]	50:4 [1.75]	51:4 [1]		
1.5.17 [2]:	1:1 [2]	23:1 [2]										
1.5.18 [2]:	9:1 [2]	18:1 [2]										
1.5.19 [2]:												
1.5.20 [2]:	22:1 [1]	49:3 [1.33]										
1.5.21 [2]:	22:2 [1.5]	34:1 [2]	48:1 [1]	50:1 [1]								
1.5.22 [3]:	5:4 [2.5]	10:1 [2]	15:2 [2.5]	19:1 [2]	21:1 [2]	28:1 [3]	42:5 [1.8]	45:5 [2]	47:4 [3]			
1.5.23 [2]:												
1.5.24												

[2]:					
1.5.25 [2]:					
1.5.26 [2]:	29:2 [2]	51:1 [2]			
1.5.27 [2]:	4:3 [2]	15:1 [2]	18:3 [2.33]	23:3 [2.33]	28:4 [2]
1.5.28 [3]:	4:2 [2]				
Goal 2 [2]:					
2A [2]:	14:4 [1.75]				
2.5.01 [2]:					
2.5.02 [2]:					
2.5.03 [2]:	14:1 [2]	32:1 [2]	39:2 [1]		
2.5.04 [3]:	23:1 [2]				
2.5.05 [3]:					
2.5.06 [3]:					
2.5.07 [2]:					
2.5.08 [3]:	3:5 [2]	32:4 [2]	33:1 [2]	36:1 [3]	47:4 [3]
2.5.09 [3]:	2:5 [2]	34:5 [1.8]	36:4 [2]		
2.5.10 [3]:	38:1 [1]				
2.5.11 [2]:	38:1 [2]	44:5 [1.6]			
2.5.12 [2]:	21:1 [2]	33:4 [2]	37:1 [1]	40:4 [2]	
2.5.13 [1]:					
2B [2]:					
2.5.14 [2]:	13:4 [1.75]	46:1 [2]			
2.5.15 [2]:	46:4 [2]				

Categorical Concurrence Between Standards and Assessment for Grade 6

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 - Reading	3	25	1 2 3	3 18 3	12 75 12	42.8	2.32	YES
Goal 2 - Literature	2	15	2 3	6 9	40 60	11.4	2.42	YES
Total	5	40	1 2 3	3 24 12	7 61 30	54.2	0.4	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 6

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	3	25	42.8	2.32	23	35	77	35	1	6	YES
Goal 2 - Literature	2	15	11.4	2.42	38	47	62	47	0	0	YES
Total	5	40	54.2	0.4	28	40	71	40	1	5	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 6

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	3	25	42.8	2.32	11.8	1.33	47	5	WEAK	79	4	0.59	0.04	NO
Goal 2 - Literature	2	15	11.4	2.42	6.8	0.75	45	5	WEAK	21	4	0.77	0.05	YES
Total	5	40	54.2	0.4	9.3	2.72	46	5		50	29	0.68	0.10	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 6

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	WEAK	NO
Goal 2 - Literature	YES	YES	WEAK	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 6 Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	2	2	2	2	2
2	2	2	2	2	2
3	2	2	2	2	2
4	2	2	2	2	2
5	1	1	2	1	1
6	2	2	1	2	2
7	1	1	1	1	1
8	2	2	2	2	1
9	1	1	1	1	1
10	2	2	2	2	2
11	2	2	2	2	2
12	2	1	2	2	2
13	2	1	2	2	1
14	1	1	2	1	1
15	2	2	2	2	2
16	2	2	2	2	3
17	1	2	1	1	1
18	2	2	2	2	1
19	2	2	2	2	2
20	2	2	2	2	2
21	2	2	2	2	2
22	2	2	3	2	2
23	2	2	2	2	2
24	3	1	3	2	2
25	2	2	2	2	2
26	1	1	1	1	1
27	2	2	2	2	2
28	2	2	2	2	2
29	2	2	2	2	2
30	2	2	2	2	2
31	2	2	3	2	2
32	2	2	2	2	2
33	2	2	2	2	1
34	2	2	2	2	1
35	2	2	3	2	1
36	2	2	2	2	2
37	3	2	3	2	2
38	2	1	2	2	1
39	2	2	3	2	2
40	1	1	2	2	1
41	3	3	3	2	2
42	2	2	2	2	1
43	3	2	2	2	1
44	2	2	3	3	2
45	3	2	2	3	2
46	2	2	2	2	2
47	3	3	3	2	3
48	1	1	2	1	1
49	2	1	2	2	1
50	2	2	2	2	2
51	2	1	2	2	1

Intraclass Correlation: 0.8375
Pairwise Comparison: 0.7255

DOK Levels and Objectives Coded by Each Reviewer for Grade 6

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	2.6.08		2	2.6.08		2	1.6.14		2	2.6.08		2	2.6.08	
2	2	2.6.10		2	2.6.02		2	2.6.10		2	2.6.10		2	2.6.10	
3	2	2.6.14		2	2.6.14		2	2.6.14		2	2.6.14		2	2.6.14	
4	2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC	
5	1	1.6.14		1	1.6.14		2	1.6.14		1	1.6.14		1	1.6.14	
6	2	1.6.14		2	1.6.14		1	1.6.14		2	1.6.14		2	1.6.14	
7	1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14	
8	2	1.6.03		2	1.6.03		2	1.6.03		2	1.6.03		1	1.6.05	
9	1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14	
10	2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19	
11	2	1.6.19		2	1.6.14		2	1.6.07		2	1.6.14		2	1.6.14	
12	2	2.6.08		1	1.6.08		2	1.6.19		2	1.6.08		2	1.6.08	
13	2	1.6.14		1	1.6.14		2	1.6.08		2	1.6.14		1	1.6.14	
14	1	1.6.14		1	1.6.14		2	1.6.22		1	1.6.14		1	1.6.14	
15	2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.14		2	1.6.14	
16	2	IB, IC		2	IB, IC		2	1.6.12		2	IB, IC		3	1.6.12	
17	1	1.6.14		2	1.6.18		1	1.6.14		1	1.6.14		1	1.6.14	
18	2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19		1	1.6.19	
19	2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC	
20	2	1.6.12		2	1.6.12		2	1.6.16		2	1.6.15		2	1.6.12	
21	2	2.6.11		2	2.6.11		2	1.6.03		2	2.6.11		2	1.6.23	
22	2	1.6.14		2	2.6.07		3	1.6.23		2	1.6.14		2	1.6.23	
23	2	1.6.14		2	2.6.08		2	1.6.14		2	1.6.14		2	1.6.18	
24	3	1.6.23		1	1.6.23		3	1.6.23		2	1.6.23		2	1.6.23	
25	2	2.6.07		2	2.6.07		2	2.6.07		2	2.6.07		2	2.6.07	
26	1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14		1	1.6.14	
27	2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.14	
28	2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19		2	1.6.19	
29	2	1.6.07		2	1.6.08		2	1.6.07		2	1.6.07		2	1.6.07	
30	2	1.6.07		2	1.6.07		2	1.6.07		2	1.6.14		2	1.6.07	
31	2	2.6.09		2	2.6.09		3	2.6.09		2	2.6.09		2	2.6.09	
32	2	2.6.08		2	1.6.14		2	1.6.15		2	1.6.14		2	1.6.14	
33	2	1.6.04		2	1.6.03		2	1.6.04		2	1.6.04		1	1.6.04	
34	2	1.6.03		2	1.6.03		2	1.6.03		2	1.6.03		1	1.6.03	
35	2	2.6.08		2	2.6.08		3	2.6.08		2	2.6.08		1	2.6.08	
36	2	1.6.18		2	1.6.18		2	1.6.18		2	1.6.18		2	1.6.18	
37	3	2.6.07		2	1.6.19		3	2.6.07		2	2.6.07		2	2.6.07	
38	2	1.6.14		1	1.6.14		2	1.6.19		2	1.6.14		1	1.6.14	
39	2	1.6.23		2	1.6.23	2.6.07	3	1.6.23		2	1.6.23		2	1.6.23	
40	1	1.6.14		1	1.6.14		2	2.6.07		2	1.6.17		1	1.6.14	
41	3	1.6.19		3	1.6.19		3	1.6.19		2	1.6.19		2	1.6.19	

DOK Levels and Objectives Coded by Each Reviewer for Grade 6

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
42	2	1.6.03		2	1.6.03		2	1.6.06		2	1.6.03		1	1.6.05	
43	3	2.6.08		2	2.6.08		2	1.6.14		2	1.6.14		1	1.6.14	
44	2	2.6.09		2	2.6.09		3	2.6.09		3	1.6.19		2	1.6.14	
45	3	2.6.04		2	1.6.19		2	1.6.19		3	1.6.19		2	1.6.19	
46	2	2.6.15		2	2.6.15		2	2.6.15		2	2.6.14		2	2.6.15	
47	3	1.6.19		3	1.6.19		3	2.6.04		2	1.6.19		3	1.6.19	
48	1	1.6.22		1	1.6.14		2	1.6.22		1	1.6.14		1	1.6.22	
49	2	1.6.19		1	1.6.14		2	1.6.14		2	1.6.14		1	1.6.14	
50	2	1.6.22		2	1.6.22		2	1.6.22		2	1.6.22		2	1.6.22	
51	2	1.6.03		1	1.6.05		2	1.6.03		2	1.6.03		1	1.6.05	

Objective Pairwise Comparison: 0.6673
Standard Pairwise Comparison: 0.8872

Objectives Coded to Each Item by Reviewers for Grade 6

Low		Medium		High
5		5.313725		20

1	1.6.14	2.6.08	2.6.08	2.6.08	2.6.08					
2	2.6.02	2.6.10	2.6.10	2.6.10	2.6.10					
3	2.6.14	2.6.14	2.6.14	2.6.14	2.6.14					
4	IB, IC	IB, IC	IB, IC	IB, IC	IB, IC					
5	1.6.14	1.6.14	1.6.14	1.6.14	1.6.14					
6	1.6.14	1.6.14	1.6.14	1.6.14	1.6.14					
7	1.6.14	1.6.14	1.6.14	1.6.14	1.6.14					
8	1.6.03	1.6.03	1.6.03	1.6.03	1.6.05					
9	1.6.14	1.6.14	1.6.14	1.6.14	1.6.14					
10	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19					
11	1.6.07	1.6.14	1.6.14	1.6.14	1.6.19					
12	1.6.08	1.6.08	1.6.08	1.6.19	2.6.08					
13	1.6.08	1.6.14	1.6.14	1.6.14	1.6.14					
14	1.6.14	1.6.14	1.6.14	1.6.14	1.6.22					
15	1.6.14	1.6.14	1.6.19	1.6.19	1.6.19					
16	IB, IC	IB, IC	IB, IC	1.6.12	1.6.12					
17	1.6.14	1.6.14	1.6.14	1.6.14	1.6.18					
18	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19					
19	IB, IC	IB, IC	IB, IC	IB, IC	IB, IC					
20	1.6.12	1.6.12	1.6.12	1.6.15	1.6.16					
21	1.6.03	1.6.23	2.6.11	2.6.11	2.6.11					
22	1.6.14	1.6.14	1.6.23	1.6.23	2.6.07					
23	1.6.14	1.6.14	1.6.14	1.6.18	2.6.08					
24	1.6.23	1.6.23	1.6.23	1.6.23	1.6.23					
25	2.6.07	2.6.07	2.6.07	2.6.07	2.6.07					
26	1.6.14	1.6.14	1.6.14	1.6.14	1.6.14					
27	1.6.14	1.6.19	1.6.19	1.6.19	1.6.19					
28	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19					
29	1.6.07	1.6.07	1.6.07	1.6.07	1.6.08					
30	1.6.07	1.6.07	1.6.07	1.6.07	1.6.14					
31	2.6.09	2.6.09	2.6.09	2.6.09	2.6.09					
32	1.6.14	1.6.14	1.6.14	1.6.15	2.6.08					
33	1.6.03	1.6.04	1.6.04	1.6.04	1.6.04					
34	1.6.03	1.6.03	1.6.03	1.6.03	1.6.03					
35	2.6.08	2.6.08	2.6.08	2.6.08	2.6.08					
36	1.6.18	1.6.18	1.6.18	1.6.18	1.6.18					
37	1.6.19	2.6.07	2.6.07	2.6.07	2.6.07					
38	1.6.14	1.6.14	1.6.14	1.6.14	1.6.19					
39	1.6.23	1.6.23	1.6.23	1.6.23	1.6.23	2.6.07				
40	1.6.14	1.6.14	1.6.14	1.6.17	2.6.07					
41	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19					
42	1.6.03	1.6.03	1.6.03	1.6.05	1.6.06					
43	1.6.14	1.6.14	1.6.14	2.6.08	2.6.08					
44	1.6.14	1.6.19	2.6.09	2.6.09	2.6.09					
45	1.6.19	1.6.19	1.6.19	1.6.19	2.6.04					
46	2.6.14	2.6.15	2.6.15	2.6.15	2.6.15					
47	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19
	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	1.6.19	2.6.04	2.6.04	2.6.04	
	2.6.04									
48	1.6.14	1.6.14	1.6.22	1.6.22	1.6.22					
49	1.6.14	1.6.14	1.6.14	1.6.14	1.6.19					
50	1.6.22	1.6.22	1.6.22	1.6.22	1.6.22					
51	1.6.03	1.6.03	1.6.03	1.6.05	1.6.05					

Items Coded by Reviewers to Each Objective for Grade 6

Low		Medium		High
0		5.765957		70

Goal 1																			
1A																			
1.6.01																			
1.6.02																			
1.6.03	8	8	8	8	21	33	34	34	34	34	34	42	42	42	51	51	51		
1.6.04	33	33	33	33															
1.6.05	8	42	51	51															
1.6.06	42																		
IB, IC	4	4	4	4	4	16	16	16	19	19	19	19	19						
1.6.07	11	29	29	29	29	30	30	30	30										
1.6.08	12	12	12	13	29														
1.6.09																			
1.6.10																			
1.6.11																			
1.6.12	16	16	20	20	20														
1.6.13																			
1C																			
1.6.14	1	5	5	5	5	5	6	6	6	6	6	7	7	7	7	7	9	9	9	9
	9	11	11	11	13	13	13	13	14	14	14	14	15	15	17	17	17	17	22
	22	23	23	23	26	26	26	26	26	27	30	32	32	32	38	38	38	38	40
	40	40	43	43	43	44	48	48	49	49	49	49							
1.6.15	20	32																	
1.6.16	20																		
1.6.17	40																		
1.6.18	17	23	36	36	36	36	36												
1.6.19	10	10	10	10	10	11	12	15	15	15	18	18	18	18	18	27	27	27	27	28
	28	28	28	28	37	38	41	41	41	41	41	44	45	45	45	45	47	47	47
	47	47	47	47	47	47	47	47	47	47	47	47	47	49					
1.6.20																			
1.6.21																			
1.6.22	14	48	48	48	50	50	50	50	50										
1.6.23	21	22	22	24	24	24	24	24	39	39	39	39	39						
1.6.24																			
Goal 2																			
2A																			
2.6.01																			
2.6.02	2																		
2.6.03																			
2.6.04	45	47	47	47	47														
2.6.05																			
2.6.06																			
2.6.07	22	25	25	25	25	25	37	37	37	37	39	40							
2.6.08	1	1	1	1	12	23	32	35	35	35	35	35	43	43					
2.6.09	31	31	31	31	31	44	44	44											
2.6.10	2	2	2	2															
2.6.11	21	21	21																
2.6.12																			
2.6.13																			
2B																			
2.6.14	3	3	3	3	3	46													
2.6.15	46	46	46	46															

Number of Reviewers Coding an Item by Objective for Grade 6
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 1												
1A												
1.6.01												
1.6.02												
1.6.03	8:4	21:1	33:1	34:5	42:3	51:3						
1.6.04	33:4											
1.6.05	8:1	42:1	51:2									
1.6.06	42:1											
IB, IC	4:5	16:3	19:5									
1.6.07	11:1	29:4	30:4									
1.6.08	12:3	13:1	29:1									
1.6.09												
1.6.10												
1.6.11												
1.6.12	16:2	20:3										
1.6.13												
1C												
1.6.14	1:1	5:5	6:5	7:5	9:5	11:3	13:4	14:4	15:2	17:4	22:2	23:3	26:5
	27:1	30:1	32:3	38:4	40:3	43:3	44:1	48:2	49:4			
1.6.15	20:1	32:1										
1.6.16	20:1											
1.6.17	40:1											
1.6.18	17:1	23:1	36:5									
1.6.19	10:5	11:1	12:1	15:3	18:5	27:4	28:5	37:1	38:1	41:5	44:1	45:4	47:4
	49:1											
1.6.20												
1.6.21												
1.6.22	14:1	48:3	50:5									
1.6.23	21:1	22:2	24:5	39:5								
1.6.24												
Goal 2												
2A												
2.6.01												
2.6.02	2:1											
2.6.03												
2.6.04	45:1	47:1										
2.6.05												
2.6.06												
2.6.07	22:1	25:5	37:4	39:1	40:1							
2.6.08	1:4	12:1	23:1	32:1	35:5	43:2						
2.6.09	31:5	44:3										
2.6.10	2:4											
2.6.11	21:3											
2.6.12												
2.6.13												
2B												
2.6.14	3:5	46:1										
2.6.15	46:4											

Number of Reviewers Coding an Objective by Item for Grade 6
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item			
1	1.6.14:1	2.6.08:4	
2	2.6.02:1	2.6.10:4	
3	2.6.14:5		
4	IB, IC:5		
5	1.6.14:5		
6	1.6.14:5		
7	1.6.14:5		
8	1.6.03:4	1.6.05:1	
9	1.6.14:5		
10	1.6.19:5		
11	1.6.07:1	1.6.14:3	1.6.19:1
12	1.6.08:3	1.6.19:1	2.6.08:1
13	1.6.08:1	1.6.14:4	
14	1.6.14:4	1.6.22:1	
15	1.6.14:2	1.6.19:3	
16	IB, IC:3	1.6.12:2	
17	1.6.14:4	1.6.18:1	
18	1.6.19:5		
19	IB, IC:5		
20	1.6.12:3	1.6.15:1	1.6.16:1
21	1.6.03:1	1.6.23:1	2.6.11:3
22	1.6.14:2	1.6.23:2	2.6.07:1
23	1.6.14:3	1.6.18:1	2.6.08:1
24	1.6.23:5		
25	2.6.07:5		
26	1.6.14:5		
27	1.6.14:1	1.6.19:4	
28	1.6.19:5		
29	1.6.07:4	1.6.08:1	
30	1.6.07:4	1.6.14:1	
31	2.6.09:5		
32	1.6.14:3	1.6.15:1	2.6.08:1
33	1.6.03:1	1.6.04:4	
34	1.6.03:5		
35	2.6.08:5		
36	1.6.18:5		
37	1.6.19:1	2.6.07:4	
38	1.6.14:4	1.6.19:1	
39	1.6.23:5	2.6.07:1	
40	1.6.14:3	1.6.17:1	2.6.07:1
41	1.6.19:5		
42	1.6.03:3	1.6.05:1	1.6.06:1
43	1.6.14:3	2.6.08:2	
44	1.6.14:1	1.6.19:1	2.6.09:3
45	1.6.19:4	2.6.04:1	
46	2.6.14:1	2.6.15:4	
47	1.6.19:4	2.6.04:1	
48	1.6.14:2	1.6.22:3	
49	1.6.14:4	1.6.19:1	
50	1.6.22:5		
51	1.6.03:3	1.6.05:2	

Assessment Item DOK vs. Consensus DOK for Grade 6
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:													
1A [2]:													
1.6.01 [2]:													
1.6.02 [1]:													
1.6.03 [2]:	8:4 [2]	21:1 [2]	33:1 [2]	34:5 [1.8]	42:3 [2]	51:3 [2]							
1.6.04 [2]:	33:4 [1.75]												
1.6.05 [1]:	8:1 [1]	42:1 [1]	51:2 [1]										
1.6.06 [2]:	42:1 [2]												
IB, IC [2]:	4:5 [2]	16:3 [2]	19:5 [2]										
1.6.07 [2]:	11:1 [2]	29:4 [2]	30:4 [2]										
1.6.08 [2]:	12:3 [1.67]	13:1 [2]	29:1 [2]										
1.6.09 [1]:													
1.6.10 [2]:													
1.6.11 [2]:													
1.6.12 [2]:	16:2 [2.5]	20:3 [2]											
1.6.13 [2]:													
1C [2]:													
1.6.14 [2]:	1:1 [2]	5:5 [1.2]	6:5 [1.8]	7:5 [1]	9:5 [1]	11:3 [2]	13:4 [1.5]	14:4 [1]	15:2 [2]	17:4 [1]	22:2 [2]	23:3 [2]	26:5 [1]
	27:1 [2]	30:1 [2]	32:3 [2]	38:4 [1.5]	40:3 [1]	43:3 [1.67]	44:1 [2]	48:2 [1]	49:4 [1.5]				
1.6.15 [2]:	20:1 [2]	32:1 [2]											
1.6.16 [2]:	20:1 [2]												
1.6.17 [2]:	40:1 [2]												
1.6.18 [2]:	17:1 [2]	23:1 [2]	36:5 [2]										
1.6.19 [3]:	10:5 [2]	11:1 [2]	12:1 [2]	15:3 [2]	18:5 [1.8]	27:4 [2]	28:5 [2]	37:1 [2]	38:1 [2]	41:5 [2.6]	44:1 [3]	45:4 [2.25]	47:4 [2.75]
	49:1 [2]												
1.6.20 [2]:													
1.6.21 [2]:													
1.6.22 [2]:	14:1 [2]	48:3 [1.33]	50:5 [2]										
1.6.23 [3]:	21:1 [2]	22:2 [2.5]	24:5 [2.2]	39:5 [2.2]									

1.6.24 [3]:						
Goal 2 [3]:						
2A [3]:						
2.6.01 [2]:						
2.6.02 [3]:	2:1 [2]					
2.6.03 [3]:						
2.6.04 [3]:	45:1 [3]	47:1 [3]				
2.6.05 [3]:						
2.6.06 [2]:						
2.6.07 [3]:	22:1 [2]	25:5 [2]	37:4 [2.5]	39:1 [2]	40:1 [2]	
2.6.08 [3]:	1:4 [2]	12:1 [2]	23:1 [2]	32:1 [2]	35:5 [2]	43:2 [2.5]
2.6.09 [3]:	31:5 [2.2]	44:3 [2.33]				
2.6.10 [2]:	2:4 [2]					
2.6.11 [2]:	21:3 [2]					
2.6.12 [3]:						
2.6.13 [3]:						
2B [2]:						
2.6.14 [2]:	3:5 [2]	46:1 [2]				
2.6.15 [2]:	46:4 [2]					

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Categorical Concurrence Between Standards and Assessment for Grade 7

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 - Reading	3	25	1 2 3	1 17 6	4 70 25	40.8	1.17	YES
Goal 2 - Literature	2	14	2 3	6 8	42 57	17.6	3.14	YES
Total	5	39	1 2 3	1 23 14	2 60 36	58.4	3.83	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 7

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	3	25	40.8	1.17	35	45	59	46	6	24	YES
Goal 2 - Literature	2	14	17.6	3.14	55	44	45	44	0	0	WEAK
Total	5	39	58.4	3.83	44	46	53	46	4	18	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 7

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	3	25	40.8	1.17	13.2	0.75	53	3	YES	70	4	0.60	0.03	WEAK
Goal 2 - Literature	2	14	17.6	3.14	9.4	0.8	67	6	YES	30	4	0.71	0.08	YES
Total	5	39	58.4	3.83	11.3	2.05	60	8		50	20	0.65	0.08	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 7

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	YES	WEAK
Goal 2 - Literature	YES	WEAK	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 7 Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	1	1	1	1	1
2	2	2	2	2	2
3	2	2	2	2	2
4	2	2	2	2	2
5	2	2	2	2	1
6	2	2	1	2	2
7	2	2	1	2	2
8	2	2	2	2	3
9	2	2	2	2	1
10	2	2	3	2	2
11	1	1	1	1	1
12	2	2	2	2	2
13	3	1	2	1	1
14	2	2	2	2	1
15	2	2	2	2	2
16	1	1	1	1	1
17	2	2	3	2	2
18	2	2	2	2	2
19	2	2	2	2	2
20	2	2	3	2	2
21	1	1	1	1	1
22	2	2	2	1	1
23	2	2	2	2	2
24	2	1	1	1	1
25	2	2	1	2	2
26	2	2	2	2	1
27	1	1	1	1	1
28	2	2	2	2	2
29	2	2	2	3	2
30	2	2	2	2	2
31	2	2	2	2	1
32	1	1	1	1	1
33	3	3	2	2	2
34	2	2	2	2	2
35	3	3	3	2	3
36	2	2	2	2	2
37	2	2	2	2	2
38	2	2	2	2	1
39	3	3	3	2	3
40	3	1	2	2	2
41	2	2	2	2	2
42	2	2	2	3	2
43	2	2	2	2	2
44	2	2	2	2	1
45	3	3	3	3	2
46	2	2	2	2	1
47	3	3	2	3	3
48	2	1	2	1	1
49	2	1	2	1	1
50	2	1	2	2	1
51	2	2	2	2	2

Intraclass Correlation: 0.8758
Pairwise Comparison: 0.7412

DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	S2Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	1.7.15			1	1.7.15		1	1.7.15		1	1.7.15		1	1.7.15	
2	2	1.7.20			2	1.7.20		2	1.7.15		2	1.7.20		2	1.7.20	
3	2	IB, IC			2	IB, IC		2	IB, IC		2	IB, IC		2	IB, IC	
4	2	1.7.21			2	1.7.21		2	1.7.21		2	1.7.21		2	1.7.21	
5	2	1.7.15			2	1.7.15		2	1.7.15		2	1.7.15		1	1.7.15	
6	2	2.7.03			2	2.7.03		1	2.7.03		2	2.7.03		2	2.7.03	
7	2	2.7.11			2	1.7.04		1	1.7.15		2	2.7.11		2	2.7.11	
8	2	1.7.20			2	1.7.20		2	1.7.20		2	1.7.20		3	2.7.11	
9	2	2.7.10			2	1.7.23	2.7.10	2	2.7.10		2	2.7.10		1	2.7.10	
10	2	1.7.23			2	1.7.23		3	1.7.23		2	1.7.23		2	1.7.23	
11	1	1.7.15			1	1.7.15		1	1.7.15		1	1.7.15		1	1.7.15	
12	2	1.7.03			2	1.7.03		2	1.7.03		2	IB, IC		2	1.7.03	
13	3	1.7.20			1	1.7.15		2	1.7.22		1	1.7.15		1	1.7.15	
14	2	1.7.08			2	1.7.08		2	1.7.08		2	1.7.08		1	1.7.08	
15	2	1.7.20			2	1.7.20		2	1.7.20		2	1.7.20		2	1.7.20	
16	1	1.7.15			1	1.7.15		1	1.7.15		1	1.7.15		1	1.7.18	
17	2	1.7.07			2	1.7.20		3	2.7.03		2	1.7.20		2	1.7.20	
18	2	2.7.06			2	2.7.06		2	2.7.06		2	2.7.06		2	2.7.06	
19	2	1.7.07			2	1.7.07		2	1.7.07		2	1.7.07		2	1.7.07	
20	2	1.7.12			2	1.7.20		3	1.7.12		2	1.7.12		2	1.7.12	
21	1	2.7.01			1	2.7.01		1	2.7.01		1	2.7.01		1	2.7.01	
22	2	2.7.09			2	1.7.16		2	2.7.09		1	2.7.09		1	2.7.09	
23	2	1.7.19			2	2.7.09		2	1.7.19		2	2.7.07		2	1.7.19	
24	2	2.7.07			1	1.7.15	2.7.07	1	1.7.15		1	2.7.06		1	2.7.07	
25	2	1.7.03			2	1.7.03		1	1.7.03		2	IB, IC		2	1.7.03	
26	2	1.7.03			2	1.7.03		2	1.7.03		2	1.7.03		1	1.7.04	
27	1	1.7.15			1	1.7.15		1	1.7.15		1	1.7.15		1	1.7.15	
28	2	1.7.07			2	1.7.20		2	1.7.07		2	1.7.20		2	1.7.20	
29	2	1.7.15			2	2.7.07	1.7.20	2	1.7.15		3	1.7.15		2	1.7.15	
30	2	1.7.15			2	1.7.15		2	1.7.15		2	1.7.15		2	1.7.15	
31	2	1.7.05			2	1.7.03		2	1.7.03		2	1.7.03		1	1.7.03	
32	1	1.7.15			1	1.7.15		1	1.7.15		1	1.7.15		1	1.7.15	
33	3	2.7.08			3	2.7.08		2	2.7.08		2	2.7.08		2	1.7.20	
34	2	1.7.24			2	1.7.24		2	1.7.09		2	1.7.24		2	2.7.06	
35	3	2.7.06			3	2.7.02		3	1.7.20		2	2.7.06		3	1.7.20	
36	2	1.7.20			2	1.7.20	2.7.06	2	1.7.20		2	1.7.20		2	1.7.20	
37	2	1.7.20			2	2.7.07		2	2.7.10		2	2.7.07		2	2.7.07	
38	2	1.7.05			2	1.7.03		2	2.7.10		2	1.7.03		1	1.7.03	
39	3	2.7.08			3	2.7.08		3	2.7.08		2	1.7.20		3	2.7.12	
40	3	1.7.20			1	1.7.15		2	1.7.19		2	1.7.15		2	1.7.15	
41	2	1.7.07			2	1.7.07		2	1.7.07		2	1.7.07		2	1.7.07	

DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	S2Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
42	2	2.7.06			2	2.7.06		2	2.7.06		3	2.7.06		2	1.7.20	
43	2	2.7.08			2	2.7.08		2	2.7.08		2	2.7.08		2	2.7.08	
44	2	1.7.05			2	1.7.05		2	1.7.05		2	1.7.05		1	1.7.15	
45	3	2.7.12			3	2.7.12		3	2.7.12		3	2.7.12		2	2.7.12	
46	2	2.7.13			2	1.7.13		2	2.7.13		2	2.7.13		1	2.7.13	
47	3	1.7.20	2.7.03	2.7.06	3	2.7.07	1.7.20	2	1.7.20		3	1.7.20	2.7.07	3	1.7.20	
48	2	1.7.09			1	1.7.09		2	1.7.10		1	1.7.09		1	1.7.09	
49	2	1.7.09			1	1.7.09		2	1.7.10		1	1.7.09		1	1.7.09	
50	2	1.7.09			1	1.7.09		2	1.7.10		2	1.7.09		1	1.7.09	
51	2	1.7.09	1.7.15		2	1.7.15		2	1.7.09		2	1.7.09	1.7.15	2	1.7.15	

Objective Pairwise Comparison: 0.6374
Standard Pairwise Comparison: 0.8449

Objectives Coded to Each Item by Reviewers for Grade 7

Low		Medium		High
5		5.72549		36

1	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
2	1.7.15	1.7.20	1.7.20	1.7.20	1.7.20				
3	IB, IC	IB, IC	IB, IC	IB, IC	IB, IC				
4	1.7.21	1.7.21	1.7.21	1.7.21	1.7.21				
5	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
6	2.7.03	2.7.03	2.7.03	2.7.03	2.7.03				
7	1.7.04	1.7.15	2.7.11	2.7.11	2.7.11				
8	1.7.20	1.7.20	1.7.20	1.7.20	2.7.11				
9	1.7.23	2.7.10	2.7.10	2.7.10	2.7.10	2.7.10			
10	1.7.23	1.7.23	1.7.23	1.7.23	1.7.23				
11	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
12	1.7.03	1.7.03	1.7.03	1.7.03	IB, IC				
13	1.7.15	1.7.15	1.7.15	1.7.20	1.7.22				
14	1.7.08	1.7.08	1.7.08	1.7.08	1.7.08				
15	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20				
16	1.7.15	1.7.15	1.7.15	1.7.15	1.7.18				
17	1.7.07	1.7.20	1.7.20	1.7.20	2.7.03				
18	2.7.06	2.7.06	2.7.06	2.7.06	2.7.06				
19	1.7.07	1.7.07	1.7.07	1.7.07	1.7.07				
20	1.7.12	1.7.12	1.7.12	1.7.12	1.7.20				
21	2.7.01	2.7.01	2.7.01	2.7.01	2.7.01				
22	1.7.16	2.7.09	2.7.09	2.7.09	2.7.09				
23	1.7.19	1.7.19	1.7.19	2.7.07	2.7.09				
24	1.7.15	1.7.15	2.7.06	2.7.07	2.7.07	2.7.07			
25	1.7.03	1.7.03	1.7.03	1.7.03	IB, IC				
26	1.7.03	1.7.03	1.7.03	1.7.03	1.7.04				
27	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
28	1.7.07	1.7.07	1.7.20	1.7.20	1.7.20				
29	1.7.15	1.7.15	1.7.15	1.7.15	1.7.20	2.7.07			
30	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
31	1.7.03	1.7.03	1.7.03	1.7.03	1.7.05				
32	1.7.15	1.7.15	1.7.15	1.7.15	1.7.15				
33	1.7.20	2.7.08	2.7.08	2.7.08	2.7.08				
34	1.7.09	1.7.24	1.7.24	1.7.24	2.7.06				
35	1.7.20	1.7.20	2.7.02	2.7.06	2.7.06				
36	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	2.7.06			
37	1.7.20	2.7.07	2.7.07	2.7.07	2.7.10				
38	1.7.03	1.7.03	1.7.03	1.7.05	2.7.10				
39	1.7.20	2.7.08	2.7.08	2.7.08	2.7.12				
40	1.7.15	1.7.15	1.7.15	1.7.19	1.7.20				
41	1.7.07	1.7.07	1.7.07	1.7.07	1.7.07				
42	1.7.20	2.7.06	2.7.06	2.7.06	2.7.06				
43	2.7.08	2.7.08	2.7.08	2.7.08	2.7.08				
44	1.7.05	1.7.05	1.7.05	1.7.05	1.7.15				
45	2.7.12	2.7.12	2.7.12	2.7.12	2.7.12				
46	1.7.13	2.7.13	2.7.13	2.7.13	2.7.13				
47	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20
	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	1.7.20	
	1.7.20	2.7.03	2.7.03	2.7.03	2.7.03	2.7.06	2.7.06	2.7.06	2.7.06	
	2.7.07	2.7.07	2.7.07	2.7.07	2.7.07	2.7.07	2.7.07	2.7.07		
48	1.7.09	1.7.09	1.7.09	1.7.09	1.7.10				
49	1.7.09	1.7.09	1.7.09	1.7.09	1.7.10				
50	1.7.09	1.7.09	1.7.09	1.7.09	1.7.10				
51	1.7.09	1.7.09	1.7.09	1.7.15	1.7.15	1.7.15	1.7.15		

Items Coded by Reviewers to Each Objective for Grade 7

Low		Medium		High
0		6.347826		54

Objective	Items
Goal 1	
1A	
1.7.01	
1.7.02	
1.7.03	12 12 12 12 25 25 25 25 26 26 26 26 31 31 31 31 38 38 38
1.7.04	7 26
1.7.05	31 38 44 44 44 44
1.7.06	
IB, IC	3 3 3 3 3 12 25
1.7.07	17 19 19 19 19 19 28 28 41 41 41 41 41
1.7.08	14 14 14 14 14
1.7.09	34 48 48 48 48 49 49 49 49 50 50 50 50 51 51 51
1.7.10	48 49 50
1.7.11	
1.7.12	20 20 20 20
1.7.13	46
1.7.14	
1C	
1.7.15	1 1 1 1 1 2 5 5 5 5 5 7 11 11 11 11 11 13 13 13
	16 16 16 16 24 24 27 27 27 27 27 29 29 29 29 30 30 30 30
	30 32 32 32 32 32 40 40 40 44 51 51 51 51
1.7.16	22
1.7.17	
1.7.18	16
1.7.19	23 23 23 40
1.7.20	2 2 2 2 8 8 8 8 13 15 15 15 15 15 17 17 17 20 28 28
	28 29 33 35 35 36 36 36 36 36 37 39 40 42 47 47 47 47 47
	47 47 47 47 47 47 47 47 47 47 47 47 47 47 47
1.7.21	4 4 4 4 4
1.7.22	13
1.7.23	9 10 10 10 10 10
1.7.24	34 34 34
Goal 2	
2A	
2.7.01	21 21 21 21 21
2.7.02	35
2.7.03	6 6 6 6 6 17 47 47 47 47
2.7.04	
2.7.05	
2.7.06	18 18 18 18 18 24 34 35 35 36 42 42 42 42 47 47 47 47
2.7.07	23 24 24 24 29 37 37 37 47 47 47 47 47 47 47 47
2.7.08	33 33 33 33 39 39 39 43 43 43 43 43
2.7.09	22 22 22 22 23
2.7.10	9 9 9 9 9 37 38
2.7.11	7 7 7 8
2.7.12	39 45 45 45 45 45
2B	
2.7.13	46 46 46 46
2.7.14	

Number of Reviewers Coding an Item by Objective for Grade 7
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective	Items
Goal 1	
1A	
1.7.01	
1.7.02	
1.7.03	12:4 25:4 26:4 31:4 38:3
1.7.04	7:1 26:1
1.7.05	31:1 38:1 44:4
1.7.06	
IB, IC	3:5 12:1 25:1
1.7.07	17:1 19:5 28:2 41:5
1.7.08	14:5
1.7.09	34:1 48:4 49:4 50:4 51:3
1.7.10	48:1 49:1 50:1
1.7.11	
1.7.12	20:4
1.7.13	46:1
1.7.14	
1C	
1.7.15	1:5 2:1 5:5 7:1 11:5 13:3 16:4 24:2 27:5 29:4 30:5 32:5 40:3
	44:1 51:4
1.7.16	22:1
1.7.17	
1.7.18	16:1
1.7.19	23:3 40:1
1.7.20	2:4 8:4 13:1 15:5 17:3 20:1 28:3 29:1 33:1 35:2 36:5 37:1 39:1
	40:1 42:1 47:5
1.7.21	4:5
1.7.22	13:1
1.7.23	9:1 10:5
1.7.24	34:3
Goal 2	
2A	
2.7.01	21:5
2.7.02	35:1
2.7.03	6:5 17:1 47:1
2.7.04	
2.7.05	
2.7.06	18:5 24:1 34:1 35:2 36:1 42:4 47:1
2.7.07	23:1 24:3 29:1 37:3 47:2
2.7.08	33:4 39:3 43:5
2.7.09	22:4 23:1
2.7.10	9:5 37:1 38:1
2.7.11	7:3 8:1
2.7.12	39:1 45:5
2B	
2.7.13	46:4
2.7.14	

Number of Reviewers Coding an Objective by Item for Grade 7
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	1.7.15:5		
2	1.7.15:1	1.7.20:4	
3	IB, IC:5		
4	1.7.21:5		
5	1.7.15:5		
6	2.7.03:5		
7	1.7.04:1	1.7.15:1	2.7.11:3
8	1.7.20:4	2.7.11:1	
9	1.7.23:1	2.7.10:5	
10	1.7.23:5		
11	1.7.15:5		
12	1.7.03:4	IB, IC:1	
13	1.7.15:3	1.7.20:1	1.7.22:1
14	1.7.08:5		
15	1.7.20:5		
16	1.7.15:4	1.7.18:1	
17	1.7.07:1	1.7.20:3	2.7.03:1
18	2.7.06:5		
19	1.7.07:5		
20	1.7.12:4	1.7.20:1	
21	2.7.01:5		
22	1.7.16:1	2.7.09:4	
23	1.7.19:3	2.7.07:1	2.7.09:1
24	1.7.15:2	2.7.06:1	2.7.07:3
25	1.7.03:4	IB, IC:1	
26	1.7.03:4	1.7.04:1	
27	1.7.15:5		
28	1.7.07:2	1.7.20:3	
29	1.7.15:4	1.7.20:1	2.7.07:1
30	1.7.15:5		
31	1.7.03:4	1.7.05:1	
32	1.7.15:5		
33	1.7.20:1	2.7.08:4	
34	1.7.09:1	1.7.24:3	2.7.06:1
35	1.7.20:2	2.7.02:1	2.7.06:2
36	1.7.20:5	2.7.06:1	
37	1.7.20:1	2.7.07:3	2.7.10:1
38	1.7.03:3	1.7.05:1	2.7.10:1
39	1.7.20:1	2.7.08:3	2.7.12:1
40	1.7.15:3	1.7.19:1	1.7.20:1
41	1.7.07:5		
42	1.7.20:1	2.7.06:4	
43	2.7.08:5		
44	1.7.05:4	1.7.15:1	
45	2.7.12:5		
46	1.7.13:1	2.7.13:4	
47	1.7.20:5	2.7.03:1	2.7.06:1	2.7.07:2
48	1.7.09:4	1.7.10:1	
49	1.7.09:4	1.7.10:1	
50	1.7.09:4	1.7.10:1	
51	1.7.09:3	1.7.15:4	

Assessment Item DOK vs. Consensus DOK for Grade 7
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:													
1A [2]:													
1.7.01 [2]:													
1.7.02 [2]:													
1.7.03 [2]:	12:4 [2]	25:4 [1.75]	26:4 [2]	31:4 [1.75]	38:3 [1.67]								
1.7.04 [2]:	7:1 [2]	26:1 [1]											
1.7.05 [2]:	31:1 [2]	38:1 [2]	44:4 [2]										
1.7.06 [2]:													
IB, IC [2]:	3:5 [2]	12:1 [2]	25:1 [2]										
1.7.07 [2]:	17:1 [2]	19:5 [2]	28:2 [2]	41:5 [2]									
1.7.08 [1]:	14:5 [1.8]												
1.7.09 [2]:	34:1 [2]	48:4 [1.25]	49:4 [1.25]	50:4 [1.5]	51:3 [2]								
1.7.10 [2]:	48:1 [2]	49:1 [2]	50:1 [2]										
1.7.11 [3]:													
1.7.12 [3]:	20:4 [2.25]												
1.7.13 [2]:	46:1 [2]												
1.7.14 [2]:													
1C [2]:													
1.7.15 [3]:	1:5 [1]	2:1 [2]	5:5 [1.8]	7:1 [1]	11:5 [1]	13:3 [1]	16:4 [1]	24:2 [1]	27:5 [1]	29:4 [2.25]	30:5 [2]	32:5 [1]	40:3 [1.67]
	44:1 [1]	51:4 [2]											
1.7.16 [2]:	22:1 [2]												
1.7.17 [2]:													
1.7.18 [2]:	16:1 [1]												
1.7.19 [2]:	23:3 [2]	40:1 [2]											
1.7.20 [3]:	2:4 [2]	8:4 [2]	13:1 [3]	15:5 [2]	17:3 [2]	20:1 [2]	28:3 [2]	29:1 [2]	33:1 [2]	35:2 [3]	36:5 [2]	37:1 [2]	39:1 [2]
	40:1 [3]	42:1 [2]	47:5 [2.8]										
1.7.21 [2]:	4:5 [2]												
1.7.22 [2]:	13:1 [2]												
1.7.23 [3]:	9:1 [2]	10:5 [2.2]											
1.7.24 [3]:	34:3 [2]												
Goal 2 [3]:													
2A [3]:													
2.7.01 [2]:	21:5 [1]												
2.7.02 [3]:	35:1												

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	[3]						
2.7.03 [3]:	6:5 [1.8]	17:1 [3]	47:1 [3]				
2.7.04 [3]:							
2.7.05 [2]:							
2.7.06 [3]:	18:5 [2]	24:1 [1]	34:1 [2]	35:2 [2.5]	36:1 [2]	42:4 [2.25]	47:1 [3]
2.7.07 [3]:	23:1 [2]	24:3 [1.33]	29:1 [2]	37:3 [2]	47:2 [3]		
2.7.08 [3]:	33:4 [2.5]	39:3 [3]	43:5 [2]				
2.7.09 [2]:	22:4 [1.5]	23:1 [2]					
2.7.10 [2]:	9:5 [1.8]	37:1 [2]	38:1 [2]				
2.7.11 [3]:	7:3 [2]	8:1 [3]					
2.7.12 [3]:	39:1 [3]	45:5 [2.8]					
2B [2]:							
2.7.13 [2]:	46:4 [1.75]						
2.7.14 [2]:							

Categorical Concurrence Between Standards and Assessment for Grade 8

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 1 - Reading	3	26	2 3	19 6	76 24	35.2	0.75	YES
Goal 2 - Literature	2	13	1 2 3	1 4 8	7 30 61	20.8	2.14	YES
Total	5	39	1 2 3	1 23 14	2 60 36	56	1.79	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 8

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 1 - Reading	3	26	35.2	0.75	33	41	67	41	0	0	YES
Goal 2 - Literature	2	13	20.8	2.14	41	45	58	44	1	8	YES
Total	5	39	56	1.79	36	43	64	43	0	5	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 8

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 1 - Reading	3	26	35.2	0.75	13.6	1.50	52	6	YES	63	3	0.63	0.03	WEAK
Goal 2 - Literature	2	13	20.8	2.14	7.6	0.8	58	6	YES	37	3	0.71	0.05	YES
Total	5	39	56	1.79	10.6	3.23	55	7		50	13	0.67	0.06	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 8

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 1 - Reading	YES	YES	YES	WEAK
Goal 2 - Literature	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 8 Intraclass Correlation

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
1	2	2	2	2	1
2	2	2	2	2	2
3	2	2	3	2	2
4	2	2	2	2	2
5	3	2	3	2	3
6	2	2	3	2	1
7	2	2	2	2	2
8	2	2	2	2	2
9	2	1	2	1	2
10	2	2	2	2	2
11	1	1	2	1	2
12	2	1	2	1	2
13	2	2	2	2	2
14	2	2	2	2	3
15	2	2	3	2	2
16	3	2	2	3	3
17	2	2	3	2	2
18	2	2	3	2	2
19	2	2	3	2	2
20	1	1	1	2	1
21	2	2	2	2	2
22	2	1	2	2	1
23	2	2	3	2	2
24	1	2	2	2	1
25	2	1	2	1	1
26	2	2	2	2	2
27	2	2	2	1	1
28	2	2	3	2	2
29	2	2	3	2	2
30	2	2	2	2	1
31	3	2	3	3	2
32	2	1	2	2	1
33	3	2	3	2	2
34	2	1	1	2	1
35	2	2	2	2	1
36	2	2	3	2	2
37	2	2	3	2	2
38	1	1	1	1	1
39	2	2	2	2	2
40	2	2	3	2	2
41	2	1	3	1	1
42	2	2	2	2	2
43	1	1	1	1	1
44	2	2	3	2	2
45	2	2	3	3	2
46	2	2	2	2	1
47	3	3	3	3	3
48	1	1	1	1	1
49	1	1	1	1	2
50	2	2	1	1	1
51	2	2	2	2	2

Intraclass Correlation: 0.8412
Pairwise Comparison: 0.6471

DOK Levels and Objectives Coded by Each Reviewer for Grade 8

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	IB, IC		2	1.8.12		2	IB, IC		2	IB, IC		1	IB, IC	
2	2	2.8.07		2	2.8.06		2	2.8.07		2	2.8.07		2	2.8.07	
3	2	2.8.06		2	1.8.19		3	2.8.06		2	2.8.06		2	2.8.06	
4	2	2.8.09		2	2.8.06		2	2.8.11		2	2.8.09		2	2.8.09	
5	3	2.8.11		2	2.8.11		3	2.8.06		2	2.8.11		3	2.8.11	
6	2	1.8.21		2	1.8.21		3	1.8.21		2	1.8.21		1	1.8.21	
7	2	1.8.09		2	1.8.09		2	1.8.10		2	1.8.09		2	1.8.09	
8	2	1.8.24		2	1.8.24		2	1.8.14		2	1.8.09		2	1.8.24	
9	2	1.8.21		1	1.8.14		2	1.8.14		1	1.8.14		2	1.8.12	
10	2	1.8.19		2	1.8.19		2	1.8.19		2	1.8.19		2	1.8.19	
11	1	1.8.14		1	1.8.14		2	1.8.14		1	1.8.14		2	1.8.18	
12	2	1.8.14		1	1.8.14		2	1.8.20		1	1.8.14		2	1.8.14	
13	2	1.8.21		2	1.8.21		2	1.8.21		2	1.8.21		2	1.8.21	
14	2	1.8.06		2	1.8.06		2	1.8.06		2	1.8.19		3	1.8.19	
15	2	IB, IC		2	IB, IC		3	1.8.10		2	1.8.06		2	IB, IC	
16	3	2.8.11		2	2.8.11		2	2.8.09		3	2.8.11		3	2.8.06	
17	2	2.8.11		2	1.8.24		3	2.8.11		2	2.8.11		2	2.8.11	
18	2	2.8.11		2	1.8.19		3	2.8.04		2	2.8.11		2	1.8.11	
19	2	2.8.06		2	1.8.19		3	2.8.06		2	2.8.06		2	2.8.06	
20	1	2.8.10		1	2.8.10		1	2.8.10		2	2.8.10		1	2.8.10	
21	2	1.8.13		2	1.8.13		2	1.8.13		2	1.8.13		2	1.8.13	
22	2	1.8.14		1	1.8.14		2	1.8.24		2	1.8.21		1	1.8.14	
23	2	1.8.24		2	1.8.24		3	2.8.03		2	1.8.24		2	1.8.19	
24	1	1.8.14		2	1.8.14		2	1.8.14		2	1.8.14		1	1.8.14	
25	2	1.8.14		1	1.8.14		2	1.8.14		1	1.8.14		1	1.8.14	
26	2	2.8.13		2	2.8.13		2	1.8.24		2	2.8.13		2	2.8.13	
27	2	1.8.14		2	1.8.19		2	1.8.19		1	1.8.14		1	1.8.14	
28	2	1.8.21		2	2.8.06		3	1.8.21		2	1.8.21		2	1.8.21	
29	2	IB, IC		2	1.8.21		3	1.8.21		2	1.8.06		2	1.8.21	
30	2	1.8.03		2	1.8.03		2	1.8.03		2	1.8.03		1	1.8.03	
31	3	1.8.24		2	1.8.24		3	2.8.03		3	1.8.24		2	1.8.24	
32	2	1.8.01		1	1.8.01		2	1.8.01		2	1.8.03		1	1.8.01	
33	3	2.8.12		2	2.8.12	1.8.19	3	2.8.12		2	2.8.12		2	2.8.12	
34	2	1.8.14		1	1.8.14		1	1.8.14		2	1.8.14		1	1.8.14	
35	2	1.8.18		2	1.8.18		2	1.8.18		2	1.8.18		1	1.8.18	
36	2	1.8.24		2	2.8.03		3	1.8.24		2	2.8.11		2	1.8.24	
37	2	2.8.06		2	2.8.06		3	1.8.19		2	2.8.06		2	2.8.06	
38	1	1.8.18		1	1.8.19		1	2.8.07		1	2.8.07		1	2.8.07	
39	2	1.8.25		2	1.8.25		2	1.8.25		2	1.8.25		2	1.8.25	
40	2	2.8.11		2	2.8.11	2.8.12	3	2.8.11		2	2.8.11		2	2.8.11	
41	2	2.8.11		1	2.8.04		3	2.8.11		1	2.8.11		1	2.8.11	

DOK Levels and Objectives Coded by Each Reviewer for Grade 8

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
42	2	1.8.05		2	1.8.05		2	1.8.03		2	1.8.03		2	1.8.05	
43	1	2.8.10		1	2.8.10		1	2.8.10		1	2.8.10		1	2.8.10	
44	2	2.8.06		2	2.8.06		3	2.8.06		2	2.8.06		2	2.8.06	
45	2	2.8.11		2	2.8.11		3	2.8.11		3	2.8.11		2	2.8.11	
46	2	2.8.13		2	2.8.13		2	2.8.13		2	2.8.13		1	2.8.13	
47	3	1.8.19	2.8.07	3	2.8.07		3	1.8.19		3	1.8.19	2.8.06	3	1.8.19	
48	1	1.8.14		1	1.8.14		1	1.8.14		1	1.8.21		1	1.8.14	
49	1	1.8.14		1	1.8.14		1	1.8.14		1	1.8.21		2	1.8.23	
50	2	1.8.14		2	1.8.19		1	1.8.14		1	1.8.21		1	1.8.14	
51	2	1.8.21		2	1.8.23		2	1.8.23		2	1.8.14		2	1.8.23	

Objective Pairwise Comparison: 0.6007
Standard Pairwise Comparison: 0.881

Objectives Coded to Each Item by Reviewers for Grade 8

Low		Medium		High
5		5.490196		28

1	IB, IC	IB, IC	IB, IC	IB, IC	1.8.12					
2	2.8.06	2.8.07	2.8.07	2.8.07	2.8.07					
3	1.8.19	2.8.06	2.8.06	2.8.06	2.8.06					
4	2.8.06	2.8.09	2.8.09	2.8.09	2.8.11					
5	2.8.06	2.8.11	2.8.11	2.8.11	2.8.11					
6	1.8.21	1.8.21	1.8.21	1.8.21	1.8.21					
7	1.8.09	1.8.09	1.8.09	1.8.09	1.8.10					
8	1.8.09	1.8.14	1.8.24	1.8.24	1.8.24					
9	1.8.12	1.8.14	1.8.14	1.8.14	1.8.21					
10	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19					
11	1.8.14	1.8.14	1.8.14	1.8.14	1.8.18					
12	1.8.14	1.8.14	1.8.14	1.8.14	1.8.20					
13	1.8.21	1.8.21	1.8.21	1.8.21	1.8.21					
14	1.8.06	1.8.06	1.8.06	1.8.19	1.8.19					
15	IB, IC	IB, IC	IB, IC	1.8.06	1.8.10					
16	2.8.06	2.8.09	2.8.11	2.8.11	2.8.11					
17	1.8.24	2.8.11	2.8.11	2.8.11	2.8.11					
18	1.8.11	1.8.19	2.8.04	2.8.11	2.8.11					
19	1.8.19	2.8.06	2.8.06	2.8.06	2.8.06					
20	2.8.10	2.8.10	2.8.10	2.8.10	2.8.10					
21	1.8.13	1.8.13	1.8.13	1.8.13	1.8.13					
22	1.8.14	1.8.14	1.8.14	1.8.21	1.8.24					
23	1.8.19	1.8.24	1.8.24	1.8.24	2.8.03					
24	1.8.14	1.8.14	1.8.14	1.8.14	1.8.14					
25	1.8.14	1.8.14	1.8.14	1.8.14	1.8.14					
26	1.8.24	2.8.13	2.8.13	2.8.13	2.8.13					
27	1.8.14	1.8.14	1.8.14	1.8.19	1.8.19					
28	1.8.21	1.8.21	1.8.21	1.8.21	2.8.06					
29	IB, IC	1.8.06	1.8.21	1.8.21	1.8.21					
30	1.8.03	1.8.03	1.8.03	1.8.03	1.8.03					
31	1.8.24	1.8.24	1.8.24	1.8.24	2.8.03					
32	1.8.01	1.8.01	1.8.01	1.8.01	1.8.03					
33	1.8.19	2.8.12	2.8.12	2.8.12	2.8.12	2.8.12				
34	1.8.14	1.8.14	1.8.14	1.8.14	1.8.14					
35	1.8.18	1.8.18	1.8.18	1.8.18	1.8.18					
36	1.8.24	1.8.24	1.8.24	2.8.03	2.8.11					
37	1.8.19	2.8.06	2.8.06	2.8.06	2.8.06					
38	1.8.18	1.8.19	2.8.07	2.8.07	2.8.07					
39	1.8.25	1.8.25	1.8.25	1.8.25	1.8.25					
40	2.8.11	2.8.11	2.8.11	2.8.11	2.8.11	2.8.12				
41	2.8.04	2.8.11	2.8.11	2.8.11	2.8.11					
42	1.8.03	1.8.03	1.8.05	1.8.05	1.8.05					
43	2.8.10	2.8.10	2.8.10	2.8.10	2.8.10					
44	2.8.06	2.8.06	2.8.06	2.8.06	2.8.06					
45	2.8.11	2.8.11	2.8.11	2.8.11	2.8.11					
46	2.8.13	2.8.13	2.8.13	2.8.13	2.8.13					
47	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19
	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	1.8.19	2.8.06	2.8.06	2.8.06	
	2.8.06	2.8.07	2.8.07	2.8.07	2.8.07	2.8.07	2.8.07	2.8.07	2.8.07	
48	1.8.14	1.8.14	1.8.14	1.8.14	1.8.21					
49	1.8.14	1.8.14	1.8.14	1.8.21	1.8.23					
50	1.8.14	1.8.14	1.8.14	1.8.19	1.8.21					
51	1.8.14	1.8.21	1.8.23	1.8.23	1.8.23					

Items Coded by Reviewers to Each Objective for Grade 8

Low		Medium		High
0		6.086957		44

Goal 1																				
1A																				
1.8.01	32	32	32	32																
1.8.02																				
1.8.03	30	30	30	30	30	32	42	42												
1.8.04																				
1.8.05	42	42	42																	
IB, IC	1	1	1	1	15	15	15	29												
1.8.06	14	14	14	15	29															
1.8.07																				
1.8.08																				
1.8.09	7	7	7	7	8															
1.8.10	7	15																		
1.8.11	18																			
1.8.12	1	9																		
1.8.13	21	21	21	21	21															
1C																				
1.8.14	8	9	9	9	11	11	11	11	12	12	12	12	22	22	22	24	24	24	24	24
	25	25	25	25	25	27	27	27	34	34	34	34	34	48	48	48	48	49	49	
	49	50	50	50	51															
1.8.15																				
1.8.16																				
1.8.17																				
1.8.18	11	35	35	35	35	35	38													
1.8.19	3	10	10	10	10	10	14	14	18	19	23	27	27	33	37	38	47	47	47	47
	47	47	47	47	47	47	47	47	47	47	47	47	50							
1.8.20	12																			
1.8.21	6	6	6	6	6	9	13	13	13	13	13	22	28	28	28	28	29	29	29	48
	49	50	51																	
1.8.22																				
1.8.23	49	51	51	51																
1.8.24	8	8	8	17	22	23	23	23	26	31	31	31	31	36	36	36				
1.8.25	39	39	39	39	39															
Goal 2																				
2A																				
2.8.01																				
2.8.02																				
2.8.03	23	31	36																	
2.8.04	18	41																		
2.8.05																				
2.8.06	2	3	3	3	3	4	5	16	19	19	19	19	28	37	37	37	37	44	44	44
	44	44	47	47	47	47														
2.8.07	2	2	2	2	38	38	38	47	47	47	47	47	47	47	47					
2.8.08																				
2.8.09	4	4	4	16																
2.8.10	20	20	20	20	20	43	43	43	43	43										
2.8.11	4	5	5	5	5	16	16	16	17	17	17	17	18	18	36	40	40	40	40	40
	41	41	41	41	45	45	45	45	45											
2.8.12	33	33	33	33	33	40														
2B																				
2.8.13	26	26	26	26	46	46	46	46	46											

Number of Reviewers Coding an Item by Objective for Grade 8
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 1												
1A												
1.8.01	32:4											
1.8.02												
1.8.03	30:5	32:1	42:2									
1.8.04												
1.8.05	42:3											
IB, IC	1:4	15:3	29:1									
1.8.06	14:3	15:1	29:1									
1.8.07												
1.8.08												
1.8.09	7:4	8:1										
1.8.10	7:1	15:1										
1.8.11	18:1											
1.8.12	1:1	9:1										
1.8.13	21:5											
1C												
1.8.14	8:1	9:3	11:4	12:4	22:3	24:5	25:5	27:3	34:5	48:4	49:3	50:3	51:1
1.8.15												
1.8.16												
1.8.17												
1.8.18	11:1	35:5	38:1									
1.8.19	3:1	10:5	14:2	18:1	19:1	23:1	27:2	33:1	37:1	38:1	47:4	50:1
1.8.20	12:1											
1.8.21	6:5	9:1	13:5	22:1	28:4	29:3	48:1	49:1	50:1	51:1		
1.8.22												
1.8.23	49:1	51:3										
1.8.24	8:3	17:1	22:1	23:3	26:1	31:4	36:3					
1.8.25	39:5											
Goal 2												
2A												
2.8.01												
2.8.02												
2.8.03	23:1	31:1	36:1									
2.8.04	18:1	41:1										
2.8.05												
2.8.06	2:1	3:4	4:1	5:1	16:1	19:4	28:1	37:4	44:5	47:1		
2.8.07	2:4	38:3	47:2									
2.8.08												
2.8.09	4:3	16:1										
2.8.10	20:5	43:5										
2.8.11	4:1	5:4	16:3	17:4	18:2	36:1	40:5	41:4	45:5			
2.8.12	33:5	40:1										
2B												
2.8.13	26:4	46:5										

Number of Reviewers Coding an Objective by Item for Grade 8
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item				
1	IB, IC:4	1.8.12:1		
2	2.8.06:1	2.8.07:4		
3	1.8.19:1	2.8.06:4		
4	2.8.06:1	2.8.09:3	2.8.11:1	
5	2.8.06:1	2.8.11:4		
6	1.8.21:5			
7	1.8.09:4	1.8.10:1		
8	1.8.09:1	1.8.14:1	1.8.24:3	
9	1.8.12:1	1.8.14:3	1.8.21:1	
10	1.8.19:5			
11	1.8.14:4	1.8.18:1		
12	1.8.14:4	1.8.20:1		
13	1.8.21:5			
14	1.8.06:3	1.8.19:2		
15	IB, IC:3	1.8.06:1	1.8.10:1	
16	2.8.06:1	2.8.09:1	2.8.11:3	
17	1.8.24:1	2.8.11:4		
18	1.8.11:1	1.8.19:1	2.8.04:1	2.8.11:2
19	1.8.19:1	2.8.06:4		
20	2.8.10:5			
21	1.8.13:5			
22	1.8.14:3	1.8.21:1	1.8.24:1	
23	1.8.19:1	1.8.24:3	2.8.03:1	
24	1.8.14:5			
25	1.8.14:5			
26	1.8.24:1	2.8.13:4		
27	1.8.14:3	1.8.19:2		
28	1.8.21:4	2.8.06:1		
29	IB, IC:1	1.8.06:1	1.8.21:3	
30	1.8.03:5			
31	1.8.24:4	2.8.03:1		
32	1.8.01:4	1.8.03:1		
33	1.8.19:1	2.8.12:5		
34	1.8.14:5			
35	1.8.18:5			
36	1.8.24:3	2.8.03:1	2.8.11:1	
37	1.8.19:1	2.8.06:4		
38	1.8.18:1	1.8.19:1	2.8.07:3	
39	1.8.25:5			
40	2.8.11:5	2.8.12:1		
41	2.8.04:1	2.8.11:4		
42	1.8.03:2	1.8.05:3		
43	2.8.10:5			
44	2.8.06:5			
45	2.8.11:5			
46	2.8.13:5			
47	1.8.19:4	2.8.06:1	2.8.07:2	
48	1.8.14:4	1.8.21:1		
49	1.8.14:3	1.8.21:1	1.8.23:1	
50	1.8.14:3	1.8.19:1	1.8.21:1	
51	1.8.14:1	1.8.21:1	1.8.23:3	

Assessment Item DOK vs. Consensus DOK for Grade 8
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 1 [2]:													
1A [2]:													
1.8.01 [2]:	32:4 [1.5]												
1.8.02 [2]:													
1.8.03 [2]:	30:5 [1.8]	32:1 [2]	42:2 [2]										
1.8.04 [2]:													
1.8.05 [2]:	42:3 [2]												
IB, IC [2]:	1:4 [1.75]	15:3 [2]	29:1 [2]										
1.8.06 [2]:	14:3 [2]	15:1 [2]	29:1 [2]										
1.8.07 [2]:													
1.8.08 [2]:													
1.8.09 [3]:	7:4 [2]	8:1 [2]											
1.8.10 [3]:	7:1 [2]	15:1 [3]											
1.8.11 [2]:	18:1 [2]												
1.8.12 [2]:	1:1 [2]	9:1 [2]											
1.8.13 [2]:	21:5 [2]												
1C [2]:													
1.8.14 [2]:	8:1 [2]	9:3 [1.33]	11:4 [1.25]	12:4 [1.5]	22:3 [1.33]	24:5 [1.6]	25:5 [1.4]	27:3 [1.33]	34:5 [1.4]	48:4 [1]	49:3 [1]	50:3 [1.33]	51:1 [2]
1.8.15 [2]:													
1.8.16 [2]:													
1.8.17 [2]:													
1.8.18 [2]:	11:1 [2]	35:5 [1.8]	38:1 [1]										
1.8.19 [3]:	3:1 [2]	10:5 [2]	14:2 [2.5]	18:1 [2]	19:1 [2]	23:1 [2]	27:2 [2]	33:1 [2]	37:1 [3]	38:1 [1]	47:4 [3]	50:1 [2]	
1.8.20 [2]:	12:1 [2]												
1.8.21 [3]:	6:5 [2]	9:1 [2]	13:5 [2]	22:1 [2]	28:4 [2.25]	29:3 [2.33]	48:1 [1]	49:1 [1]	50:1 [1]	51:1 [2]			
1.8.22 [3]:													
1.8.23 [2]:	49:1 [2]	51:3 [2]											
1.8.24 [3]:	8:3 [2]	17:1 [2]	22:1 [2]	23:3 [2]	26:1 [2]	31:4 [2.5]	36:3 [2.33]						
1.8.25 [2]:	39:5 [2]												
Goal 2 [3]:													
2A [3]:													
2.8.01 [2]:													
2.8.02 [3]:													
2.8.03 [3]:	23:1 [3]	31:1 [3]	36:1 [2]										
2.8.04 [3]:	18:1 [3]	41:1 [1]											
2.8.05 [2]:													

2.8.06 [3]:	2:1 [2]	3:4 [2.25]	4:1 [2]	5:1 [3]	16:1 [3]	19:4 [2.25]	28:1 [2]	37:4 [2]	44:5 [2.2]	47:1 [3]
2.8.07 [3]:	2:4 [2]	38:3 [1]	47:2 [3]							
2.8.08 [3]:										
2.8.09 [2]:	4:3 [2]	16:1 [2]								
2.8.10 [1]:	20:5 [1.2]	43:5 [1]								
2.8.11 [3]:	4:1 [2]	5:4 [2.5]	16:3 [2.67]	17:4 [2.25]	18:2 [2]	36:1 [2]	40:5 [2.2]	41:4 [1.75]	45:5 [2.4]	
2.8.12 [3]:	33:5 [2.4]	40:1 [2]								
2B [2]:										
2.8.13 [2]:	26:4 [2]	46:5 [1.8]								

Alignment Analysis of Learning Goals and Assessments

Illinois Mathematics Grades 3-8

Norman L. Webb
October 28, 2006

Executive Summary

This is a report of the results of a three-day Alignment Analysis Institute conducted September 27-29, 2006 in Springfield, Illinois. Five people, including mathematics content experts, district mathematics supervisors, and mathematics teachers, met to analyze the agreement between the state's mathematics learning goals and assessments for Grades 3-8. Three of the reviewers were from Illinois and two, including the group leader, were from other states.

This analysis indicates that the alignment is quite good. For Grades 3, 5, 6, and 7, all of the alignment criteria are fully satisfied when item weighting is taken into account. Grade 4 has a minor Balance weakness with respect to Goal 10. Grade 8 has a minor DOK weakness for Goal 10 and a Balance weakness for Goal 7. The most important alignment weakness is with respect to Source-of-Challenge issues for Grades 7 and 8. Three items for each of these grades were found to differentially report student knowledge based on the type of calculators students used on the assessments. All of the alignment weaknesses could be fully addressed by replacing a total of nine items across the six grades. It is the finding of this alignment institute that the alignment between the Illinois mathematics learning goals and assessments for Grades 3-8 is acceptable.

Acknowledgements

Introduction

The alignment of expectations for student learning with assessments for measuring students' attainment of these expectations is an essential attribute for an effective learning goals-based education system. Alignment is defined as the degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide an education system toward students learning what they are expected to know and do. As such, alignment is a quality of the relationship between expectations and assessments and not an attribute of any one of these two system components. Alignment describes the match between expectations and assessment that can be legitimately improved by changing either student expectations or the assessments. As a relationship between two or more system components, alignment is determined by using the multiple criteria described in detail in a National Institute of Science Education (NISE) research monograph, *Criteria for Alignment of Expectations and Assessments in Mathematics and Science Education* (Webb, 1997).

A three-day Alignment Analysis Institute was conducted September 27-29, 2006 in Springfield, Illinois. Five people, including mathematics content experts, district mathematics supervisors, and mathematics teachers, met to analyze the agreement between the state's mathematics learning goals and assessments for Grades 3-8. Three of the reviewers were from Illinois and two, including the group leader, were from other states.

The State of Illinois uses the terminology of *learning goals*, *learning goals, and performance indicators* in their mathematics content expectations. The state had five mathematics learning goals (example: *Number Sense*—Demonstrate and apply a knowledge and sense of numbers, including numeration and operations, patterns, ratios and proportions.). Each of these learning goals was further described using three or four learning goals. For this analysis some of the learning goals were combined. Under the learning goals were performance indicators (or sometimes referred to as objectives) with 3 to 11 of these for each learning goal. For this analysis, data was coded using the performance indicators (objectives) and reported by the five learning goals.

Reviewers were trained to identify the depth-of-knowledge of objectives and assessment items. This training included reviewing the definitions of the four depth-of-knowledge (DOK) levels and then reviewing examples of each. Then for each grade, the reviewers participated in 1) a consensus process to determine the depth-of-knowledge levels of the objectives and 2) individual analyses of the assessment items.

To derive the results from the analysis, the reviewers' responses are averaged. Any variance among reviewers is considered legitimate, with the true depth-of-knowledge level for the item falling somewhere in between the two or more assigned values. Such variation could signify a lack of clarity in how the objectives were written, the robustness of an item that can legitimately correspond to more than one objective, and/or a depth of knowledge that falls in between two of the four defined levels. Reviewers were allowed to identify one assessment item as corresponding to up to three objectives—one primary

hit (objective) and up to two secondary hits. However, reviewers could only code one depth-of-knowledge level to each assessment item even if the item corresponded to more than one objective. Finally, in addition to learning the process, reviewers were asked to provide suggestions for improving the process.

Reviewers were instructed to focus primarily on the alignment between the state learning goals and assessments. However, they were encouraged to offer their opinion on the quality of the learning goals, or of the assessment activities/items, by writing a note about the item. Reviewers could also indicate whether there was a source-of-challenge issue with the item—i.e., a problem with the item that might cause the student who knows the material to give a wrong answer, or enable someone who does not have the knowledge being tested to answer the item correctly. For example, a mathematics item that involves an excessive amount of reading may represent a source-of-challenge issue because the skill required to answer is more a reading skill than a mathematics skill.

 The results produced from the institute pertain only to the issue of agreement between the Illinois state goals and the state assessment instruments. Note that this alignment analysis does not serve as external verification of the general quality of the state's goals or assessments. Rather, only the degree of alignment is discussed in these results. For these results, the averages of the reviewers' coding were used to determine whether the alignment criteria were met.

This report describes the results of an alignment study of learning goals and grade- level operational tests in mathematics for grades 3-8 in Illinois. The study addressed specific criteria related to the content agreement between the state learning goals and grade-level assessments. Four criteria received major attention: categorical concurrence, depth-of-knowledge consistency, range-of-knowledge correspondence, and balance of representation.

Alignment Criteria Used for This Analysis

This analysis judged the alignment between the learning goals and the assessments on the basis of four criteria. Information is also reported on the quality of items by identifying items with Sources-of-Challenge and other issues. For each alignment criterion, an acceptable level was defined by what would be required to assure that a student had met the learning goals.

Categorical Concurrence

An important aspect of alignment between learning goals and assessments is whether both address the same content categories. The categorical-concurrence criterion provides a very general indication of alignment if both documents incorporate the same content. The criterion of categorical concurrence between learning goals and assessments is met if the same or consistent categories of content appear in both documents. This criterion was judged by determining whether the assessment included items measuring content from each learning goal. The analysis assumed that the assessment had to have at least six items for measuring content from a learning goal in order for an acceptable level of categorical concurrence to exist between the learning goal and the assessment. The

number of items, six, is based on estimating the number of items that could produce a reasonably reliable subscale for estimating students' mastery of content on that subscale. Of course, many factors have to be considered in determining what a reasonable number is, including the reliability of the subscale, the mean score, and cutoff score for determining mastery. Using a procedure developed by Subkoviak (1988) and assuming that the cutoff score is the mean and that the reliability of one item is .1, it was estimated that six items would produce an agreement coefficient of at least .63. This indicates that about 63% of the group would be consistently classified as masters or nonmasters if two equivalent test administrations were employed. The agreement coefficient would increase if the cutoff score is increased to one standard deviation from the mean to .77 and, with a cutoff score of 1.5 standard deviations from the mean, to .88. Usually states do not report student results by learning goals or require students to achieve a specified cutoff score on subscales related to a learning goal. If a state did do this, then the state would seek a higher agreement coefficient than .63. Six items were assumed as a minimum for an assessment measuring content knowledge related to a learning goal, and as a basis for making some decisions about students' knowledge of that learning goal. If the mean for six items is 3 and one standard deviation is one item, then a cutoff score set at 4 would produce an agreement coefficient of .77. Any fewer items with a mean of one-half of the items would require a cutoff that would only allow a student to miss one item. This would be a very stringent requirement, considering a reasonable standard error of measurement on the subscale.

Depth-of-Knowledge Consistency

Learning goals and assessments can be aligned not only on the category of content covered by each, but also on the basis of the complexity of knowledge required by each. Depth-of-knowledge consistency between learning goals and assessment indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the learning goals. For consistency to exist between the assessment and the learning goal, as judged in this analysis, at least 50% of the items corresponding to a learning goal had to be at or above the level of knowledge of the learning goal: 50%, a conservative cutoff point, is based on the assumption that a minimal passing score for any one learning goal of 50% or higher would require the student to successfully answer at least some items at or above the depth-of-knowledge level of the corresponding learning goal. For example, assume an assessment included six items related to one learning goal and students were required to answer correctly four of those items to be judged proficient—i.e., 67% of the items. If three, 50%, of the six items were at or above the depth-of-knowledge level of the corresponding learning goals, then for a student to achieve a proficient score would require the student to answer correctly at least one item at or above the depth-of-knowledge level of one learning goal. Some leeway was used in this analysis on this criterion. If a learning goal had between 40% and 50% of items at or above the depth-of-knowledge levels of the learning goals, then it was reported that the criterion was "weakly" met.

Interpreting and assigning depth-of-knowledge levels to both objectives within learning goals and assessment items is an essential requirement of alignment analysis. These descriptions help to clarify what the different levels represent in mathematics:

Level 1 (**Recall**) includes the recall of information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula. That is, in Mathematics a one-step, well defined, and straight algorithmic procedure should be included at this lowest level. Other key words that signify a Level 1 include "identify," "recall," "recognize," "use," and "measure." Verbs such as "describe" and "explain" could be classified at different levels, depending on what is to be described and explained.

Level 2 (Skill/Concept) includes the engagement of some mental processing beyond a habitual response. A Level 2 assessment item requires students to make some decisions as to how to approach the problem or activity, whereas Level 1 requires students to demonstrate a rote response, perform a well-known algorithm, follow a set procedure (like a recipe), or perform a clearly defined series of steps. Keywords that generally distinguish a Level 2 item include "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." These actions imply more than one step. For example, to compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects. Some action verbs, such as "explain," "describe," or "interpret," could be classified at different levels depending on the object of the action. For example, interpreting information from a simple graph, or requiring mathematics information from the graph, also is at Level 2. Interpreting information from a complex graph that requires some decisions on what features of the graph need to be considered and how information from the graph can be aggregated is at Level 3. Level 2 activities are not limited solely to number skills, but can involve visualization skills and probability skills. Other Level 2 activities include noticing and describing non-trivial patterns; explaining the purpose and use of experimental procedures; carrying out experimental procedures; making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts.

Level 3 (Strategic Thinking) requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. In most instances, requiring students to explain their thinking is at Level 3. Activities that require students to make conjectures are also at this level. The cognitive demands at Level 3 are complex and abstract. The complexity does not result from the fact that there are multiple answers, a possibility for both Levels 1 and 2, but because the task requires more demanding reasoning. An activity, however, that has more than one possible answer and requires students to justify the response they give would most likely be at Level 3. Other Level 3 activities include drawing conclusions from observations; citing evidence and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve problems.

Level 4 (Extended Thinking) requires complex reasoning, planning, developing, and thinking most likely over an extended period of time. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. For example, if a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as Level 2. However, if the student is to conduct a river study that requires taking into consideration a number of variables, this would be at Level 4. At Level 4, the cognitive demands of the task should be high and the work should be very complex. Students should be required to make several connections—relate ideas within the content area or among content areas—and to select one approach among many alternatives on how the situation should be solved, in order to be at this highest level. Level 4 activities include developing and proving conjectures; designing and conducting experiments; making connections between a finding and related concepts and phenomena; combining and synthesizing ideas into new concepts; and critiquing experimental designs.

Range-of-Knowledge Correspondence
For learning goals and assessments to be aligned, the breadth of knowledge required on both should be comparable. The range-of-knowledge criterion is used to judge whether a comparable span of knowledge expected of students by a learning goal is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer the assessment items/activities. The criterion for correspondence between span of knowledge for a learning goal and an assessment considers the number of objectives within the learning goal with one related assessment item/activity. Fifty percent of the objectives for a learning goal had to have at least one related assessment item in order for the alignment on this criterion to be judged acceptable. This level is based on the assumption that students' knowledge should be tested on content from over half of the domain of knowledge for a learning goal. This assumes that each objective for a learning goal should be given equal weight. Depending on the balance in the distribution of items and the need to have a low number of items related to any one objective, the requirement that assessment items need to be related to more than 50% of the objectives for an learning goal increases the likelihood that students will have to demonstrate knowledge on more than one objective per learning goal to achieve a minimal passing score. As with the other criteria, a state may choose to make the acceptable level on this criterion more rigorous by requiring an assessment to include items related to a greater number of the objectives. However, any restriction on the number of items included on the test will place an upper limit on the number of objectives that can be assessed. Range-of-knowledge correspondence is more difficult to attain if the content expectations are partitioned among a greater number of learning goals and a large number of objectives. If 50% or more of the objectives for a learning goal had a corresponding assessment item, then the Range-of-knowledge correspondence criterion was met. If between 40% and 50% of the objectives for a learning goal had a corresponding assessment item, the criterion was "weakly" met.

Balance of Representation

In addition to comparable depth and breadth of knowledge, aligned learning goals and assessments require that knowledge be distributed equally in both. The range-of-knowledge criterion only considers the number of objectives within a learning goal hit (an objective with a corresponding item); it does not take into consideration how the hits (or assessment items/activities) are distributed among these objectives. The balance-of-representation criterion is used to indicate the degree to which one objective is given more emphasis on the assessment than another. An index is used to judge the distribution of assessment items. This index only considers the objectives for a learning goal that have at least one hit—i.e., one related assessment item per objective. The index is computed by considering the difference in the proportion of objectives and the proportion of hits assigned to the objective. An index value of 1 signifies perfect balance and is obtained if the hits (corresponding items) related to a learning goal are equally distributed among the objectives for the given learning goal. Index values that approach 0 signify that a large proportion of the hits are on only one or two of all of the objectives hit. Depending on the number of objectives and the number of hits, a unimodal distribution (most items related to one objective and only one item related to each of the remaining objectives) has an index value of less than .5. A bimodal distribution has an index value of around .55 or .6. Index values of .7 or higher indicate that items/activities are distributed among all of the objectives at least to some degree (e.g., every objective has at least two items) and is used as the acceptable level on this criterion. Index values between .6 and .7 indicate the balance-of-representation criterion has only been "weakly" met.

Source-of-Challenge Criterion

The Source-of-Challenge criterion is only used to identify items on which the major cognitive demand is inadvertently placed and is other than the targeted mathematics objective, concept, or application. Cultural bias or specialized knowledge could be reasons for an item to have a Source-of-Challenge problem. Such item characteristics may result in some students not answering an assessment item, or answering an assessment item incorrectly, or at a lower level, even though they possess the understanding and skills being assessed.

Findings

Table 1 shows the percentages of objectives at each DOK level. Only 3% of all the objectives were found to be at a Level 3, and there were no objectives at Level 4. A progression can be observed in the DOK values for the objectives; as the grades get higher there are fewer Level 1 objectives and more Level 3 objectives.

Table 1
Percent of Objectives by Depth-of-Knowledge (DOK) Levels for Grades 3-8 Illinois Alignment Analysis for Mathematics

Grade	Total number of objectives	DOK Level	# of objs by Level	% within std by Level
3	42	1	20	47
		2	22	52
4	48	1	20	41
		2	28	58
5	55	1	19	34
		2	35	63
		3	1	1
6	56	1	18	32
		2	36	64
		3	2	3
7	58	1	14	24
		2	42	72
		3	2	3
8	57	1	13	22
		2	38	66
		3	6	10

Table 2
Items Coded to Generic Objectives by More Than One Reviewer, Illinois Alignment Analysis for Mathematics, Grades 3-8

Grade	Assessment Item	Generic Objective (Number of Reviewers)
4	13	6B,C (2)
4	14	6B,C (3)
5	74	6B,C (2)
5	50	9A (4)
6	51	7A,B,C (2)
7	26	9A (2)

If no particular objective is targeted by a given assessment item, reviewers are instructed to code the item at the level of a learning goal or a standard. This coding to a generic objective sometimes indicates that the item is inappropriate for the grade level. However, if the item is grade-appropriate, then this situation may instead indicate that there is a piece of content not expressly or precisely described in the objectives. These items may highlight areas in the objectives that should be changed or made more precise. Table 2 displays the assessment items coded to generic objectives by more than one reviewer. Alignment of Curriculum Learning Goals and Assessments

The results of the analysis for each of the four alignment criteria are summarized in Tables 4.1-4.6. More detailed data on each of the criteria are provided. With each table and for each grade is a description of the satisfaction of the alignment criteria for the given grade. The reviewers' debriefing comments provide more detail about the individual reviewers' impressions of the alignment.

Table 3 displays the number of items and points for each assessment form. In the analysis that follows, multiple-point items are weighted extra for alignment purposes. For example, a 3-point item is counted towards the alignment as 3 identically coded 1-point items.

Table 3
Number of items and point value by grade for Illinois Assessments, Grades 3-8

Grade Level	Number of Items	Number of Multi-Point Items	Total Point Value
3	68	3	81
4	68	3	81
5	68	3	81
6	68	3	81
7	68	3	81
8	68	3	81

In Tables 4.1-4.6, "YES" indicates that an acceptable level was attained between the assessment and the learning goal on the criterion. "WEAK" indicates that the criterion was nearly met, within a margin that could simply be due to error in the system. "NO" indicates that the criterion was not met by a noticeable margin—10% over an acceptable level for Depth-of-Knowledge Consistency, 10% over an acceptable level for Range-of-Knowledge Correspondence, and .1 under an index value of .7 for Balance of Representation.

Grade 3

The alignment between the Grade 3 learning goals and assessment is acceptable. All of the alignment criteria are met with respect to each goal. The apparent Balance weakness with respect to Goal 8 is not an alignment problem, but is simply due to the fact that item 74 is an algebra item and is worth 12 points.

Table 4.1
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 3
Learning goals and Assessments for Illinois Alignment Analysis

Grade 3	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	YES
Goal 8 - Algebra	YES	YES	YES	WEAK
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Grade 4

The alignment between the Grade 4 learning goals and assessment is reasonable. All of the alignment criteria are met with respect to each goal, with the minor exception of a

Balance weakness with respect to Goal 10. This weakness could be corrected by removing or changing one of the items targeting 10.4.1, addressing graph-reading. The apparent Balance weakness with respect to Goal 7 is not really an alignment problem, but is simply due to the fact that item 74 is a measurement item and is worth 12 points.

Table 4.2
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 4 Learning
Goals and Assessments for Illinois Alignment Analysis

Grade 4	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	NO
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	WEAK

Grade 5

The alignment between the Grade 5 learning goals and assessment is acceptable. All of the alignment criteria are met with respect to each goal. The apparent Balance weakness with respect to Goal 6 is not really an alignment problem, but is simply due to the fact that item 74 is a number sense item and is worth 12 points.

Table 4.3
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 5 Learning Goals and Assessments for Illinois Alignment Analysis

Grade 5	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	WEAK
Goal 7 – Measurement	YES	YES	YES	YES
Goal 8 – Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Grade 6

The alignment between the Grade 6 learning goals and assessment is acceptable. All of the alignment criteria are met with respect to each goal. The apparent Balance weakness with respect to Goal 7 is not really an alignment problem, but is simply due to the fact that item 74 is a measurement item and is worth 12 points.

Table 4.4
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 6
Learning Goals and Assessments for Illinois Alignment Analysis

Grade 6	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 – Measurement	YES	YES	YES	NO
Goal 8 – Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Grade 7

The alignment between the Grade 7 learning goals and assessment is acceptable. All of the alignment criteria are met with respect to each goal. The apparent Balance weakness with respect to Goal 6 is not really an alignment problem, but is simply due to the fact that item 74 is a number sense item and is worth 12 points.

Table 4.5
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 7
Learning goals and Assessments for Illinois Alignment Analysis

Grade 7	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	NO
Goal 7 - Measurement	YES	YES	YES	YES
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Grade 8

The alignment between the Grade 8 learning goals and assessment is reasonable. The only two alignment criteria that are not fully satisfied are Depth-of-Knowledge Consistency with respect to Goal 10 and Balance of Representation with respect to Goals 7 and 10. The apparent Balance weakness for Goal 10 is not really an alignment problem, but is simply due to the fact that item 74 is worth 12 points. The Balance weakness for the measurement goal is caused by too many items targeting objective 7.8.02. Reviewers' debriefing comments suggest that there are too many items addressing areas and circumferences of circles. Changing or removing one or two such items would correct this balance weakness. The DOK Consistency weakness for Goal 10 is due to the fact that five of the objectives under the Data Analysis, Statistics, and Probability learning goal have a DOK Level of 3, although none of the four items that target one of these objectives are at a DOK Level of 3. Replacing items 19, 39, or 53 with those that have a DOK level 3 would fully correct this alignment weakness.

Table 4.6
Summary of Acceptable Levels on Alignment Criteria for Mathematics Grade 8 Learning Goals and Assessments for Illinois Alignment Analysis

Grade 8	*Alignment Criteria*			
Learning goals	*Categorical Concurrence*	*Depth-of-Knowledge Consistency*	*Range of Knowledge*	*Balance of Representation*
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	WEAK
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	WEAK	YES	NO

Source of Challenge Issue Comments

Reviewers were instructed to comment about any items that contained an inappropriate source of challenge. Several items were noted by more than one reviewer as having issues with source of challenge—Grade 7 items 2, 38, and 54, and Grade 8 items 3, 9, 10, and 35. All of these issues arose because the students are allowed to use calculators on the assessments. Scientific calculators, which some students will have and others will not, can directly solve order-of-operations items and fraction-decimal-percent conversion items without the student understanding the targeted concept. These items should be strongly considered for revision or replacement.

Reliability Among Reviewers

The overall intraclass correlation among the mathematics reviewers' assignment of DOK levels to items was moderately high to high for five reviewers (Table 5). An intraclass correlation value greater than 0.8 generally indicates a high level of agreement among the reviewers. A pairwise comparison is used to determine the degree of reliability of reviewer coding at the objective level and at the learning goal level. The learning goal pairwise comparison values are very high, while the objective values are well within reasonable bounds and exceed the values attained in most alignment studies. This is one indication of the clarity of objectives in that reviewers were able to distinguish among objectives to assign items.

Table 5
Intraclass and Pairwise Comparisons

Grade	Intraclass Correlation	Pairwise Comparison:	Pairwise: Objective	Pairwise: Learning goal
3	.85	.73	.79	.92
4	.85	.70	.70	.91
5	.79	.71	.62	.90
6	.79	.69	.74	.90
7	.84	.77	.70	.91
8	.72	.67	.62	.85

Summary

This analysis indicates that the alignment between the Illinois mathematics learning goals and assessments for Grades 3-8 is quite good. For Grades 3, 5, 6, and 7, all of the alignment criteria are fully satisfied when item weighting is taken into account. Grade 4 has a minor Balance weakness with respect to Goal 10. Grade 8 has a minor DOK weakness for Goal 10 and a Balance weakness for Goal 7. The most important alignment weakness is with respect to Source-of-Challenge issues for Grades 7 and 8. Three items for each of these grades were found to differentially report student knowledge based on the type of calculators students used on the assessments. All of the alignment weaknesses could be fully addressed by replacing nine items total across the six grades.

References

Subkoviak, M. J. (1988). A practitioner's guide to computation and interpretation of reliability indices for mastery tests. Journal of Educational Measurement, 25(1), 47-55.

Webb, N. L. (1997). Criteria for alignment of expectations and assessments in mathematics and science education. Council of Chief State School Officers and National Institute for Science Education Research Monograph No. 6. Madison: University of Illinois, Illinois Center for Education Research.

Grades 3-8 Mathematics Standards and Group Consensus DOK Values

Level	Description	DOK
Goal 6	**Number Sense**	**1**
6A	**Representations and Ordering**	**1**
6.3.01	Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000.	1
6.3.02	Identify and write (in words and standard form) whole numbers up to 100,000.	1
6.3.03	Recognize a fraction represented with a pictorial model.	1
6.3.04	Represent multiplication as repeated addition.	1
6.3.05	Order and compare whole numbers up to 10,000 using symbols (>, <, or =) and words (e.g., greater (more) than, less than, equal to, between).	1
6.3.06	Order and compare decimals expressed using monetary units.	1
6.3.07	Identify and locate whole numbers and halves on a number line.	1
6.3.08	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.3.09	Solve problems and number sentences involving addition and subtraction with regrouping.	2
6.3.10	Solve problems involving the value of a collection of bills and coins whose total value is $10.00 or less, and make change.	2
6.3.11	Model and apply basic multiplication facts (up to 10×10), and apply them to related multiples of 10 (e.g., 3×4=12, 30×4=120).	1
6.3.12	Use the inverse relationships between addition and subtraction to complete basic fact sentences and solve problems (e.g., 5 + 3 = 8 and 8 - 3 = __).	1
6.3.13	Solve problems involving the multiplicative identity of one (e.g., 3×1 =3) and the additive identity of zero (e.g., 3+0 =3).	1
6.3.14	Make estimates appropriate to a given situation with whole numbers.	2
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**
7.3.01	Solve problems involving simple elapsed time in compound units (e.g., hours, minutes, days).	1
7.3.02	Select and use appropriate standard units and tools to measure length (to the nearest inch or cm), time (to the nearest minute), and temperature (to the nearest degree).	2
7.3.03	Solve problems involving the perimeter of a polygon with given side lengths or a given non-standard unit (e.g., paperclip).	2
7.3.04	Solve problems involving the area of a figure when whole and half square units are shown within the figure.	2
7.3.05	Compare and estimate length (including perimeter), area, and weight/mass using referents.	2
7.3.06	Determine the volume of a solid figure that shows cubic units.	2
7.3.07	Solve problems involving simple unit conversions within the same measurement system for time and length.	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.3.01	Determine a missing term in a pattern (sequence), describe a pattern (sequence), and extend a pattern (sequence) when given a description or pattern (sequence).	2
8.3.02	Write an expression to represent a given situation.	2
8C,D	**Writing, Interpreting, and Solving Equations**	**2**
8.3.03	Represent simple mathematical relationships with number sentences (equations and inequalities).	2
8.3.04	Solve one-step addition and subtraction equations that have a missing number or missing operation sign (e.g., 3+?=5, 6 ? 1=7).	1
8.3.05	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**1**
9A	**Properties of Single Figures and Coordinate Geometry**	**1**
9.3.01	Identify, describe, and sketch two-dimensional shapes (triangles, squares, rectangles, pentagons, hexagons, and octagons) according to the number of sides, length of sides, and number of vertices.	1
9.3.02	Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids)	2

Level	Description	DOK
	according to their characteristics (faces, edges, vertices).	
9.3.03	Locate and identify points using numbers and symbols on a grid, and describe how points relate to each other on a grid (e.g., ? is 2 units below ¤, point A is 3 units to the right of point B).	1
9.3.04	Identify whether or not a figure has a line of symmetry, and sketch or identify the line of symmetry.	1
9.3.05	Identify images resulting from flips (reflections), slides (translations), or turns (rotations).	2
9.3.06	Identify parallel lines.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.3.07	Identify the two-dimensional components of a three-dimensional object (e.g., a cube has square faces).	2
9.3.08	Identify a three-dimensional object from its net.	2
9.3.09	Predict the result of putting shapes together (composing) and taking them apart (decomposing).	2
9.3.10	Identify congruent and similar figures by visual inspection.	1
9.3.11	Determine the distance between two points on the number line in whole numbers.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**2**
10A,B	**Data Analysis and Statistics**	**2**
10.3.01	Read and interpret data represented in a pictograph, bar graph, Venn diagram (with two circles), tally chart, or table.	2
10.3.02	Complete missing parts of a pictograph, bar graph, tally chart, or table for a given set of data.	2
10.3.03	Determine the mode, given a set of data or a graph.	1
10C	**Probability**	**2**
10.3.04	Classify events using words such as certain, most likely, equally likely, least likely, possible, and impossible.	1
10.3.05	Describe the chances associated with a context presented visually, including using the response format "3 out of 4."	2
Level	**Description**	**DOK**
Goal 6	**Number Sense**	**1**
6A	**Representations and Ordering**	**1**
6.4.01	Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 1,000,000.	1
6.4.02	Identify and write (in words and standard form) whole numbers up to 1,000,000.	1
6.4.03	Read, write, recognize, and model equivalent representations of fractions; divide regions or sets to represent a fraction.	2
6.4.04	Represent multiplication as repeated addition.	1
6.4.05	Order and compare whole numbers up to 100,000.	1
6.4.06	Order and compare decimals through hundredths.	1
6.4.07	Order and compare fractions having like denominators with or without models.	1
6.4.08	Identify and locate whole numbers, halves, and fourths on a number line.	1
6.4.09	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.4.10	Solve problems and number sentences involving addition and subtraction with regrouping and multiplication (up to three-digit by one-digit).	2
6.4.11	Solve problems involving the value of a collection of bills and coins whose total value is $100.00 or less, and make change.	2
6.4.12	Model and apply basic multiplication and division facts (up to 12×12), and apply them to related multiples of 10(e.g., 3×9=27, 30×9=270, 6÷3=2, 600÷3=200).	1
6.4.13	Model situations involving addition and subtraction of fractions with like denominators.	2
6.4.14	Solve problems involving the commutative and distributive properties of operations on whole numbers [e.g., 8 + 7 = 7 + 8, 27 × 5 = (20×5) + (7×5)].	2
6.4.15	Use the inverse relationships between addition/subtraction and multiplication/division to complete basic fact sentences and solve problems (e.g., 4×3=12, 12÷3=__).	1
6.4.16	Make estimates appropriate to a given situation with whole numbers	2
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**

Level	Description	DOK
7.4.01	Solve problems involving elapsed time in compound units (e.g., 1 hour and 40 minutes) that occur in the same half day (a.m. only or p.m. only).	1
7.4.02	Select and use appropriate standard units and tools to measure length (to the nearest ½ inch or ½ cm), time, and temperature.	2
7.4.03	Solve problems involving the perimeter of a polygon with given side lengths and the area of a square, rectangle, or irregular shape composed of rectangles using diagrams, models, and grids or by measuring (may include sketching a figure from its description).	2
7.4.04	Compare and estimate length (including perimeter), area, volume, and weight/mass using referents	2
7.4.05	Determine the volume of a solid figure that shows cubic units.	2
7.4.06	Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass.	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.4.01	Determine a missing term in a pattern (sequence), describe a pattern (sequence), and extend a pattern (sequence) when given a description or pattern (sequence).	2
8.4.02	Write an expression using letters or symbols to represent an unknown quantity.	2
8.4.03	Evaluate algebraic expressions with a whole number variable value (e.g., evaluate $3 + m$ when $m = 4$).	1
8B	**Connections Using Tables, Graphs, and Symbols**	**2**
8.4.04	Identify or represent situations with well-defined patterns using words, tables, and graphs (e.g., represent temperature and time in a line graph).	2
8.4.05	Translate between different representations (table, written, or pictorial) of whole number relationships.	2
8C,D	**Writing, Interpreting, and Solving Equations**	**2**
8.4.06	Represent simple mathematical relationships with number sentences (equations and inequalities).	2
8.4.07	Solve for the unknown in an equation with one operation (e.g., 10=?+3+2, ?-1=3).	2
8.4.08	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**1**
9A	**Properties of Single Figures and Coordinate Geometry**	**1**
9.4.01	Identify, describe, and sketch two-dimensional shapes (triangles, quadrilaterals, pentagons, hexagons, and octagons) according to the number of sides, length of sides, number of vertices, and right angles.	1
9.4.02	Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).	2
9.4.03	Differentiate between polygons and non-polygons	1
9.4.04	Graph, locate, identify points, and describe paths using ordered pairs (first quadrant).	1
9.4.05	Identify whether or not a figure has one or more lines of symmetry, and sketch or identify all lines of symmetry.	2
9.4.06	Identify images resulting from flips (reflections), slides (translations), or turns (rotations).	2
9.4.07	Identify and sketch parallel and perpendicular lines.	1
9.4.08	Identify and sketch right angles.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.4.09	Identify the two-dimensional components of a three-dimensional object.	2
9.4.10	Identify a three-dimensional object from its net.	2
9.4.11	Predict the result of composing or decomposing shapes or figures.	2
9.4.12	Identify congruent and similar figures by visual inspection.	1
9.4.13	Determine the distance between two points on the number line in whole numbers.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**2**
10A,B	**Data Analysis and Statistics**	**2**
10.4.01	Read and interpret data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), tally chart, table, line graph, or circle graph.	2
10.4.02	Create a pictograph, bar graph, tally chart, or table for a given set of data.	2
10.4.03	Determine the mode and range, given a set of data or a graph.	1
10C	**Probability**	**2**
10.4.04	Classify events using words such as certain, most likely, equally likely, least likely, possible, and impossible.	1

Level	Description	DOK
10.4.05	Describe the chances associated with a context presented visually, including using the response format "3 out of 4" or ¾.	2
Level	Description	DOK
Goal 6	**Number Sense**	**2**
6A	**Representations and Ordering**	**1**
6.5.01	Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000,000.	1
6.5.02	Read, write, recognize, model, and interpret numerical expressions from a given description or situation.	2
6.5.03	Read, write, recognize, and model equivalent representations of fractions, including improper fractions and mixed numbers.	2
6.5.04	Recognize, translate between, and model multiple representations of decimals, fractions less than one (halves, quarters, fifths, and tenths), and percents (0%, 25%, 50%, 75%, and 100%).	2
6.5.05	Read, write, recognize, and model decimals and their place values through thousandths.	1
6.5.06	Represent multiplication as repeated addition.	1
6.5.07	Order and compare whole numbers up to 1,000,000.	1
6.5.08	Order and compare decimals through hundredths.	1
6.5.09	Order and compare fractions having like or unlike denominators with or without models.	2
6.5.10	Identify and locate whole numbers, halves, fourths, and thirds on a number line.	1
6.5.11	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.5.12	Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers.	2
6.5.13	Solve problems and number sentences involving addition and subtraction of decimals through hundredths (with or without monetary labels).	2
6.5.14	Model situations involving addition and subtraction of fractions.	2
6.5.15	Solve problems involving the commutative, distributive, and identity properties of operations on whole numbers (e.g., $37 \times 46 = 46 \times 37$, $270 \times 5 = (200 \times 5) + (70 \times 5)$].	2
6.5.16	Make estimates appropriate to a given situation with whole numbers, fractions, and decimals.	2
6D	**Ratios, Proportions, and Percents**	**2**
6.5.17	Identify and express ratios using appropriate notation (i.e., a/b, a to b), and identify equivalent ratios.	2
6.5.18	Solve problems involving proportional relationships, including unit pricing (e.g., one apple costs 20¢, so four apples cost 80¢).	2
6.5.19	Read, write, recognize, and model percents (0%, 25%, 50%, 75%, and 100%).	1
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**
7.5.01	Solve problems involving elapsed time in compound units.	1
7.5.02	Select and use appropriate standard units and tools to measure length (to the nearest ¼ inch or mm), mass/weight, capacity, and angles.	2
7.5.03	Solve problems involving the perimeter and area of a triangle, rectangle, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).	2
7.5.04	Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.	2
7.5.05	Determine the volume of a right rectangular prism using an appropriate formula or strategy.	1
7.5.06	Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz).	2
7.5.07	Solve problems involving map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.5.01	Determine a missing term in a sequence, extend a sequence, and identify errors in a sequence when given a description or sequence.	2

Level	Description	DOK
8.5.02	Construct and identify a rule that can generate the terms of a given sequence.	2
8.5.03	Write an expression using variables to represent unknown quantities.	2
8.5.04	Evaluate algebraic expressions with a whole number variable value (e.g., evaluate $m + m + 3$ when $m = 4$).	1
8B	Connections Using Tables, Graphs, and Symbols	2
8.5.05	Demonstrate, in simple situations, how a change in one quantity results in a change in another quantity (e.g., input-output tables).	2
8.5.06	Translate between different representations (table, written, or pictorial) of whole number relationships.	2
8C,D	Writing, Interpreting, and Solving Equations	2
8.5.07	Represent problems with equations and inequalities.	2
8.5.08	Solve for the unknown in an equation with one operation (e.g., $2+n=20$, $n\div2=6$).	1
8.5.09	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**2**
9A	**Properties of Single Figures and Coordinate Geometry**	**1**
9.5.01	Classify, describe, and sketch two-dimensional shapes (triangles, quadrilaterals, pentagons, hexagons, and octagons) according to the number of sides, length of sides, number of vertices, and interior angles (right, acute, obtuse).	1
9.5.02	Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).	2
9.5.03	Solve problems using properties of triangles (e.g., sum of interior angles of a triangle is 180 degrees).	2
9.5.04	Identify, describe, and sketch circles, including radius and diameter.	1
9.5.05	Graph, locate, identify points, and describe paths using ordered pairs (first quadrant).	1
9.5.06	Identify whether or not a figure has one or more lines of symmetry, and sketch or identify all lines of symmetry.	2
9.5.07	Identify, describe, and predict results of reflections, translations, and rotations of two-dimensional shapes.	2
9.5.08	Identify and sketch parallel, perpendicular, and intersecting lines.	1
9.5.09	Identify and sketch acute, right, and obtuse angles.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.5.10	Identify the two-dimensional components of a three-dimensional object.	2
9.5.11	Identify a three-dimensional object from its net.	2
9.5.12	Predict the result of composing or decomposing shapes or figures.	2
9.5.13	Identify congruent and similar figures by visual inspection.	1
9.5.14	Determine if figures are similar, and identify relationships between corresponding parts of similar figures.	2
9.5.15	Determine the distance between two points on a horizontal or vertical number line in whole numbers.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**2**
10A,B	**Data Analysis and Statistics**	**2**
10.5.01	Read, interpret, and make predictions from data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.	3
10.5.02	Create a pictograph, bar graph, chart/table, or line graph for a given set of data.	2
10.5.03	Determine the mode, range, median (with an odd number of data points), and mean, given a set of data or a graph.	1
10C	**Probability**	**2**
10.5.04	Solve problems involving the probability of a simple event, including representing the probability as a fraction between zero and one.	2
10.5.05	Apply the fundamental counting principle in a simple problem (e.g., How many different combinations of one-scoop ice cream cones can be made with 3 flavors and 2 types of cones?).	2
Level	Description	DOK
Goal 6	**Number Sense**	**2**
6A	**Representations and Ordering**	**2**
6.6.01	Read, write, recognize, and model equivalent representations of whole numbers and their place values.	1
6.6.02	Read, write, recognize, model, and interpret numerical expressions from a given description or situation.	2
6.6.03	Read, write, recognize, and model equivalent representations of fractions, including improper fractions and mixed numbers.	2
6.6.04	Recognize, translate between, and apply multiple representations of decimals, fractions, percents (less than	2

Level	Description	DOK
	100%), and mixed numbers (halves, quarters, fifths, and tenths).	
6.6.05	Read, write, recognize, and model equivalent representations of decimals and their place values through thousandths.	1
6.6.06	Represent repeated factors using exponents.	1
6.6.07	Order and compare whole numbers.	1
6.6.08	Order and compare decimals through thousandths.	1
6.6.09	Order and compare fractions and mixed numbers having like or unlike denominators.	2
6.6.10	Identify and locate decimals, fractions, and mixed numbers on a number line.	2
6.6.11	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers, primes).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.6.12	Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers.	2
6.6.13	Solve problems and number sentences involving addition, subtraction, and multiplication of decimals.	2
6.6.14	Solve problems involving addition and subtraction of fractions and mixed numbers, and express answers in simplest form.	2
6.6.15	Identify and apply order of operations to simplify numeric expressions involving whole numbers.	1
6.6.16	Solve problems involving the commutative, distributive, and associative properties of operations on whole numbers [e.g., $(5\times7)\times2 = 5\times(7\times2)$].	2
6.6.17	Make estimates appropriate to a given situation, and analyze what effect the estimation method used has on the accuracy of results.	3
6D	**Ratios, Proportions, and Percents**	**2**
6.6.18	Identify and express ratios using appropriate notation (i.e., a/b, a to b, a:b), identify equivalent ratios, and explain ratios that represent a given situation.	2
6.6.19	Solve problems involving proportional relationships, including unit pricing (e.g., seven apples cost $1.40, so nine apples cost $1.80).	2
6.6.20	Read, write, recognize, and model percents from 0% to 100%.	1
6.6.21	Solve number sentences and problems involving percents.	2
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**
7.6.01	Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles.	2
7.6.02	Solve problems involving the perimeter and area of a triangle, parallelogram, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).	2
7.6.03	Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.	2
7.6.04	Determine the volume of a right rectangular prism using an appropriate formula or strategy.	1
7.6.05	Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz).	2
7.6.06	Solve problems involving scale drawings and maps.	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.6.01	Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of a given sequence (e.g., 3, 6, 9, . . . is explained by the rule 3n, for n =1).	2
8.6.02	Write an expression using variables to represent unknown quantities.	2
8.6.03	Evaluate algebraic expressions with up to two whole number variable values (e.g., evaluate 3m + n + 3 when m = 4 and n = 2).	1
8B	**Connections Using Tables, Graphs, and Symbols**	**2**
8.6.04	Determine a rule having two operations from an input-output table (e.g., multiply by 3 and add 2).	2
8.6.05	Select a table of values that satisfies a linear equation, and recognize the ordered pairs on a rectangular coordinate system.	2
8.6.06	Translate between different representations (table, written, or pictorial) of whole number relationships.	2
8.6.07	Identify graphs of inequalities on a number line.	2

Level	Description	DOK
8C,D	**Writing, Interpreting, and Solving Equations**	**2**
8.6.08	Represent problems with equations and inequalities.	2
8.6.09	Solve for the unknown in an equation with one operation (e.g., 8x = 24, m÷2=25).	1
8.6.10	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**1**
9A	**Properties of Single Figures and Coordinate Geometry**	**1**
9.6.01	Classify, describe, and sketch regular and irregular two-dimensional shapes according to the number of sides, length of sides, number of vertices, and interior angles.	2
9.6.02	Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).	1
9.6.03	Solve problems using properties of triangles and quadrilaterals (e.g., sum of interior angles of a quadrilateral is 360°).	2
9.6.04	Identify, describe, and sketch circles, including radius, diameter, and chord.	1
9.6.05	Graph, locate, identify points, describe paths, and plot figures using ordered pairs (first quadrant).	1
9.6.06	Identify, describe, and predict results of reflections, translations, and rotations of two-dimensional shapes.	2
9.6.07	Identify and sketch parallel, perpendicular, and intersecting lines.	1
9.6.08	Identify and sketch acute, right, and obtuse angles.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.6.09	Identify a three-dimensional object from its net.	2
9.6.10	Recognize which attributes (such as shape, perimeter, and area) change or don't change when plane figures are composed, decomposed, or rearranged.	2
9.6.11	Identify congruent and similar figures by visual inspection.	1
9.6.12	Determine if figures are similar, and identify relationships between corresponding parts of similar figures.	2
9.6.13	Determine the distance between two points on a horizontal or vertical number line.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**2**
10A,B	**Data Analysis and Statistics**	**2**
10.6.01	Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.	3
10.6.02	Compare different representations of the same data.	2
10.6.03	Create a bar graph, chart/table, line graph, or circle graph with common referents (1/4, 50%, .75) for a given set of data.	2
10.6.04	Determine the mode, range, median, and mean, given a set of data or a graph.	1
10C	**Probability**	**2**
10.6.05	Solve problems involving the probability of a simple event, including representing the probability as a fraction, decimal, or percent.	2
10.6.06	Apply the fundamental counting principle in a simple problem (e.g., How many different 3-digit numbers can be made with the digits 1, 2, and 2?).	2
Level	**Description**	**DOK**
Goal 6	**Number Sense**	**2**
6A	**Representations and Ordering**	**2**
6.7.01	Read, write, and recognize equivalent representations of positive powers of 10.	1
6.7.02	Read, write, recognize, model, and interpret integers, including translating numerical expressions.	2
6.7.03	Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, and percents less than 100%).	2
6.7.04	Represent repeated factors using exponents.	1
6.7.05	Order and compare integers, terminating decimals, fractions, and mixed numbers.	2
6.7.06	Identify and locate integers, decimals, and fractions/mixed numbers on a number line, and estimate the locations of square roots.	2
6.7.07	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., square numbers, prime/composite, prime factorization, greatest common factor, least common multiple).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.7.08	Solve problems and number sentences involving addition, subtraction, multiplication, and division using integers, fractions, and decimals.	2

Level	Description	DOK
6.7.09	Identify and apply order of operations to simplify numeric expressions involving whole numbers (including exponents), fractions, and decimals.	1
6.7.10	Identify and apply the following properties of operations with rational numbers: the commutative and associative properties for addition and multiplication; the distributive property; the additive and multiplicative identity properties; the additive and multiplicative inverse properties; and the multiplicative property of zero.	1
6.7.11	Demonstrate and apply the relationships between addition/subtraction and multiplication/division with rational numbers.	2
6.7.12	Make estimates appropriate to a given situation, and analyze what effect the estimation method used has on the accuracy of results.	3
6.7.13	Estimate the square root of a number less than 1,000 between two whole numbers (e.g., √41 is between 6 and 7)	2
6D	**Ratios, Proportions, and Percents**	**2**
6.7.14	Create and explain ratios that represent a given situation.	2
6.7.15	Use proportional reasoning to model and solve problems.	2
6.7.16	Read, write, recognize, model, and interpret percents from 0% to 100%.	1
6.7.17	Solve number sentences and problems involving fractions, decimals, and percents (e.g., 50% of 10 is the same as 1/2 of 10 is the same as 0.5×10, sales tax, tips, interest, discounts).	2
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**
7.7.01	Select and use appropriate standard units and tools to measure length, mass/weight, capacity, and angles. Sketch, with given specifications, line segments, angles, triangles, and quadrilaterals.	2
7.7.02	Solve problems involving the perimeter and area of polygons and composite figures using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).	2
7.7.03	Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.	2
7.7.04	Determine the volume and surface area of a right rectangular prism using an appropriate formula or strategy.	2
7.7.05	Solve problems involving unit conversions within the same measurement system for length, weight/mass, capacity, and square units (e.g., 1 ft2 = 144 in2).	2
7.7.06	Solve problems involving scale drawings and maps.	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.7.01	Determine a missing term in a sequence, extend a sequence, and construct and identify a rule that can generate the terms of an arithmetic or geometric sequence.	2
8.7.02	Write an expression using variables to represent unknown quantities.	2
8.7.03	Simplify algebraic expressions by identifying and combining like terms.	1
8.7.04	Recognize equivalent forms of algebraic expressions.	2
8.7.05	Evaluate or simplify algebraic expressions with one or more integer variable values (e.g., a2 + b for a = 3 and b = -4).	1
8B	**Connections Using Tables, Graphs, and Symbols**	**2**
8.7.06	Determine how a change in one variable relates to a change in a second variable.	2
8.7.07	Represent linear equations and quantitative relationships on a rectangular coordinate system, and interpret the meaning of a specific part of a graph.	2
8.7.08	Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.	2
8.7.09	Identify, graph, and interpret inequalities on a number line.	2
8C,D	Writing, Interpreting, and Solving Equations	2
8.7.10	Represent and analyze problems with linear equations and inequalities.	2
8.7.11	Solve linear equations in one variable (e.g., 2x + 3 = 13) and inequalities involving < or > (e.g., 2x<6,	2

Level	Description	DOK
	x+7>10).	
8.7.12	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**2**
9A	**Properties of Single Figures and Coordinate Geometry**	**1**
9.7.01	Classify, describe, and sketch regular and irregular two-dimensional shapes according to the number of sides, length of sides, number of vertices, and interior angles.	1
9.7.02	Solve problems involving two- and three-dimensional shapes.	2
9.7.03	Solve problems using properties of triangles and quadrilaterals (e.g., opposite sides of a parallelogram are congruent).	2
9.7.04	Identify, describe, and determine the radius and diameter of a circle.	1
9.7.05	Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	1
9.7.06	Represent and identify geometric figures using coordinate geometry.	1
9.7.07	Analyze the results of a combination of transformations.	2
9.7.08	Identify or analyze relationships of angles formed by intersecting lines.	2
9.7.09	Identify and sketch acute, right, and obtuse angles.	1
9.7.10	Solve problems involving complementary and supplementary angles.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.7.11	Identify a three-dimensional object from its net.	2
9.7.12	Recognize which attributes (such as shape, perimeter, and area) change or don't change when plane figures are composed, decomposed, or rearranged.	2
9.7.13	Describe the difference between congruence and similarity.	2
9.7.14	Determine if figures are similar, and identify relationships between corresponding parts of similar figures.	2
9.7.15	Determine the distance between two points on a horizontal or vertical number line.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**2**
10A,B	**Data Analysis and Statistics**	**2**
10.7.01	Read, interpret, and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, scatterplot, circle graph, or histogram.	3
10.7.02	Compare different representations of the same data.	2
10.7.03	Create a bar graph, chart/table, line graph, or circle graph for a given set of data.	2
10.7.04	Identify a reasonable approximation of the line of best fit from a set of data or a scatter plot.	2
10.7.05	Determine and use the mode, range, median, and mean to interpret data.	2
10C	**Probability**	**2**
10.7.06	Solve problems involving the probability of a simple or compound event, including representing the probability as a fraction, decimal, or percent.	2
10.7.07	Represent all possible outcomes for simple events.	2
10.7.08	Solve simple problems involving the number of ways objects can be arranged (permutations and combinations).	2
Level	**Description**	**DOK**
Goal 6	**Number Sense**	**2**
6A	**Representations and Ordering**	**2**
6.8.01	Read, write, and recognize equivalent representations of integer powers of 10.	1
6.8.02	Read, write, recognize, model, and interpret integers, including translating numerical expressions.	1
6.8.03	Recognize, translate between, and apply multiple representations of rational numbers (decimals, fractions, mixed numbers, percents, and roots).	2
6.8.04	Use scientific notation to represent numbers and solve problems.	1
6.8.05	Represent repeated factors using exponents.	1
6.8.06	Order and compare rational numbers.	2
6.8.07	Identify and locate rational and irrational numbers (e.g., pi, v2,v5) on a number line.	2
6.8.08	Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., exponents, roots, prime/composite, prime factorization, greatest common factor, least common multiple).	2
6B,C	**Computation, Operations, Estimation, and Properties**	**2**
6.8.09	Solve problems and number sentences involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots.	2

Level	Description	DOK
6.8.10	Identify and apply order of operations to simplify numeric expressions involving integers (including exponents and roots), fractions, and decimals.	1
6.8.11	Identify and apply the following properties of operations with rational numbers: the commutative and associative properties for addition and multiplication; the distributive property; the additive and multiplicative identity properties; the additive and multiplicative inverse properties; and the multiplicative property of zero.	1
6.8.12	Describe the effect of multiplying and dividing by numbers, including the effect of multiplying or dividing a rational number by: a number less than zero; zero; a number between zero and one; and a number greater than one.	2
6.8.13	Select, use, and justify appropriate operations, methods, and tools to compute or estimate with rational numbers. Verify solutions and determine the reasonableness of results.	3
6.8.14	Estimate the square or cube root of a number less than 1,000 between two whole numbers (e.g., 3v 200 is between 5 and 6).	2
6D	**Ratios, Proportions, and Percents**	**2**
6.8.15	Use ratios to describe problem situations.	1
6.8.16	Use proportional reasoning to model and solve problems.	2
6.8.17	Read, write, recognize, model, and interpret percents, including those less than 1% and greater than 100%.	2
6.8.18	Solve number sentences and problems involving fractions, decimals, and percents (e.g., percent increase and decrease, interest rates, tax, discounts, tips).	2
Goal 7	**Measurement**	**2**
7A,B,C	**Units, Tools, Estimation, and Applications**	**2**
7.8.01	Select and use appropriate standard units and tools to solve measurement problems, including measurements of polygons and circles.	2
7.8.02	Solve problems involving perimeter/circumference and area of polygons, circles, and composite figures using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).	2
7.8.03	Compare and estimate length (including perimeter/circumference), area, volume, weight/mass, and angles (0° to 360°) using referents.	2
7.8.04	Solve problems involving the volume or surface area of a right rectangular prism, right circular cylinder, or composite shape using an appropriate formula or strategy.	2
7.8.05	Solve problems involving unit conversions within the same measurement system for length, weight/mass, capacity, square units, and measures expressed as rates (e.g., converting feet/second to yards/minute).	2
7.8.06	Solve problems involving scale drawings, maps, and indirect measurement (e.g., determining the height of a building by comparing its known shadow length to the known height and shadow length of another object).	2
Goal 8	**Algebra**	**2**
8A	**Representations, Patterns, and Expressions**	**2**
8.8.01	Analyze, extend, and create sequences or linear functions, and determine algebraic expressions to describe the nth term of a sequence.	3
8.8.02	Write an expression using variables to represent unknown quantities.	2
8.8.03	Simplify algebraic expressions.	1
8.8.04	Recognize and generate equivalent forms of algebraic expressions.	2
8.8.05	Evaluate or simplify algebraic expressions with one or more rational variable values (e.g., 3a2 - b for a = 3 and b = 7).	1
8B	**Connections Using Tables, Graphs, and Symbols**	**2**
8.8.06	Recognize, describe, and extend patterns using rate of change.	2
8.8.07	Represent linear equations and quantitative relationships on a rectangular coordinate system, and interpret the meaning of a specific part of a graph.	2
8.8.08	Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.	2

Level	Description	DOK
8.8.09	Interpret the meaning of slope and intercepts in linear situations.	2
8.8.10	Identify, graph, and interpret up to two inequalities with a single variable (including the intersection or union of these inequalities) on a number line.	2
8C,D	**Writing, Interpreting, and Solving Equations**	**2**
8.8.11	Represent and analyze problems with linear equations and inequalities.	2
8.8.12	Solve linear equations and inequalities in one variable over the rational numbers (e.g., 5x+7= -13, 4x-3= -7x+8, -2x+3>-5).	2
8.8.13	Solve word problems involving unknown quantities.	2
Goal 9	**Geometry**	**2**
9A	**Properties of Single Figures and Coordinate Geometry**	**2**
9.8.01	Solve problems involving two- and three-dimensional shapes.	2
9.8.02	Solve problems that require knowledge of triangle and quadrilateral properties (e.g., triangle inequality).	2
9.8.03	Find the length of any side of a right triangle using the Pythagorean theorem (whole number solutions).	1
9.8.04	Identify, describe, and determine the radius, diameter, and circumference of a circle and their relationship to each other and to pi.	2
9.8.05	Graph points, and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).	1
9.8.06	Represent and identify geometric figures using coordinate geometry, including those resulting from transformations.	2
9.8.07	Analyze the results of a combination of transformations, and determine a different transformation that could produce the same result.	2
9.8.08	Identify or analyze relationships of angles formed by intersecting lines (including parallel lines cut by a transversal) and angles formed by radii of a circle.	2
9.8.09	Solve problems involving vertical, complementary, and supplementary angles.	1
9B	**Relationships Between and Among Multiple Figures**	**2**
9.8.10	Identify front, side, and top views of a three-dimensional solid built with cubes.	2
9.8.11	Solve problems involving congruent and similar figures.	2
9.8.12	Relate absolute value to distance on the number line.	1
Goal 10	**Data Analysis, Statistics, and Probability**	**3**
10A,B	**Data Analysis and Statistics**	**3**
10.8.01	Read, interpret (including possible misleading characteristics), and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two or three circles), chart/table, line graph, scatterplot, circle graph, stem-and-leaf plot, or histogram.	3
10.8.02	Compare and contrast the effectiveness of different representations of the same data.	3
10.8.03	Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data.	2
10.8.04	Identify or draw a reasonable approximation of the line of best fit from a set of data or a scatter plot, and use the line to make predictions.	3
10.8.05	Analyze and apply measures of central tendency (mode, range, median, and mean) in problem-solving situations.	3
10C	Probability	2
10.8.06	Solve problems involving the probability of an event composed of repeated trials, compound events (including independent events), or future events with or without replacement.	2
10.8.07	Represent all possible outcomes (sample space) for simple or compound events (e.g., tables, grids, tree diagrams).	2
10.8.08	Solve simple problems involving the number of ways objects can be arranged (permutations and combinations).	2

Data Analysis Tables Grades 3-8 Mathematics

Brief Explanation of Data in the Alignment Tables by Column

Table 1

| Standards # | Number of standards plus one for a generic standard for each standard. |

Standards #   Number of standards plus one for a generic standard for each standard.

Standards #   Average number of standards for reviewers. If the number is greater than the actual number in the standard, then at least one reviewer coded an item for the standard/standard but did not find any standard in the standard that corresponded to the item.

Level   The Depth-of-Knowledge level coded by the reviewers for the standards for each standard.

\# of standards by
Level   The number of standards coded at each level

% w/in std
by Level   The percent of standards coded at each level

Hits
Mean & SD   Mean and standard deviation number of items reviewers coded as corresponding to standard. The total is the total number of coded hits.

Cat. Conc.
Accept.   "Yes" indicates that the standard met the acceptable level for criterion. "Yes" if mean is six or more. "Weak" if mean is five to six. "No" if mean is less than five.

Table 2

First five columns repeat columns from Table 1.

Level of Item
w.r.t. Stand   Mean percent and standard deviation of items coded as "under" the Depth-of-Knowledge level of the corresponding standard, as "at" (the same) the Depth-of-Knowledge level of the corresponding standard, and as "above" the Depth-of-Knowledge level of the corresponding standard.

Depth-of-Know.
Consistency
Accept.   "Yes" indicates that 50% or more of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.
"Weak" indicates that 40% to 50% of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

"No" indicates that less than 40% items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

Table 3

First five columns repeat columns from Table 1 and 2.

Range of Stds.

# Stds. Hit	Average number and standard deviation of the standards hit coded by reviewers.
% of Total	Average percent and standard deviation of the total standards that had at least one item coded.

Range of Know.

Accept.	"Yes" indicates that 50% or more of the standards had at least one coded standard.
	"Weak" indicates that 40% to 50% of the standards had at least one coded standard.
	"No" indicates that 40% or less of the standards had at least one coded standard.

Balance Index
% Hits in

Std/Ttl Hits	Average and standard deviation of the percent of the items hit for a standard of total number of hits (see total under the Hits column).
Index	Average and standard deviation of the Balance Index.

Note: BALANCE INDEX $\quad 1 - (\sum_{k=1} \left| 1/(O) - I_{(k)}/(H) \right|)/2$

Where O = Total number of standards hit for the standard
$I_{(k)}$ = Number of items hit corresponding to standard (k)
H = Total number of items hit for the standard

Bal. of Rep

Accept.	"Yes" indicates that the Balance Index was .7 or above (items evenly distributed among standards).
	"Weak" indicates that the Balance Index was .6 to .7 (a high percentage of items coded as corresponding to two or three standards).
	"No" indicates that the Balance Index was .6 or less (a high percentage of items coded as corresponding to one standard.)

Categorical Concurrence Between Standards and Assessment for Grade 3

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	2	14.8	1 2	10 4	71 28	29.8	6.31	YES
Goal 7 - Measurement	1	7	1 2	1 6	14 85	12.2	0.75	YES
Goal 8 - Algebra	2	5	1 2	1 4	20 80	19.2	0.4	YES
Goal 9 - Geometry	2	11	1 2	6 5	54 45	15.2	1.17	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	1 2	2 3	40 60	11.2	0.98	YES
Total	9	42.8	1 2	20 22	47 52	87.6	6.09	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 3

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	2	14.8	29.8	6.31	9	21	81	34	10	29	YES
Goal 7 - Measurement	1	7	12.2	0.75	23	39	64	43	13	31	YES
Goal 8 - Algebra	2	5	19.2	0.4	19	35	65	43	16	34	YES
Goal 9 - Geometry	2	11	15.2	1.17	8	26	67	43	25	40	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	11.2	0.98	10	24	83	31	7	22	YES
Total	9	42.8	87.6	6.09	12	28	73	39	15	33	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 3

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	2	14.8	29.8	6.31	13.8	1.47	93	5	YES	34	5	0.73	0.08	YES
Goal 7 - Measurement	1	7	12.2	0.75	6.6	0.49	94	7	YES	14	1	0.75	0.01	YES
Goal 8 - Algebra	2	5	19.2	0.4	3.2	0.4	64	8	YES	22	2	0.60	0.02	WEAK
Goal 9 - Geometry	2	11	15.2	1.17	9.6	0.8	87	7	YES	17	2	0.80	0	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	11.2	0.98	4.6	0.49	92	10	YES	13	1	0.78	0.02	YES
Total	9	42.8	87.6	6.09	7.56	3.88	86	14		20	8	0.73	0.08	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 3

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	YES
Goal 8 - Algebra	YES	YES	YES	WEAK
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 3 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	2	2	2	2	2
60	2	1	1	1	1
61	2	2	1	2	2
62	2	2	1	2	2
63	2	2	2	2	2
64	2	2	2	2	2
65	1	2	2	2	2
66					
67					
68					
69					
70					
71	2	1	2	2	1
72	2	2	2	2	2
73					
74	2	2	3	3	3
75					

Intraclass Correlation: 0.8504
Pairwise Comparison: 0.7324

DOK Levels and Objectives Coded by Each Reviewer for Grade 3

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	S2Obj1	DOK2	PObj2	S1Obj2	S2Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	6.3.02		1	6.3.02			1	6.3.02			1	6.3.02		1	6.3.02	
2	2	6.3.05		1	6.3.05			1	6.3.05			1	6.3.05		1	6.3.05	
3	1	6.3.01		1	6.3.01			1	6.3.01			1	6.3.01		1	6.3.01	
4	1	6.3.03		1	6.3.03			1	6.3.03			1	6.3.02		1	6.3.03	
5	2	6.3.09		1	6.3.09			1	6.3.10			1	6.3.09		1	6.3.08	
6	2	6.3.06		2	6.3.06			1	6.3.05			2	6.3.06		1	6.3.06	
7	1	6.3.08		1	6.3.07			1	6.3.07			1	6.3.07		1	6.3.07	
8	1	6.3.08		2	6.3.08			1	6.3.08			1	6.3.08		1	6.3.08	
9	2	6A		2	6.3.08			2	6.3.08			2	6.3.08		2	6.3.08	
10	2	6.3.10		2	6.3.10			2	6.3.10			2	6.3.10		2	6.3.10	
11	2	6.3.14		2	6.3.14			2	6.3.14			1	6.3.11		1	6.3.09	
12	1	6.3.11		1	6.3.11			1	6.3.11			1	6.3.11		1	6.3.11	
13	2	7.3.01		2	7.3.01			2	7.3.01			2	7.3.01		2	7.3.01	
14	1	6.3.13		1	6.3.13			1	6.3.13			1	6.3.13		1	6.3.13	
15	2	6.3.09		2	6.3.09			2	6.3.08			2	6.3.09		2	6.3.09	
16	2	6B,C		2	8.3.02			1	8.3.03			2	8.3.02		1	6.3.11	
17	2	8.3.01		1	8.3.01			1	8.3.01			2	8.3.01		2	8.3.01	
18	2	8.3.01		1	8.3.01			2	8.3.01			2	8.3.01		2	8.3.01	
19	2	8.3.01		2	8.3.01			2	8.3.01			2	8.3.01		2	8.3.01	
20	2	10.3.01		2	10.3.01			2	10.3.01			2	10.3.01		2	10.3.01	
21	2	10.3.01		2	10.3.01			2	10.3.01			2	10.3.02		2	10.3.01	
22	1	6.3.09		2	6.3.09			1	6.3.09			2	6.3.09		2	6.3.09	
23	1	10.3.04		1	10.3.04			1	10.3.04			2	10.3.04		1	10.3.04	
24	2	9.3.09		2	9.3.09			3	9.3.09			3	9.3.09		2	9.3.09	
25	2	9.3.03		2	9.3.03			2	9.3.03			1	9.3.03		1	9.3.03	
26	1	9.3.04		1	9.3.04			1	9.3.04			1	9.3.04		1	9.3.04	
27	1	7.3.02		2	7.3.02			1	7.3.02			2	7.3.02		2	7.3.02	
28	1	7.3.02		2	7.3.02			1	7.3.02			2	7.3.02		1	7.3.02	
29	2	7.3.01		2	7.3.01			1	7.3.01			2	7.3.01		1	7.3.01	
30	2	6.3.10		1	6.3.10			2	6.3.10			1	6.3.10		1	6.3.10	
31	2	9.3.09	9.3.02	2	7.3.06			2	7.3.06			2	7.3.06		2	9.3.02	
32	2	8.3.05		2	8.3.05			2	8.3.05			2	8.3.05		2	8.3.05	
33	2	8.3.02		2	8.3.02			1	8.3.02			2	8.3.02		2	8.3.02	
34	1	9.3.06		1	9.3.06			1	9.3.06			1	9.3.06		1	9.3.06	
35	2	9.3.05		1	9.3.05			1	9.3.05			2	9.3.05		2	9.3.05	
36	1	6.3.12		1	6.3.12			1	6.3.12			1	6.3.12		1	6.3.12	
37	2	10.3.05		1	10.3.05			1	10.3.05			1	10.3.05		2	10.3.05	
38	2	10.3.01		1	10.3.01			1	10.3.01			2	10.3.01		2	10.3.01	
39	1	6.3.04		1	6.3.04			1	6.3.04			1	6.3.04		1	6.3.04	
40	1	7.3.06		1	7.3.06			1	7.3.06			2	7.3.06		2	7.3.06	
41	1	6.3.12		1	6.3.12			1	6.3.12			1	6.3.12		1	6.3.12	
42	2	9.3.11		2	9.3.11			1	6.3.07			2	9.3.11		1	9.3.11	

DOK Levels and Objectives Coded by Each Reviewer for Grade 3

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	S2Obj1	DOK2	PObj2	S1Obj2	S2Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	2	10.3.05		1	10.3.05			2	10.3.05			2	10.3.05		2	10.3.05	
44	2	8.3.05		2	Goal 6			2	7.3.05			2	8.3.05		2	8.3.05	
45	2	7.3.03		2	7.3.03			2	7.3.03			2	7.3.03		2	7.3.03	
46	1	10.3.03		1	10.3.03			1	10.3.03			1	10.3.03		1	10.3.03	
47	1	6.3.04		1	6.3.04			1	6.3.04			1	6.3.04		1	6.3.04	
48	2	7.3.04		1	7.3.04			1	7.3.04			2	7.3.04		1	7.3.04	
49	1	10.3.04		2	10.3.04			1	10.3.04			2	10.3.04		1	10.3.04	
50	1	6.3.11		1	6.3.11			1	6.3.11			1	6.3.11		1	6.3.11	
51	2	7.3.01		1	7.3.01			2	7.3.01			2	7.3.01		2	7.3.01	
52	2	7.3.07		1	7.3.07			2	7.3.07			2	7.3.07		2	7.3.07	
53	2	9.3.10		2	7.3.05			2	9.3.10			2	9.3.10		2	7.3.05	
54	1	9.3.03		1	9.3.03			2	9.3.03			1	9.3.03		1	9.3.01	9.3.03
55	2	9.3.05		1	9.3.05			1	9.3.05			1	9.3.05		2	9.3.05	
56	1	6.3.12		1	6.3.12			1	6.3.12			1	6.3.12		1	6.3.12	
57	2	6.3.09		2	6.3.09			2	6.3.09			2	6.3.09		2	6.3.09	
58	1	9.3.01		1	9.3.01			1	9.3.01			1	9.3.01		1	9.3.01	
59	2	7.3.01		2	7.3.01			2	7.3.01			2	7.3.01		2	7.3.01	
60	2	6.3.10		1	6.3.10			1	6.3.10			1	6.3.10		1	6.3.10	
61	2	9.3.02		2	9.3.02			1	9.3.02			2	9.3.02		2	9.3.02	
62	2	8.3.02		2	9.3.08			1	8.3.02			2	8.3.02		2	8.3.02	
63	2	9.3.08		2	7.3.06			2	9.3.08			2	9.3.08		2	9.3.08	
64	2	7.3.06		2	9.3.02			2	7.3.06			2	7.3.06		2	7.3.06	
65	1	9.3.07		2	6.3.12	8.3.05		2	9.3.02			2	9.3.02		2	9.3.02	
66																	
67																	
68																	
69																	
70																	
71	2	9.3.04		1	9.3.04			2	9.3.04			2	9.3.04		1	9.3.04	
72	2	10.3.01		2	10.3.01			2	10.3.01	10.3.02		2	10.3.01	10.3.02	2	10.3.02	10.3.01
73																	
74	2	8.3.05		2	8.3.05	6B,C		3	8.3.05			3	8.3.05		3	6.3.08	8.3.05
75																	

Objective Pairwise Comparison: 0.7868
Standard Pairwise Comparison: 0.9204

Objectives Coded to Each Item by Reviewers for Grade 3

Low		Medium		High
0		5.84		84

1	6.3.02	6.3.02	6.3.02	6.3.02	6.3.02	
2	6.3.05	6.3.05	6.3.05	6.3.05	6.3.05	
3	6.3.01	6.3.01	6.3.01	6.3.01	6.3.01	
4	6.3.02	6.3.03	6.3.03	6.3.03	6.3.03	
5	6.3.08	6.3.09	6.3.09	6.3.09	6.3.10	
6	6.3.05	6.3.06	6.3.06	6.3.06	6.3.06	
7	6.3.07	6.3.07	6.3.07	6.3.07	6.3.08	
8	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	
9	6A	6.3.08	6.3.08	6.3.08	6.3.08	
10	6.3.10	6.3.10	6.3.10	6.3.10	6.3.10	
11	6.3.09	6.3.11	6.3.14	6.3.14	6.3.14	
12	6.3.11	6.3.11	6.3.11	6.3.11	6.3.11	
13	7.3.01	7.3.01	7.3.01	7.3.01	7.3.01	
14	6.3.13	6.3.13	6.3.13	6.3.13	6.3.13	
15	6.3.08	6.3.09	6.3.09	6.3.09	6.3.09	
16	6B,C	6.3.11	8.3.02	8.3.02	8.3.03	
17	8.3.01	8.3.01	8.3.01	8.3.01	8.3.01	
18	8.3.01	8.3.01	8.3.01	8.3.01	8.3.01	
19	8.3.01	8.3.01	8.3.01	8.3.01	8.3.01	
20	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	
21	10.3.01	10.3.01	10.3.01	10.3.01	10.3.02	
22	6.3.09	6.3.09	6.3.09	6.3.09	6.3.09	
23	10.3.04	10.3.04	10.3.04	10.3.04	10.3.04	
24	9.3.09	9.3.09	9.3.09	9.3.09	9.3.09	
25	9.3.03	9.3.03	9.3.03	9.3.03	9.3.03	
26	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	
27	7.3.02	7.3.02	7.3.02	7.3.02	7.3.02	
28	7.3.02	7.3.02	7.3.02	7.3.02	7.3.02	
29	7.3.01	7.3.01	7.3.01	7.3.01	7.3.01	
30	6.3.10	6.3.10	6.3.10	6.3.10	6.3.10	
31	7.3.06	7.3.06	7.3.06	9.3.02	9.3.02	9.3.09
32	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	
33	8.3.02	8.3.02	8.3.02	8.3.02	8.3.02	
34	9.3.06	9.3.06	9.3.06	9.3.06	9.3.06	
35	9.3.05	9.3.05	9.3.05	9.3.05	9.3.05	
36	6.3.12	6.3.12	6.3.12	6.3.12	6.3.12	
37	10.3.05	10.3.05	10.3.05	10.3.05	10.3.05	
38	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	
39	6.3.04	6.3.04	6.3.04	6.3.04	6.3.04	
40	7.3.06	7.3.06	7.3.06	7.3.06	7.3.06	
41	6.3.12	6.3.12	6.3.12	6.3.12	6.3.12	
42	6.3.07	9.3.11	9.3.11	9.3.11	9.3.11	
43	10.3.05	10.3.05	10.3.05	10.3.05	10.3.05	
44	Goal 6	7.3.05	8.3.05	8.3.05	8.3.05	
45	7.3.03	7.3.03	7.3.03	7.3.03	7.3.03	
46	10.3.03	10.3.03	10.3.03	10.3.03	10.3.03	
47	6.3.04	6.3.04	6.3.04	6.3.04	6.3.04	
48	7.3.04	7.3.04	7.3.04	7.3.04	7.3.04	
49	10.3.04	10.3.04	10.3.04	10.3.04	10.3.04	
50	6.3.11	6.3.11	6.3.11	6.3.11	6.3.11	
51	7.3.01	7.3.01	7.3.01	7.3.01	7.3.01	
52	7.3.07	7.3.07	7.3.07	7.3.07	7.3.07	
53	7.3.05	7.3.05	9.3.10	9.3.10	9.3.10	
54	9.3.01	9.3.03	9.3.03	9.3.03	9.3.03	9.3.03
55	9.3.05	9.3.05	9.3.05	9.3.05	9.3.05	
56	6.3.12	6.3.12	6.3.12	6.3.12	6.3.12	
57	6.3.09	6.3.09	6.3.09	6.3.09	6.3.09	

58	9.3.01	9.3.01	9.3.01	9.3.01	9.3.01				
59	7.3.01	7.3.01	7.3.01	7.3.01	7.3.01				
60	6.3.10	6.3.10	6.3.10	6.3.10	6.3.10				
61	9.3.02	9.3.02	9.3.02	9.3.02	9.3.02				
62	8.3.02	8.3.02	8.3.02	8.3.02	9.3.08				
63	7.3.06	9.3.08	9.3.08	9.3.08	9.3.08				
64	7.3.06	7.3.06	7.3.06	7.3.06	9.3.02				
65	6.3.12	8.3.05	9.3.02	9.3.02	9.3.02	9.3.07			
66									
67									
68									
69									
70									
71	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04	9.3.04
72	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01	10.3.01
	10.3.02	10.3.02	10.3.02	10.3.02	10.3.02	10.3.02			
73									
74	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08	6.3.08
	6.3.08	6.3.08	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C
	6B,C	6B,C	6B,C	6B,C	6B,C	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05	8.3.05
	8.3.05	8.3.05							
75									

Items Coded by Reviewers to Each Objective for Grade 3

Low		Medium		High
0		7.68421		69

Goal 6	44																			
6A	9																			
6.3.01	3	3	3	3	3															
6.3.02	1	1	1	1	1	4														
6.3.03	4	4	4	4																
6.3.04	39	39	39	39	39	47	47	47	47	47										
6.3.05	2	2	2	2	2	6														
6.3.06	6	6	6	6																
6.3.07	7	7	7	7	42															
6.3.08	5	7	8	8	8	8	8	9	9	9	9	15	74	74	74	74	74	74	74	74
	74	74	74	74																
6B,C	16	74	74	74	74	74	74	74	74	74	74	74	74							
6.3.09	5	5	5	11	15	15	15	15	22	22	22	22	22	57	57	57	57	57		
6.3.10	5	10	10	10	10	10	30	30	30	30	30	60	60	60	60	60				
6.3.11	11	12	12	12	12	12	16	50	50	50	50	50								
6.3.12	36	36	36	36	36	41	41	41	41	41	56	56	56	56	56	65				
6.3.13	14	14	14	14	14															
6.3.14	11	11	11																	
Goal 7																				
7A,B,C																				
7.3.01	13	13	13	13	13	29	29	29	29	29	51	51	51	51	51	59	59	59	59	59
7.3.02	27	27	27	27	27	28	28	28	28	28										
7.3.03	45	45	45	45	45															
7.3.04	48	48	48	48	48															
7.3.05	44	53	53																	
7.3.06	31	31	31	40	40	40	40	40	63	64	64	64	64							
7.3.07	52	52	52	52	52															
Goal 8																				
8A																				
8.3.01	17	17	17	17	17	18	18	18	18	18	19	19	19	19	19					
8.3.02	16	16	33	33	33	33	33	62	62	62	62									
8C,D																				
8.3.03	16																			
8.3.04																				
8.3.05	32	32	32	32	32	44	44	44	65	74	74	74	74	74	74	74	74	74	74	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74		
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74		
	74	74	74	74	74	74	74	74	74	74	74									
Goal 9																				
9A																				
9.3.01	54	58	58	58	58	58														
9.3.02	31	31	61	61	61	61	61	64	65	65	65									
9.3.03	25	25	25	25	25	54	54	54	54	54										
9.3.04	26	26	26	26	26	71	71	71	71	71	71	71	71	71	71					
9.3.05	35	35	35	35	35	55	55	55	55	55										
9.3.06	34	34	34	34	34															
9B																				
9.3.07	65																			
9.3.08	62	63	63	63	63															
9.3.09	24	24	24	24	24	31														
9.3.10	53	53	53																	
9.3.11	42	42	42	42																
Goal 10																				
10A,B																				
10.3.01	20	20	20	20	20	21	21	21	21	38	38	38	38	38	72	72	72	72	72	72
	72	72	72	72																

10.3.02	21	72	72	72	72	72	72			
10.3.03	46	46	46	46	46					
10C										
10.3.04	23	23	23	23	23	49	49	49	49	49
10.3.05	37	37	37	37	37	43	43	43	43	43

Number of Reviewers Coding an Item by Objective for Grade 3
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective					
Goal 6	44:1				
6A	9:1				
6.3.01	3:5				
6.3.02	1:5	4:1			
6.3.03	4:4				
6.3.04	39:5	47:5			
6.3.05	2:5	6:1			
6.3.06	6:4				
6.3.07	7:4	42:1			
6.3.08	5:1	7:1	8:5	9:4	15:1	74:1
6B,C	16:1	74:1			
6.3.09	5:3	11:1	15:4	22:5	57:5
6.3.10	5:1	10:5	30:5	60:5	
6.3.11	11:1	12:5	16:1	50:5	
6.3.12	36:5	41:5	56:5	65:1	
6.3.13	14:5				
6.3.14	11:3				
Goal 7					
7A,B,C					
7.3.01	13:5	29:5	51:5	59:5	
7.3.02	27:5	28:5			
7.3.03	45:5				
7.3.04	48:5				
7.3.05	44:1	53:2			
7.3.06	31:3	40:5	63:1	64:4	
7.3.07	52:5				
Goal 8					
8A					
8.3.01	17:5	18:5	19:5		
8.3.02	16:2	33:5	62:4		
8C,D					
8.3.03	16:1				
8.3.04					
8.3.05	32:5	44:3	65:1	74:5	
Goal 9					
9A					
9.3.01	54:1	58:5			
9.3.02	31:2	61:5	64:1	65:3	
9.3.03	25:5	54:5			
9.3.04	26:5	71:5			
9.3.05	35:5	55:5			
9.3.06	34:5				
9B					
9.3.07	65:1				
9.3.08	62:1	63:4			
9.3.09	24:5	31:1			
9.3.10	53:3				
9.3.11	42:4				
Goal 10					
10A,B					
10.3.01	20:5	21:4	38:5	72:5	
10.3.02	21:1	72:3			
10.3.03	46:5				
10C					
10.3.04	23:5	49:5			

Number of Reviewers Coding an Objective by Item for Grade 3
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item				
1	6.3.02:5			
2	6.3.05:5			
3	6.3.01:5			
4	6.3.02:1	6.3.03:4		
5	6.3.08:1	6.3.09:3	6.3.10:1	
6	6.3.05:1	6.3.06:4		
7	6.3.07:4	6.3.08:1		
8	6.3.08:5			
9	6A:1	6.3.08:4		
10	6.3.10:5			
11	6.3.09:1	6.3.11:1	6.3.14:3	
12	6.3.11:5			
13	7.3.01:5			
14	6.3.13:5			
15	6.3.08:1	6.3.09:4		
16	6B,C:1	6.3.11:1	8.3.02:2	8.3.03:1
17	8.3.01:5			
18	8.3.01:5			
19	8.3.01:5			
20	10.3.01:5			
21	10.3.01:4	10.3.02:1		
22	6.3.09:5			
23	10.3.04:5			
24	9.3.09:5			
25	9.3.03:5			
26	9.3.04:5			
27	7.3.02:5			
28	7.3.02:5			
29	7.3.01:5			
30	6.3.10:5			
31	7.3.06:3	9.3.02:2	9.3.09:1	
32	8.3.05:5			
33	8.3.02:5			
34	9.3.06:5			
35	9.3.05:5			
36	6.3.12:5			
37	10.3.05:5			
38	10.3.01:5			
39	6.3.04:5			
40	7.3.06:5			
41	6.3.12:5			
42	6.3.07:1	9.3.11:4		
43	10.3.05:5			
44	Goal 6:1	7.3.05:1	8.3.05:3	
45	7.3.03:5			
46	10.3.03:5			
47	6.3.04:5			
48	7.3.04:5			
49	10.3.04:5			
50	6.3.11:5			
51	7.3.01:5			
52	7.3.07:5			
53	7.3.05:2	9.3.10:3		
54	9.3.01:1	9.3.03:5		

55	9.3.05:5			
56	6.3.12:5			
57	6.3.09:5			
58	9.3.01:5			
59	7.3.01:5			
60	6.3.10:5			
61	9.3.02:5			
62	8.3.02:4	9.3.08:1		
63	7.3.06:1	9.3.08:4		
64	7.3.06:4	9.3.02:1		
65	6.3.12:1	8.3.05:1	9.3.02:3	9.3.07:1
66				
67				
68				
69				
70				
71	9.3.04:5			
72	10.3.01:5	10.3.02:3		
73				
74	6.3.08:1	6B,C:1	8.3.05:5	
75				

Assessment Item DOK vs. Consensus DOK for Grade 3
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal/Objective						
Goal 6 [1]:	44:1 [2]					
6A [1]:	9:1 [2]					
6.3.01 [1]:	3:5 [1]					
6.3.02 [1]:	1:5 [1]	4:1 [1]				
6.3.03 [1]:	4:4 [1]					
6.3.04 [1]:	39:5 [1]	47:5 [1]				
6.3.05 [1]:	2:5 [1.2]	6:1 [1]				
6.3.06 [1]:	6:4 [1.75]					
6.3.07 [1]:	7:4 [1]	42:1 [1]				
6.3.08 [2]:	5:1 [1]	7:1 [1]	8:5 [1.2]	9:4 [2]	15:1 [2]	74:1 [3]
6B,C [2]:	16:1 [2]	74:1 [2]				
6.3.09 [2]:	5:3 [1.33]	11:1 [1]	15:4 [2]	22:5 [1.6]	57:5 [2]	
6.3.10 [2]:	5:1 [1]	10:5 [2]	30:5 [1.4]	60:5 [1.2]		
6.3.11 [1]:	11:1 [1]	12:5 [1]	16:1 [1]	50:5 [1]		
6.3.12 [1]:	36:5 [1]	41:5 [1]	56:5 [1]	65:1 [2]		
6.3.13 [1]:	14:5 [1]					
6.3.14 [2]:	11:3 [2]					
Goal 7 [2]:						
7A,B,C [2]:						
7.3.01 [1]:	13:5 [2]	29:5 [1.6]	51:5 [1.8]	59:5 [2]		
7.3.02 [2]:	27:5 [1.6]	28:5 [1.4]				
7.3.03 [2]:	45:5 [2]					
7.3.04 [2]:	48:5 [1.4]					
7.3.05 [2]:	44:1 [2]	53:2 [2]				
7.3.06 [2]:	31:3 [2]	40:5 [1.4]	63:1 [2]	64:4 [2]		
7.3.07 [2]:	52:5 [1.8]					
Goal 8 [2]:						
8A [2]:						
8.3.01 [2]:	17:5 [1.6]	18:5 [1.8]	19:5 [2]			
8.3.02 [2]:	16:2 [2]	33:5 [1.8]	62:4 [1.75]			
8C,D [2]:						
8.3.03 [2]:	16:1 [1]					
8.3.04 [1]:						
8.3.05 [2]:	32:5 [2]	44:3 [2]	65:1 [2]	74:5 [2.6]		
Goal 9 [1]:						
9A [1]:						
9.3.01 [1]:	54:1 [1]	58:5 [1]				
9.3.02 [2]:	31:2 [2]	61:5 [1.8]	64:1 [2]	65:3 [2]		
9.3.03 [1]:	25:5 [1.6]	54:5 [1.2]				
9.3.04 [1]:	26:5 [1]	71:5 [1.6]				
9.3.05 [2]:	35:5 [1.6]	55:5 [1.4]				
9.3.06 [1]:	34:5 [1]					
9B [2]:						
9.3.07 [2]:	65:1 [1]					
9.3.08 [2]:	62:1 [2]	63:4 [2]				
9.3.09 [2]:	24:5 [2.4]	31:1 [2]				
9.3.10 [1]:	53:3 [2]					
9.3.11 [1]:	42:4 [1.75]					
Goal 10 [2]:						
10A,B [2]:						
10.3.01 [2]:	20:5 [2]	21:4 [2]	38:5 [1.6]	72:5 [2]		
10.3.02 [2]:	21:1 [2]	72:3 [2]				
10.3.03 [1]:	46:5 [1]					
10C [2]:						

10.3.04 [1]:	23:5 [1.2]	49:5 [1.4]
10.3.05 [2]:	37:5 [1.4]	43:5 [1.8]

Categorical Concurrence Between Standards and Assessment for Grade 4

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	2	16.8	1 2	9 7	56 43	26.6	5.95	YES
Goal 7 - Measurement	1	6	1 2	1 5	16 83	22.4	0.8	YES
Goal 8 - Algebra	3	8.2	1 2	1 7	12 87	10.2	2.04	YES
Goal 9 - Geometry	2	13	1 2	7 6	53 46	17.6	5.64	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	1 2	2 3	40 60	13	0.63	YES
Total	10	49	1 2	20 28	41 58	89.8	6.52	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 4

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	2	16.8	26.6	5.95	20	33	74	37	6	23	YES
Goal 7 - Measurement	1	6	22.4	0.8	24	33	54	40	22	36	YES
Goal 8 - Algebra	3	8.2	10.2	2.04	18	36	73	41	9	27	YES
Goal 9 - Geometry	2	13	17.6	5.64	7	24	84	34	9	27	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	13	0.63	9	23	87	30	5	21	YES
Total	10	49	89.8	6.52	15	31	76	38	9	26	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 4

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	2	16.8	26.6	5.95	14.2	0.98	84	3	YES	30	6	0.75	0.08	YES
Goal 7 - Measurement	1	6	22.4	0.8	4.2	0.4	70	7	YES	25	3	0.56	0.02	NO
Goal 8 - Algebra	3	8.2	10.2	2.04	5.4	1.2	66	16	YES	11	2	0.78	0.05	YES
Goal 9 - Geometry	2	13	17.6	5.64	10.6	0.49	82	4	YES	19	5	0.74	0.15	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	13	0.63	4.4	0.49	88	10	YES	15	1	0.64	0.02	WEAK
Total	10	49	89.8	6.52	7.76	4.05	78	13		20	8	0.69	0.11	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 4

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	NO
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	WEAK

Depth-of-Knowledge Levels by Item and Reviewers for Grade 4 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	2	1	2	2	2
60	2	1	1	2	1
61	2	2	2	2	2
62	1	1	1	1	1
63	2	1	1	1	1
64	1	1	2	2	1
65	2	1	2	2	2
66					
67					
68					
69					
70					
71	2	2	2	2	2
72	3	2	3	2	2
73					
74	2	3	3	3	3
75					

Intraclass Correlation: 0.8522
Pairwise Comparison: 0.6956

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	6.4.02		1	6.4.02		1	6.4.01		1	6.4.02		1	6.4.02	
2	1	6.4.01		1	6.4.11		2	6.4.10		2	6.4.11		1	6.4.11	
3	2	6.4.10		1	6.4.10		1	6.4.01		1	6.4.01		1	6.4.01	
4	1	6.4.06		1	6.4.06		1	6.4.06		1	6.4.06		1	6.4.06	
5	1	6.4.03		1	6.4.03		2	6.4.03		1	6.4.03		1	6.4.03	
6	2	6.4.03		1	6.4.03		2	6.4.07		1	6.4.03		1	6.4.03	
7	2	6.4.09		2	6.4.09		2	6.4.09		2	6.4.09		2	6.4.09	
8	2	6.4.10		1	6.4.10		2	6.4.10		2	6.4.10		2	8.4.08	
9	2	6.4.16		1	6.4.16		2	6.4.16		2	6.4.16		1	6.4.10	
10	2	10.4.01		1	8.4.06		2	8.4.06		2	8.4.06	10.4.01	2	8.4.06	10.4.01
11	1	6.4.15		1	6.4.15		1	6.4.15		1	6.4.12		1	6.4.15	
12	2	6.4.16		1	6.4.16		2	6.4.09		2	6.4.10		2	6.4.16	
13	3	6.4.10		1	6B,C		2	6.4.10		2	6B,C		2	8.4.08	
14	1	6B,C		1	6B,C		2	8.4.07		1	6B,C		1	8.4.07	
15	2	8.4.01		1	8.4.01		2	8.4.01		1	8.4.01		2	8.4.01	
16	2	8.4.01		1	8.4.01		2	8.4.01		2	8.4.01		2	8.4.01	
17	2	8.4.03		1	8.4.08	8.4.03	2	8.4.08		2	8.4.08		1	8.4.03	
18	2	6.4.11		1	6.4.12		2	6.4.11		2	6.4.10		2	6.4.10	
19	2	10.4.01		2	10.4.01		1	10.4.01		2	10.4.01		2	10.4.01	
20	2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01	6.4.10	2	10.4.01	
21	2	10.4.04		1	10.4.04		1	10.4.04		1	10.4.04		1	10.4.04	
22	2	10.4.05		2	10.4.05		2	10.4.05		1	10.4.05		2	10.4.05	
23	2	9.4.11		2	9.4.11		3	9.4.11		2	9.4.11		2	9.4.11	
24	1	9.4.04		1	9.4.04		1	9.4.04		1	9.4.04		1	9.4.04	
25	1	9.4.07		1	9.4.07		1	9.4.07		1	9.4.07		1	9.4.07	
26	1	7.4.02		1	7.4.02		1	7.4.02		1	7.4.02		1	7.4.02	
27	2	7.4.01		1	7.4.01		1	7.4.01		2	7.4.01		1	7.4.01	
28	2	7.4.03		1	7.4.02		2	7.4.02		2	7.4.02		2	7.4.02	
29	2	7.4.03		1	7.4.03		1	7.4.03		2	7.4.03		1	7.4.03	
30	2	7.4.02		1	7.4.02		1	7.4.02		1	7.4.02		2	7.4.02	
31	1	6.4.09		1	6.4.09		1	6.4.09		1	6.4.09		1	6.4.09	
32	2	9.4.02		1	9.4.02		2	9.4.02		2	9.4.09		2	9.4.02	
33	2	8.4.08		2	Goal 6		1	7.4.04		2	Goal 8	8.4.08	2	8.4.08	
34	2	6.4.14		1	6.4.14		2	6.4.14		2	6.4.14		2	6.4.14	
35	2	7.4.03		2	7.4.03		2	7.4.03		2	7.4.03		2	7.4.03	
36	2	9.4.03		1	9.4.03		1	9.4.03		2	9.4.03		1	9.4.03	
37	2	8.4.03		1	8.4.03	8.4.07	1	8.4.03		1	6.4.10		1	8.4.03	
38	2	10.4.05		1	10.4.05		2	10.4.05		1	10.4.05		2	10.4.05	
39	2	8.4.04		2	8.4.04		1	10.4.01		2	10.4.01		2	8.4.04	
40	1	6.4.01		1	6.4.01		1	6.4.02		1	6.4.01		1	6.4.01	
41	1	6.4.05		1	6.4.05		1	6.4.05		1	6.4.05		1	6.4.05	
42	2	9.4.02		1	9.4.01		1	9.4.02		1	9.4.01		1	9.4.01	

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	1	9.4.12		1	9.4.12		1	9.4.12		1	9.4.12		1	9.4.12	
44	2	9.4.06		1	9.4.06		2	9.4.06		2	9.4.06		2	9.4.06	
45	1	6.4.04		1	6.4.04		1	6.4.04		2	6.4.04		1	6.4.04	
46	2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01	
47	2	6.4.10		2	6.4.12		2	6.4.16		2	6.4.10		2	6.4.10	
48	1	6.4.03		2	6.4.03		1	6.4.03		2	6.4.03		2	6.4.03	
49	2	8.4.08		2	Goal 6		2	7.4.04		2	Goal 8	8.4.08	2	8.4.08	
50	2	9.4.05		1	9.4.05		2	9.4.05		2	9.4.05		2	9.4.05	
51	1	6.4.10		1	9.4.13		1	9.4.13		2	9.4.13		1	9.4.13	
52	2	6.4.11		2	6.4.16		2	6.4.16		2	6.4.10		2	6.4.16	
53	2	7.4.01		1	7.4.01		1	7.4.01		1	7.4.01		1	7.4.01	
54	1	9.4.04		1	9.4.04		1	9.4.04		1	9.4.04		1	9.4.04	
55	1	6.4.08		1	6.4.08		1	6.4.08		1	6.4.08		1	6.4.08	
56	1	10.4.03		1	10.4.03		1	10.4.03		1	10.4.03		1	10.4.03	
57	2	7.4.01		1	7.4.01		1	7.4.01		1	7.4.01		1	7.4.01	
58	1	9.4.03		1	9.4.03		1	9.4.03		1	9.4.03		1	9.4.03	
59	2	10.4.01		1	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01	
60	2	6.4.14		1	6.4.14		1	6.4.14		2	6.4.14		1	6.4.14	
61	2	10.4.02		2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.02	8.4.05
62	1	9.4.08		1	9.4.08		1	9.4.08		1	9.4.08		1	9.4.08	
63	2	10.4.05		1	10.4.04		1	10.4.04		1	10.4.04		1	10.4.04	
64	1	7.4.03		1	7.4.03		2	7.4.03		2	7.4.03		1	7.4.03	
65	2	7.4.05		1	7.4.05		2	7.4.05		2	7.4.05		2	7.4.05	
66															
67															
68															
69															
70															
71	2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01		2	10.4.01	
72	3	8.4.01		2	8.4.01		3	8.4.04		2	8.4.01		2	8.4.01	
73															
74	2	9.4.01	7.4.03	3	7.4.03		3	7.4.03		3	7.4.03	6.4.09	3	7.4.03	9.4.03
75															

Objective Pairwise Comparison: 0.7007
Standard Pairwise Comparison: 0.9062

Objectives Coded to Each Item by Reviewers for Grade 4

Low			Medium		High
0			5.986667		96

#							
1	6.4.01	6.4.02	6.4.02	6.4.02	6.4.02		
2	6.4.01	6.4.10	6.4.11	6.4.11	6.4.11		
3	6.4.01	6.4.01	6.4.01	6.4.10	6.4.10		
4	6.4.06	6.4.06	6.4.06	6.4.06	6.4.06		
5	6.4.03	6.4.03	6.4.03	6.4.03	6.4.03		
6	6.4.03	6.4.03	6.4.03	6.4.03	6.4.07		
7	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09		
8	6.4.10	6.4.10	6.4.10	6.4.10	8.4.08		
9	6.4.10	6.4.16	6.4.16	6.4.16	6.4.16		
10	8.4.06	8.4.06	8.4.06	8.4.06	10.4.01	10.4.01	10.4.01
11	6.4.12	6.4.15	6.4.15	6.4.15	6.4.15		
12	6.4.09	6.4.10	6.4.16	6.4.16	6.4.16		
13	6B,C	6B,C	6.4.10	6.4.10	8.4.08		
14	6B,C	6B,C	6B,C	8.4.07	8.4.07		
15	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01		
16	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01		
17	8.4.03	8.4.03	8.4.03	8.4.08	8.4.08	8.4.08	
18	6.4.10	6.4.10	6.4.11	6.4.11	6.4.12		
19	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01		
20	6.4.10	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	
21	10.4.04	10.4.04	10.4.04	10.4.04	10.4.04		
22	10.4.05	10.4.05	10.4.05	10.4.05	10.4.05		
23	9.4.11	9.4.11	9.4.11	9.4.11	9.4.11		
24	9.4.04	9.4.04	9.4.04	9.4.04	9.4.04		
25	9.4.07	9.4.07	9.4.07	9.4.07	9.4.07		
26	7.4.02	7.4.02	7.4.02	7.4.02	7.4.02		
27	7.4.01	7.4.01	7.4.01	7.4.01	7.4.01		
28	7.4.02	7.4.02	7.4.02	7.4.02	7.4.03		
29	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03		
30	7.4.02	7.4.02	7.4.02	7.4.02	7.4.02		
31	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09		
32	9.4.02	9.4.02	9.4.02	9.4.02	9.4.09		
33	Goal 6	7.4.04	Goal 8	8.4.08	8.4.08	8.4.08	
34	6.4.14	6.4.14	6.4.14	6.4.14	6.4.14		
35	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03		
36	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03		
37	6.4.10	8.4.03	8.4.03	8.4.03	8.4.03	8.4.07	
38	10.4.05	10.4.05	10.4.05	10.4.05	10.4.05		
39	8.4.04	8.4.04	8.4.04	10.4.01	10.4.01		
40	6.4.01	6.4.01	6.4.01	6.4.01	6.4.02		
41	6.4.05	6.4.05	6.4.05	6.4.05	6.4.05		
42	9.4.01	9.4.01	9.4.01	9.4.02	9.4.02		
43	9.4.12	9.4.12	9.4.12	9.4.12	9.4.12		
44	9.4.06	9.4.06	9.4.06	9.4.06	9.4.06		
45	6.4.04	6.4.04	6.4.04	6.4.04	6.4.04		
46	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01		
47	6.4.10	6.4.10	6.4.10	6.4.12	6.4.16		
48	6.4.03	6.4.03	6.4.03	6.4.03	6.4.03		
49	Goal 6	7.4.04	Goal 8	8.4.08	8.4.08	8.4.08	
50	9.4.05	9.4.05	9.4.05	9.4.05	9.4.05		
51	6.4.10	9.4.13	9.4.13	9.4.13	9.4.13		
52	6.4.10	6.4.11	6.4.16	6.4.16	6.4.16		
53	7.4.01	7.4.01	7.4.01	7.4.01	7.4.01		
54	9.4.04	9.4.04	9.4.04	9.4.04	9.4.04		
55	6.4.08	6.4.08	6.4.08	6.4.08	6.4.08		
56	10.4.03	10.4.03	10.4.03	10.4.03	10.4.03		
57	7.4.01	7.4.01	7.4.01	7.4.01	7.4.01		

58	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03					
59	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01					
60	6.4.14	6.4.14	6.4.14	6.4.14	6.4.14					
61	8.4.05	10.4.01	10.4.01	10.4.01	10.4.02	10.4.02				
62	9.4.08	9.4.08	9.4.08	9.4.08	9.4.08					
63	10.4.04	10.4.04	10.4.04	10.4.04	10.4.05					
64	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03					
65	7.4.05	7.4.05	7.4.05	7.4.05	7.4.05					
66										
67										
68										
69										
70										
71	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01	10.4.01
72	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01	8.4.01	8.4.04	8.4.04
73										
74	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09	6.4.09
	6.4.09	6.4.09	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	
	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	7.4.03	9.4.01	
	9.4.01	9.4.01	9.4.01	9.4.01	9.4.01	9.4.01	9.4.01	9.4.01	9.4.01	
	9.4.01	9.4.01	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03	
	9.4.03	9.4.03	9.4.03	9.4.03	9.4.03					
75										

Items Coded by Reviewers to Each Objective for Grade 4

Low		Medium		High
0		7.015625		76

Objective	Items
Goal 6	33, 49
6A	
6.4.01	1, 2, 3, 3, 3, 40, 40, 40, 40
6.4.02	1, 1, 1, 1, 40
6.4.03	5, 5, 5, 5, 5, 6, 6, 6, 6, 48, 48, 48, 48, 48
6.4.04	45, 45, 45, 45, 45
6.4.05	41, 41, 41, 41, 41
6.4.06	4, 4, 4, 4, 4
6.4.07	6
6.4.08	55, 55, 55, 55, 55
6.4.09	7, 7, 7, 7, 7, 12, 31, 31, 31, 31, 31, 74, 74, 74, 74, 74, 74, 74, 74, 74
	74, 74, 74
6B,C	13, 13, 14, 14, 14
6.4.10	2, 3, 3, 8, 8, 8, 8, 9, 12, 13, 13, 18, 18, 20, 37, 47, 47, 47, 51, 52
6.4.11	2, 2, 2, 18, 18, 52
6.4.12	11, 18, 47
6.4.13	
6.4.14	34, 34, 34, 34, 34, 60, 60, 60, 60, 60
6.4.15	11, 11, 11, 11
6.4.16	9, 9, 9, 9, 12, 12, 12, 47, 52, 52, 52
Goal 7	
7A,B,C	
7.4.01	27, 27, 27, 27, 27, 53, 53, 53, 53, 53, 57, 57, 57, 57, 57
7.4.02	26, 26, 26, 26, 26, 28, 28, 28, 28, 30, 30, 30, 30, 30
7.4.03	28, 29, 29, 29, 29, 29, 35, 35, 35, 35, 35, 64, 64, 64, 64, 64, 74, 74, 74, 74
	74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74
	74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74
	74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74
7.4.04	33, 49
7.4.05	65, 65, 65, 65, 65
7.4.06	
Goal 8	33, 49
8A	
8.4.01	15, 15, 15, 15, 15, 16, 16, 16, 16, 16, 72, 72, 72, 72, 72, 72, 72, 72
8.4.02	
8.4.03	17, 17, 17, 37, 37, 37, 37
8B	
8.4.04	39, 39, 39, 72, 72
8.4.05	61
8C,D	
8.4.06	10, 10, 10, 10
8.4.07	14, 14, 37
8.4.08	8, 13, 17, 17, 17, 33, 33, 33, 49, 49, 49
Goal 9	
9A	
9.4.01	42, 42, 42, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74
9.4.02	32, 32, 32, 32, 42, 42
9.4.03	36, 36, 36, 36, 36, 58, 58, 58, 58, 58, 74, 74, 74, 74, 74, 74, 74, 74, 74, 74
	74, 74
9.4.04	24, 24, 24, 24, 24, 54, 54, 54, 54, 54
9.4.05	50, 50, 50, 50, 50
9.4.06	44, 44, 44, 44, 44
9.4.07	25, 25, 25, 25, 25
9.4.08	62, 62, 62, 62, 62
9B	
9.4.09	32

9.4.10																				
9.4.11	23	23	23	23	23															
9.4.12	43	43	43	43	43															
9.4.13	51	51	51	51																
Goal 10																					
10A,B																					
10.4.01	10	10	10	19	19	19	19	19	20	20	20	20	20	39	39	46	46	46	46	46
	59	59	59	59	59	61	61	61	71	71	71	71	71	71	71	71	71			
10.4.02	61	61																		
10.4.03	56	56	56	56	56															
10C																					
10.4.04	21	21	21	21	21	63	63	63	63											
10.4.05	22	22	22	22	22	38	38	38	38	38	63									

Number of Reviewers Coding an Item by Objective for Grade 4
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 6	33:1	49:1										
6A												
6.4.01	1:1	2:1	3:3	40:4								
6.4.02	1:4	40:1										
6.4.03	5:5	6:4	48:5									
6.4.04	45:5											
6.4.05	41:5											
6.4.06	4:5											
6.4.07	6:1											
6.4.08	55:5											
6.4.09	7:5	12:1	31:5	74:1								
6B,C	13:2	14:3										
6.4.10	2:1	3:2	8:4	9:1	12:1	13:2	18:2	20:1	37:1	47:3	51:1	52:1
6.4.11	2:3	18:2	52:1									
6.4.12	11:1	18:1	47:1									
6.4.13												
6.4.14	34:5	60:5										
6.4.15	11:4											
6.4.16	9:4	12:3	47:1	52:3								
Goal 7												
7A,B,C												
7.4.01	27:5	53:5	57:5									
7.4.02	26:5	28:4	30:5									
7.4.03	28:1	29:5	35:5	64:5	74:5							
7.4.04	33:1	49:1										
7.4.05	65:5											
7.4.06												
Goal 8	33:1	49:1										
8A												
8.4.01	15:5	16:5	72:4									
8.4.02												
8.4.03	17:3	37:4										
8B												
8.4.04	39:3	72:1										
8.4.05	61:1											
8C,D												
8.4.06	10:4											
8.4.07	14:2	37:1										
8.4.08	8:1	13:1	17:3	33:3	49:3							
Goal 9												
9A												
9.4.01	42:3	74:1										
9.4.02	32:4	42:2										
9.4.03	36:5	58:5	74:1									
9.4.04	24:5	54:5										
9.4.05	50:5											
9.4.06	44:5											
9.4.07	25:5											
9.4.08	62:5											
9B												
9.4.09	32:1											
9.4.10												
9.4.11	23:5											
9.4.12	43:5											
9.4.13	51:4											

Goal 10								
10A,B								
10.4.01	10:3	19:5	20:5	39:2	46:5	59:5	61:3	71:5
10.4.02	61:2							
10.4.03	56:5							
10C								
10.4.04	21:5	63:4						
10.4.05	22:5	38:5	63:1					

Number of Reviewers Coding an Objective by Item for Grade 4
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item				
1	6.4.01:1	6.4.02:4		
2	6.4.01:1	6.4.10:1	6.4.11:3	
3	6.4.01:3	6.4.10:2		
4	6.4.06:5			
5	6.4.03:5			
6	6.4.03:4	6.4.07:1		
7	6.4.09:5			
8	6.4.10:4	8.4.08:1		
9	6.4.10:1	6.4.16:4		
10	8.4.06:4	10.4.01:3		
11	6.4.12:1	6.4.15:4		
12	6.4.09:1	6.4.10:1	6.4.16:3	
13	6B,C:2	6.4.10:2	8.4.08:1	
14	6B,C:3	8.4.07:2		
15	8.4.01:5			
16	8.4.01:5			
17	8.4.03:3	8.4.08:3		
18	6.4.10:2	6.4.11:2	6.4.12:1	
19	10.4.01:5			
20	6.4.10:1	10.4.01:5		
21	10.4.04:5			
22	10.4.05:5			
23	9.4.11:5			
24	9.4.04:5			
25	9.4.07:5			
26	7.4.02:5			
27	7.4.01:5			
28	7.4.02:4	7.4.03:1		
29	7.4.03:5			
30	7.4.02:5			
31	6.4.09:5			
32	9.4.02:4	9.4.09:1		
33	Goal 6:1	7.4.04:1	Goal 8:1	8.4.08:3
34	6.4.14:5			
35	7.4.03:5			
36	9.4.03:5			
37	6.4.10:1	8.4.03:4	8.4.07:1	
38	10.4.05:5			
39	8.4.04:3	10.4.01:2		
40	6.4.01:4	6.4.02:1		
41	6.4.05:5			
42	9.4.01:3	9.4.02:2		
43	9.4.12:5			
44	9.4.06:5			
45	6.4.04:5			
46	10.4.01:5			
47	6.4.10:3	6.4.12:1	6.4.16:1	
48	6.4.03:5			
49	Goal 6:1	7.4.04:1	Goal 8:1	8.4.08:3
50	9.4.05:5			
51	6.4.10:1	9.4.13:4		
52	6.4.10:1	6.4.11:1	6.4.16:3	
53	7.4.01:5			
54	9.4.04:5			
55	6.4.08:5			

56	10.4.03:5		
57	7.4.01:5		
58	9.4.03:5		
59	10.4.01:5		
60	6.4.14:5		
61	8.4.05:1	10.4.01:3	10.4.02:2
62	9.4.08:5		
63	10.4.04:4	10.4.05:1	
64	7.4.03:5		
65	7.4.05:5		
66			
67			
68			
69			
70			
71	10.4.01:5		
72	8.4.01:4	8.4.04:1	
73			
74	6.4.09:1	7.4.03:5	9.4.01:1	9.4.03:1
75			

Assessment Item DOK vs. Consensus DOK for Grade 4
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 6 [1]:	33:1 [2]	49:1 [2]								
6A [1]:										
6.4.01 [1]:	1:1 [1]	2:1 [1]	3:3 [1]	40:4 [1]						
6.4.02 [1]:	1:4 [1]	40:1 [1]								
6.4.03 [2]:	5:5 [1.2]	6:4 [1.25]	48:5 [1.6]							
6.4.04 [1]:	45:5 [1.2]									
6.4.05 [1]:	41:5 [1]									
6.4.06 [1]:	4:5 [1]									
6.4.07 [1]:	6:1 [2]									
6.4.08 [1]:	55:5 [1]									
6.4.09 [2]:	7:5 [2]	12:1 [2]	31:5 [1]	74:1 [3]						
6B,C [2]:	13:2 [1.5]	14:3 [1]								
6.4.10 [2]:	2:1 [2]	3:2 [1.5]	8:4 [1.75]	9:1 [1]	12:1 [2]	13:2 [2.5]	18:2 [2]	20:1 [2]	37:1 [1]	47:3 [2]
6.4.11 [2]:	2:3 [1.33]	18:2 [2]	52:1 [2]							
6.4.12 [1]:	11:1 [1]	18:1 [1]	47:1 [2]							
6.4.13 [2]:										
6.4.14 [2]:	34:5 [1.8]	60:5 [1.4]								
6.4.15 [1]:	11:4 [1]									
6.4.16 [2]:	9:4 [1.75]	12:3 [1.67]	47:1 [2]	52:3 [2]						
Goal 7 [2]:										
7A,B,C [2]:										
7.4.01 [1]:	27:5 [1.4]	53:5 [1.2]	57:5 [1.2]							
7.4.02 [2]:	26:5 [1]	28:4 [1.75]	30:5 [1.4]							
7.4.03 [2]:	28:1 [2]	29:5 [1.4]	35:5 [2]	64:5 [1.4]	74:5 [2.8]					
7.4.04 [2]:	33:1 [1]	49:1 [2]								
7.4.05 [2]:	65:5 [1.8]									
7.4.06 [2]:										
Goal 8 [2]:	33:1 [2]	49:1 [2]								
8A [2]:										
8.4.01 [2]:	15:5 [1.6]	16:5 [1.8]	72:4 [2.25]							
8.4.02 [2]:										
8.4.03 [1]:	17:3 [1.33]	37:4 [1.25]								
8B [2]:										
8.4.04 [2]:	39:3 [2]	72:1 [3]								
8.4.05 [2]:	61:1 [2]									
8C,D [2]:										
8.4.06 [2]:	10:4 [1.75]									
8.4.07 [2]:	14:2 [1.5]	37:1 [1]								
8.4.08 [2]:	8:1 [2]	13:1 [2]	17:3 [1.67]	33:3 [2]	49:3 [2]					
Goal 9 [1]:										
9A [1]:										
9.4.01 [1]:	42:3 [1]	74:1 [2]								
9.4.02 [2]:	32:4 [1.75]	42:2 [1.5]								
9.4.03 [1]:	36:5 [1.4]	58:5 [1]	74:1 [3]							
9.4.04 [1]:	24:5 [1]	54:5 [1]								
9.4.05 [2]:	50:5 [1.8]									
9.4.06 [2]:	44:5 [1.8]									
9.4.07 [1]:	25:5 [1]									
9.4.08 [1]:	62:5 [1]									
9B [2]:										
9.4.09 [2]:	32:1 [2]									
9.4.10 [2]:										
9.4.11 [2]:	23:5 [2.2]									

9.4.12 [1]:	43:5 [1]							
9.4.13 [1]:	51:4 [1.25]							
Goal 10 [2]:								
10A,B [2]:								
10.4.01 [2]:	10:3 [2]	19:5 [1.8]	20:5 [2]	39:2 [1.5]	46:5 [2]	59:5 [1.8]	61:3 [2]	71:5 [2]
10.4.02 [2]:	61:2 [2]							
10.4.03 [1]:	56:5 [1]							
10C [2]:								
10.4.04 [1]:	21:5 [1.2]	63:4 [1]						
10.4.05 [2]:	22:5 [1.8]	38:5 [1.6]	63:1 [2]					

Categorical Concurrence Between Standards and Assessment for Grade 5

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	3	19.4	1 2	7 12	36 63	36.4	4.72	YES
Goal 7 - Measurement	1	7.2	1 2	2 5	28 71	10.6	0.49	YES
Goal 8 - Algebra	3	9.6	1 2	2 7	22 77	11.8	1.17	YES
Goal 9 - Geometry	2	15.8	1 2	7 8	46 53	17.2	2.48	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	1 2 3	1 3 1	20 60 20	10.4	0.8	YES
Total	11	57	1 2 3	19 35 1	34 63 1	86.4	6.28	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 5

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	3	19.4	36.4	4.72	20	35	70	41	10	28	YES
Goal 7 - Measurement	1	7.2	10.6	0.49	15	32	67	43	19	37	YES
Goal 8 - Algebra	3	9.6	11.8	1.17	11	28	83	33	7	20	YES
Goal 9 - Geometry	2	15.8	17.2	2.48	10	30	74	43	16	35	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	10.4	0.8	31	41	62	43	8	24	YES
Total	11	57	86.4	6.28	16	33	72	41	12	31	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 5

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	3	19.4	36.4	4.72	11.8	0.75	61	4	YES	42	3	0.60	0.05	WEAK
Goal 7 - Measurement	1	7.2	10.6	0.49	6.4	0.49	89	6	YES	12	1	0.82	0.02	YES
Goal 8 - Algebra	3	9.6	11.8	1.17	7.6	0.8	79	6	YES	14	1	0.83	0.03	YES
Goal 9 - Geometry	2	15.8	17.2	2.48	11.8	1.47	74	8	YES	20	2	0.81	0.04	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	5	10.4	0.8	4	0	80	0	YES	12	1	0.79	0.02	YES
Total	11	57	86.4	6.28	8.32	3.18	77	11		20	12	0.77	0.09	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 5

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	WEAK
Goal 7 - Measurement	YES	YES	YES	YES
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 5 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	1	2	1	2	1
60	2	2	2	2	2
61	1	1	2	2	2
62	2	1	2	2	2
63	2	2	2	2	2
64	1	1	1	1	1
65	1	1	1	2	1
66					
67					
68					
69					
70					
71	1	1	2	2	1
72	2	2	2	2	2
73					
74	3	2	3	3	3
75					

Intraclass Correlation: 0.7942
Pairwise Comparison: 0.7088

DOK Levels and Objectives Coded by Each Reviewer for Grade 5

Item	DOK0	PObj 0	S1Obj 0	S2Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	S2Obj2	DOK3	PObj3	S1Obj3	S2Obj3	DOK4	PObj4	S1Obj4	S2Obj4
1	1	6.5.01			1	6.5.01		1	6.5.01			2	6.5.01			1	6.5.01		
2	1	6.5.11			1	6.5.11		2	6.5.11			1	6.5.11			1	6.5.11		
3	1	6.5.16			1	6.5.16		1	6.5.07			1	6.5.07			1	6.5.16		
4	2	6.5.04			1	6.5.04		2	6.5.04			2	6.5.04			2	6.5.04		
5	2	6.5.03			1	6.5.09		2	6.5.09			1	6.5.09			2	6.5.09		
6	2	6.5.03			2	6.5.03		2	6.5.03			2	6.5.03			2	6.5.03		
7	2	6.5.11			2	6.5.11		2	6.5.11			2	6.5.11			2	6.5.11		
8	1	6.5.15			1	6.5.15		1	6.5.15			1	6.5.15			1	6.5.15		
9	2	6.5.12			2	6.5.16		2	6.5.16			2	6.5.16			2	6.5.16		
10	2	6.5.13			2	6B,C		2	6.5.12			2	6.5.13			2	6.5.13		
11	2	6B,C			2	8.5.03		2	8.5.03			2	8.5.03			2	8.5.03		
12	2	6.5.16			2	6B,C		2	6.5.16			2	6.5.16			2	6.5.03		
13	2	8.5.09			2	6.5.18		2	7.5.04			2	Goal 8			2	8.5.09		
14	2	6.5.18			2	6.5.16		2	6.5.16			2	6.5.16			2	6.5.16		
15	2	8.5.02			3	10.5.01		2	8.5.05			2	8.5.02			2	8.5.02		
16	2	8.5.02			2	8.5.02		2	8.5.02			2	8.5.02			2	8.5.02		
17	1	8.5.04			1	6.5.12	6.5.11	2	6.5.11			1	8C,D			1	8.5.04		
18	2	10.5.01			1	10.5.01		2	10.5.01			2	10.5.01			2	10.5.01		
19	2	10.5.01			1	6.5.04		2	6.5.04			1	6.5.04			2	10.5.01		
20	1	10.5.03			1	10.5.03		1	10.5.03			2	10.5.03			1	10.5.03		
21	2	10.5.04			1	10.5.04		2	10.5.04			1	10.5.04			2	10.5.04		
22	2	10.5.05			2	10.5.05		2	10.5.05			2	10.5.05			2	10.5.05		
23	2	9.5.11			1	9.5.11		2	9.5.11			2	9.5.11			2	9.5.11		
24	1	9.5.05			1	9.5.05		1	9.5.05			1	9.5.05			1	9.5.05		
25	1	9.5.09	9.5.08	9.5.01	2	9.5.01		1	9.5.08			1	9.5.01			2	9.5.01		
26	2	9.5.07			1	9.5.07		2	9.5.07			2	9.5.08			2	9.5.07		
27	2	7.5.02			2	7.5.02		2	7.5.02			1	7.5.02			2	7.5.02		
28	2	7.5.07			2	7.5.07		2	7.5.07			2	7.5.02	7.5.07	6.5.16	2	7.5.07	7.5.02	
29	2	7.5.02			2	7.5.02		2	7.5.02			2	7.5.07			2	7.5.02		
30	2	7.5.03			1	7.5.03		2	7.5.03			2	7.5.03			1	7.5.03		
31	1	8.5.04			1	8.5.04		1	8.5.04			2	8.5.04			1	8.5.04		
32	1	9.5.09			1	9.5.09		1	9.5.09			2	9.5.09			1	9.5.09		
33	2	7.5.01			1	7.5.01		1	7.5.01			1	7.5.01			1	7.5.01		
34	2	6.5.03			2	6.5.14		2	6.5.14			2	6.5.14			2	6.5.14		
35	1	9.5.01			1	9.5.12		2	9.5.12			2	9.5.12			2	9.5.12		
36	2	10.5.04			2	10.5.04		2	10.5.04			2	10.5.04			2	10.5.04		
37	2	8.5.05			1	8.5.05		2	8.5.05			2	8.5.05			2	8.5.05		
38	2	10.5.01			1	10.5.01		2	10.5.01			2	10.5.01			2	10.5.01		
39	2	6.5.12			2	6.5.12		2	6.5.12			2	6.5.12			2	6.5.12		
40	1	9.5.02			1	9.5.02		1	9.5.01			2	9.5.02			2	9.5.02		
41	2	6.5.12			2	6.5.12		2	6.5.12			1	6.5.12			2	6.5.12		
42	2	7.5.03			2	7.5.03		2	7.5.03			2	7.5.03			2	7.5.03		

DOK Levels and Objectives Coded by Each Reviewer for Grade 5

Item	DOK0	PObj 0	S1Obj 0	S2Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	S2Obj2	DOK3	PObj3	S1Obj3	S2Obj3	DOK4	PObj4	S1Obj4	S2Obj4
43	1	7.5.06			1	7.5.06		2	7.5.06			2	7.5.06			2	7.5.06		
44	1	6.5.10			2	6.5.10		1	6.5.10			1	6.5.10			1	6.5.10		
45	2	9.5.03			1	7.5.03	9.5.01	2	9.5.03			2	9.5.03			1	9.5.03		
46	2	6B,C			2	8.5.03		2	8.5.03			2	8.5.03			1	8.5.03		
47	2	6.5.12			1	6.5.12		2	6.5.12			2	6.5.12			1	6.5.12		
48	2	9.5.15			1	9.5.15		1	9.5.15			2	9.5.15			1	9.5.15		
49	2	7.5.02	6.5.18		2	6.5.12		2	6.5.13			2	7.5.01			2	7.5.01		
50	2	9A			1	7A,B,C		1	9A			2	9A			1	9A		
51	2	8.5.03			2	8.5.07		2	8.5.07			2	8.5.07			2	8.5.07		
52	2	9.5.11			1	9.5.11		2	9.5.11			2	9.5.11			2	6.5.11		
53	2	8.5.05	8A		1	8.5.01		2	8.5.01			2	8.5.01			2	8.5.02		
54	2	8.5.09			2	8.5.09		2	8.5.08			2	8.5.08			2	8.5.08		
55	2	7.5.05			2	7.5.05		2	7.5.05			2	7.5.05			1	7.5.05		
56	2	8.5.05			1	8.5.05		2	8.5.05			2	8.5.05			1	8.5.05		
57	2	10.5.04			1	10.5.04		2	10.5.04			2	10.5.04			1	10.5.04		
58	2	6.5.13			2	6.5.13		2	6.5.13			2	6.5.13			2	6.5.13		
59	1	10.5.03			2	10.5.03		1	10.5.03			2	10.5.03			1	10.5.03		
60	2	6.5.18	7.5.07		2	7.5.07		2	7.5.07			2	7.5.07			2	7.5.07		
61	1	9.5.02			1	9.5.02		2	9.5.02			2	9.5.02			2	9.5.02		
62	2	10.5.01			1	10.5.01		2	10.5.01			2	6.5.04	10.5.01		2	10.5.01		
63	2	10.5.01			2	10.5.01		2	9.5.01			2	10.5.01			2	10.5.01		
64	1	8.5.08			1	8.5.08		1	8.5.08			1	8.5.08			1	8.5.08		
65	1	9.5.13			1	9.5.13		1	9.5.13			2	9.5.13			1	9.5.13		
66																			
67																			
68																			
69																			
70																			
71	1	9.5.08	9.5.01		1	9.5.01		2	9.5.14			2	9.5.08	9.5.01		1	9.5.08		
72	2	9.5.14			2	6.5.18		2	6.5.13			2	9.5.14			2	9.5.14		
73																			
74	3	6B,C			2	6B,C		3	6.5.12			3	6.5.12	6.5.11		3	6.5.11		
75																			

Objective Pairwise Comparison: 0.623
Standard Pairwise Comparison: 0.8957

Objectives Coded to Each Item by Reviewers for Grade 5

Low		Medium		High
0		5.76		72

Item								
1	6.5.01	6.5.01	6.5.01	6.5.01	6.5.01			
2	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11			
3	6.5.07	6.5.07	6.5.16	6.5.16	6.5.16			
4	6.5.04	6.5.04	6.5.04	6.5.04	6.5.04			
5	6.5.03	6.5.09	6.5.09	6.5.09	6.5.09			
6	6.5.03	6.5.03	6.5.03	6.5.03	6.5.03			
7	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11			
8	6.5.15	6.5.15	6.5.15	6.5.15	6.5.15			
9	6.5.12	6.5.16	6.5.16	6.5.16	6.5.16			
10	6B,C	6.5.12	6.5.13	6.5.13	6.5.13			
11	6B,C	8.5.03	8.5.03	8.5.03	8.5.03			
12	6.5.03	6B,C	6.5.16	6.5.16	6.5.16			
13	6.5.18	7.5.04	Goal 8	8.5.09	8.5.09			
14	6.5.16	6.5.16	6.5.16	6.5.16	6.5.18			
15	8.5.02	8.5.02	8.5.02	8.5.05	10.5.01			
16	8.5.02	8.5.02	8.5.02	8.5.02	8.5.02			
17	6.5.11	6.5.11	6.5.12	8.5.04	8.5.04	8C,D		
18	10.5.01	10.5.01	10.5.01	10.5.01	10.5.01			
19	6.5.04	6.5.04	6.5.04	10.5.01	10.5.01			
20	10.5.03	10.5.03	10.5.03	10.5.03	10.5.03			
21	10.5.04	10.5.04	10.5.04	10.5.04	10.5.04			
22	10.5.05	10.5.05	10.5.05	10.5.05	10.5.05			
23	9.5.11	9.5.11	9.5.11	9.5.11	9.5.11			
24	9.5.05	9.5.05	9.5.05	9.5.05	9.5.05			
25	9.5.01	9.5.01	9.5.01	9.5.01	9.5.08	9.5.08	9.5.09	
26	9.5.07	9.5.07	9.5.07	9.5.07	9.5.08			
27	7.5.02	7.5.02	7.5.02	7.5.02	7.5.02			
28	6.5.16	7.5.02	7.5.02	7.5.07	7.5.07	7.5.07	7.5.07	7.5.07
29	7.5.02	7.5.02	7.5.02	7.5.02	7.5.07			
30	7.5.03	7.5.03	7.5.03	7.5.03	7.5.03			
31	8.5.04	8.5.04	8.5.04	8.5.04	8.5.04			
32	9.5.09	9.5.09	9.5.09	9.5.09	9.5.09			
33	7.5.01	7.5.01	7.5.01	7.5.01	7.5.01			
34	6.5.03	6.5.14	6.5.14	6.5.14	6.5.14			
35	9.5.01	9.5.12	9.5.12	9.5.12	9.5.12			
36	10.5.04	10.5.04	10.5.04	10.5.04	10.5.04			
37	8.5.05	8.5.05	8.5.05	8.5.05	8.5.05			
38	10.5.01	10.5.01	10.5.01	10.5.01	10.5.01			
39	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12			
40	9.5.01	9.5.02	9.5.02	9.5.02	9.5.02			
41	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12			
42	7.5.03	7.5.03	7.5.03	7.5.03	7.5.03			
43	7.5.06	7.5.06	7.5.06	7.5.06	7.5.06			
44	6.5.10	6.5.10	6.5.10	6.5.10	6.5.10			
45	7.5.03	9.5.01	9.5.03	9.5.03	9.5.03	9.5.03		
46	6B,C	8.5.03	8.5.03	8.5.03	8.5.03			
47	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12			
48	9.5.15	9.5.15	9.5.15	9.5.15	9.5.15			
49	6.5.12	6.5.13	6.5.18	7.5.01	7.5.01	7.5.02		
50	7A,B,C	9A	9A	9A	9A			
51	8.5.03	8.5.07	8.5.07	8.5.07	8.5.07			
52	6.5.11	9.5.11	9.5.11	9.5.11	9.5.11			
53	8A	8.5.01	8.5.01	8.5.01	8.5.02	8.5.05		
54	8.5.08	8.5.08	8.5.08	8.5.09	8.5.09			
55	7.5.05	7.5.05	7.5.05	7.5.05	7.5.05			
56	8.5.05	8.5.05	8.5.05	8.5.05	8.5.05			
57	10.5.04	10.5.04	10.5.04	10.5.04	10.5.04			

58	6.5.13	6.5.13	6.5.13	6.5.13	6.5.13					
59	10.5.03	10.5.03	10.5.03	10.5.03	10.5.03					
60	6.5.18	7.5.07	7.5.07	7.5.07	7.5.07	7.5.07				
61	9.5.02	9.5.02	9.5.02	9.5.02	9.5.02					
62	6.5.04	10.5.01	10.5.01	10.5.01	10.5.01	10.5.01				
63	9.5.01	10.5.01	10.5.01	10.5.01	10.5.01					
64	8.5.08	8.5.08	8.5.08	8.5.08	8.5.08					
65	9.5.13	9.5.13	9.5.13	9.5.13	9.5.13					
66										
67										
68										
69										
70										
71	9.5.01	9.5.01	9.5.01	9.5.01	9.5.01	9.5.01	9.5.08	9.5.08	9.5.08	9.5.08
	9.5.08	9.5.08	9.5.14	9.5.14						
72	6.5.13	6.5.13	6.5.18	6.5.18	9.5.14	9.5.14	9.5.14	9.5.14	9.5.14	9.5.14
73										
74	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11
	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	
	6.5.11	6.5.11	6.5.11	6.5.11	6.5.11	6B,C	6B,C	6B,C	6B,C	
	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	
	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	6B,C	
	6B,C	6B,C	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	
	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	
	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12	6.5.12		
75										

Items Coded by Reviewers to Each Objective for Grade 5

Low		Medium		High
0		6		43

Goal 6																			
6A																			
6.5.01	1	1	1	1	1														
6.5.02																			
6.5.03	5	6	6	6	6	6	12	34											
6.5.04	4	4	4	4	4	19	19	19	62										
6.5.05																			
6.5.06																			
6.5.07	3	3																	
6.5.08																			
6.5.09	5	5	5	5															
6.5.10	44	44	44	44	44														
6.5.11	2	2	2	2	2	7	7	7	7	7	17	17	52	74	74	74	74	74	74	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74			
6B,C	10	11	12	46	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
	74	74	74	74	74	74	74	74											
6.5.12	9	10	17	39	39	39	39	39	41	41	41	41	41	47	47	47	47	47	49	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74		
	74	74	74	74															
6.5.13	10	10	10	49	58	58	58	58	58	72	72								
6.5.14	34	34	34	34															
6.5.15	8	8	8	8	8														
6.5.16	3	3	3	9	9	9	9	12	12	12	14	14	14	14	28				
6D																			
6.5.17																			
6.5.18	13	14	49	60	72	72													
6.5.19																			
Goal 7																			
7A,B,C	50																		
7.5.01	33	33	33	33	33	49	49												
7.5.02	27	27	27	27	27	28	28	29	29	29	29	49							
7.5.03	30	30	30	30	30	42	42	42	42	42	45								
7.5.04	13																		
7.5.05	55	55	55	55	55														
7.5.06	43	43	43	43	43														
7.5.07	28	28	28	28	28	29	60	60	60	60	60								
Goal 8	13																		
8A	53																		
8.5.01	53	53	53																
8.5.02	15	15	15	16	16	16	16	16	53										
8.5.03	11	11	11	11	46	46	46	46	51										
8.5.04	17	17	31	31	31	31	31												
8B																			
8.5.05	15	37	37	37	37	37	53	56	56	56	56	56							
8.5.06																			
8C,D	17																		
8.5.07	51	51	51	51															
8.5.08	54	54	54	64	64	64	64	64											
8.5.09	13	13	54	54															
Goal 9																			
9A	50	50	50	50															
9.5.01	25	25	25	25	35	40	45	63	71	71	71	71	71	71					
9.5.02	40	40	40	40	61	61	61	61	61										
9.5.03	45	45	45	45															
9.5.04																			
9.5.05	24	24	24	24	24														
9.5.06																			

Label																					
9.5.07	26	26	26	26																	
9.5.08	25	25	26	71	71	71	71	71	71												
9.5.09	25	32	32	32	32	32															
9B																					
9.5.10																					
9.5.11	23	23	23	23	23	52	52	52	52												
9.5.12	35	35	35	35																	
9.5.13	65	65	65	65	65																
9.5.14	71	71	72	72	72	72	72	72													
9.5.15	48	48	48	48	48																
Goal 10																					
10A,B																					
10.5.01	15	18	18	18	18	18	19	19	38	38	38	38	38	62	62	62	62	62	63	63	
	63	63																			
10.5.02																					
10.5.03	20	20	20	20	20	59	59	59	59	59											
10C																					
10.5.04	21	21	21	21	21	36	36	36	36	36	57	57	57	57	57						
10.5.05	22	22	22	22	22																

Number of Reviewers Coding an Item by Objective for Grade 5
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective								
Goal 6								
6A								
6.5.01	1:5							
6.5.02								
6.5.03	5:1	6:5	12:1	34:1				
6.5.04	4:5	19:3	62:1					
6.5.05								
6.5.06								
6.5.07	3:2							
6.5.08								
6.5.09	5:4							
6.5.10	44:5							
6.5.11	2:5	7:5	17:2	52:1	74:2			
6B,C	10:1	11:1	12:1	46:1	74:2			
6.5.12	9:1	10:1	17:1	39:5	41:5	47:5	49:1	74:2
6.5.13	10:3	49:1	58:5	72:1				
6.5.14	34:4							
6.5.15	8:5							
6.5.16	3:3	9:4	12:3	14:4	28:1			
6D								
6.5.17								
6.5.18	13:1	14:1	49:1	60:1	72:1			
6.5.19								
Goal 7								
7A,B,C	50:1							
7.5.01	33:5	49:2						
7.5.02	27:5	28:2	29:4	49:1				
7.5.03	30:5	42:5	45:1					
7.5.04	13:1							
7.5.05	55:5							
7.5.06	43:5							
7.5.07	28:5	29:1	60:5					
Goal 8	13:1							
8A	53:1							
8.5.01	53:3							
8.5.02	15:3	16:5	53:1					
8.5.03	11:4	46:4	51:1					
8.5.04	17:2	31:5						
8B								
8.5.05	15:1	37:5	53:1	56:5				
8.5.06								
8C,D	17:1							
8.5.07	51:4							
8.5.08	54:3	64:5						
8.5.09	13:2	54:2						
Goal 9								
9A	50:4							
9.5.01	25:4	35:1	40:1	45:1	63:1	71:3		
9.5.02	40:4	61:5						
9.5.03	45:4							
9.5.04								
9.5.05	24:5							
9.5.06								
9.5.07	26:4							
9.5.08	25:2	26:1	71:3					

9.5.09	25:1	32:5				
9B						
9.5.10						
9.5.11	23:5	52:4				
9.5.12	35:4					
9.5.13	65:5					
9.5.14	71:1	72:3				
9.5.15	48:5					
Goal 10						
10A,B						
10.5.01	15:1	18:5	19:2	38:5	62:5	63:4
10.5.02						
10.5.03	20:5	59:5				
10C						
10.5.04	21:5	36:5	57:5			
10.5.05	22:5					

Number of Reviewers Coding an Objective by Item for Grade 5
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	6.5.01:5			
2	6.5.11:5			
3	6.5.07:2	6.5.16:3		
4	6.5.04:5			
5	6.5.03:1	6.5.09:4		
6	6.5.03:5			
7	6.5.11:5			
8	6.5.15:5			
9	6.5.12:1	6.5.16:4		
10	6B,C:1	6.5.12:1	6.5.13:3	
11	6B,C:1	8.5.03:4		
12	6.5.03:1	6B,C:1	6.5.16:3	
13	6.5.18:1	7.5.04:1	Goal 8:1	8.5.09:2
14	6.5.16:4	6.5.18:1		
15	8.5.02:3	8.5.05:1	10.5.01:1	
16	8.5.02:5			
17	6.5.11:2	6.5.12:1	8.5.04:2	8C,D:1
18	10.5.01:5			
19	6.5.04:3	10.5.01:2		
20	10.5.03:5			
21	10.5.04:5			
22	10.5.05:5			
23	9.5.11:5			
24	9.5.05:5			
25	9.5.01:4	9.5.08:2	9.5.09:1	
26	9.5.07:4	9.5.08:1		
27	7.5.02:5			
28	6.5.16:1	7.5.02:2	7.5.07:5	
29	7.5.02:4	7.5.07:1		
30	7.5.03:5			
31	8.5.04:5			
32	9.5.09:5			
33	7.5.01:5			
34	6.5.03:1	6.5.14:4		
35	9.5.01:1	9.5.12:4		
36	10.5.04:5			
37	8.5.05:5			
38	10.5.01:5			
39	6.5.12:5			
40	9.5.01:1	9.5.02:4		
41	6.5.12:5			
42	7.5.03:5			
43	7.5.06:5			
44	6.5.10:5			
45	7.5.03:1	9.5.01:1	9.5.03:4	
46	6B,C:1	8.5.03:4		
47	6.5.12:5			
48	9.5.15:5			
49	6.5.12:1	6.5.13:1	6.5.18:1	7.5.01:2	7.5.02:1
50	7A,B,C:1	9A:4		
51	8.5.03:1	8.5.07:4		
52	6.5.11:1	9.5.11:4		
53	8A:1	8.5.01:3	8.5.02:1	8.5.05:1
54	8.5.08:3	8.5.09:2		

55	7.5.05:5		
56	8.5.05:5		
57	10.5.04:5		
58	6.5.13:5		
59	10.5.03:5		
60	6.5.18:1	7.5.07:5	
61	9.5.02:5		
62	6.5.04:1	10.5.01:5	
63	9.5.01:1	10.5.01:4	
64	8.5.08:5		
65	9.5.13:5		
66			
67			
68			
69			
70			
71	9.5.01:3	9.5.08:3	9.5.14:1
72	6.5.13:1	6.5.18:1	9.5.14:3
73			
74	6.5.11:2	6B,C:2	6.5.12:2
75			

Assessment Item DOK vs. Consensus DOK for Grade 5
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 6 [2]:							
6A [1]:							
6.5.01 [1]:	1:5 [1.2]						
6.5.02 [2]:							
6.5.03 [2]:	5:1 [2]	6:5 [2]	12:1 [2]	34:1 [2]			
6.5.04 [2]:	4:5 [1.8]	19:3 [1.33]	62:1 [2]				
6.5.05 [1]:							
6.5.06 [1]:							
6.5.07 [1]:	3:2 [1]						
6.5.08 [1]:							
6.5.09 [2]:	5:4 [1.5]						
6.5.10 [1]:	44:5 [1.2]						
6.5.11 [2]:	2:5 [1.2]	7:5 [2]	17:2 [1.5]	52:1 [2]	74:2 [3]		
6B,C [2]:	10:1 [2]	11:1 [2]	12:1 [2]	46:1 [2]	74:2 [2.5]		
6.5.12 [2]:	9:1 [2]	10:1 [2]	17:1 [1]	39:5 [2]	41:5 [1.8]	47:5 [1.6]	49:1 [2]	74:2 [3]
6.5.13 [2]:	10:3 [2]	49:1 [2]	58:5 [2]	72:1 [2]			
6.5.14 [2]:	34:4 [2]						
6.5.15 [2]:	8:5 [1]						
6.5.16 [2]:	3:3 [1]	9:4 [2]	12:3 [2]	14:4 [2]	28:1 [2]		
6D [2]:							
6.5.17 [2]:							
6.5.18 [2]:	13:1 [2]	14:1 [2]	49:1 [2]	60:1 [2]	72:1 [2]		
6.5.19 [1]:							
Goal 7 [2]:							
7A,B,C [2]:	50:1 [1]						
7.5.01 [1]:	33:5 [1.2]	49:2 [2]					
7.5.02 [2]:	27:5 [1.8]	28:2 [2]	29:4 [2]	49:1 [2]			
7.5.03 [2]:	30:5 [1.6]	42:5 [2]	45:1 [1]				
7.5.04 [2]:	13:1 [2]						
7.5.05 [1]:	55:5 [1.8]						

7.5.06 [2]:	43:5 [1.6]				
7.5.07 [2]:	28:5 [2]	29:1 [2]	60:5 [2]		
Goal 8 [2]:	13:1 [2]				
8A [2]:	53:1 [2]				
8.5.01 [2]:	53:3 [1.67]				
8.5.02 [2]:	15:3 [2]	16:5 [2]	53:1 [2]		
8.5.03 [2]:	11:4 [2]	46:4 [1.75]	51:1 [2]		
8.5.04 [1]:	17:2 [1]	31:5 [1.2]			
8B [2]:					
8.5.05 [2]:	15:1 [2]	37:5 [1.8]	53:1 [2]	56:5 [1.6]	
8.5.06 [2]:					
8C,D [2]:	17:1 [1]				
8.5.07 [2]:	51:4 [2]				
8.5.08 [1]:	54:3 [2]	64:5 [1]			
8.5.09 [2]:	13:2 [2]	54:2 [2]			
Goal 9 [2]:					
9A [1]:	50:4 [1.5]				
9.5.01 [1]:	25:4 [1.5]	35:1 [1]	40:1 [1]	45:1 [1]	63:1 [2]	71:3 [1.33]
9.5.02 [2]:	40:4 [1.5]	61:5 [1.6]			
9.5.03 [2]:	45:4 [1.75]				
9.5.04 [1]:					
9.5.05 [1]:	24:5 [1]				
9.5.06 [2]:					
9.5.07 [2]:	26:4 [1.75]				
9.5.08 [1]:	25:2 [1]	26:1 [2]	71:3 [1.33]		
9.5.09 [1]:	25:1 [1]	32:5 [1.2]			
9B [2]:					
9.5.10 [2]:					
9.5.11 [2]:	23:5 [1.8]	52:4 [1.75]			
9.5.12 [2]:	35:4 [1.75]				
9.5.13 [1]:	65:5 [1.2]				
9.5.14 [2]:	71:1 [2]	72:3 [2]			
9.5.15 [1]:	48:5 [1.4]				
Goal 10 [2]:					
10A,B [2]:					

10.5.01 [3]:	15:1 [3]	18:5 [1.8]	19:2 [2]	38:5 [1.8]	62:5 [1.8]	63:4 [2]
10.5.02 [2]:						
10.5.03 [1]:	20:5 [1.2]	59:5 [1.4]				
10C [2]:						
10.5.04 [2]:	21:5 [1.6]	36:5 [2]	57:5 [1.6]			
10.5.05 [2]:	22:5 [2]					

Categorical Concurrence Between Standards and Assessment for Grade 6

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	3	21.2	1 2 3	7 13 1	33 61 4	21	1.90	YES
Goal 7 - Measurement	1	6.4	1 2	1 5	16 83	24.8	5.15	YES
Goal 8 - Algebra	3	10	1 2	2 8	20 80	15.8	0.75	YES
Goal 9 - Geometry	2	13	1 2	7 6	53 46	14.8	1.6	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	6	1 2 3	1 4 1	16 66 16	9.2	1.47	YES
Total	11	56.6	1 2 3	18 36 2	32 64 3	85.6	3.83	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 6

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	3	21.2	21	1.90	24	40	75	41	2	13	YES
Goal 7 - Measurement	1	6.4	24.8	5.15	26	40	60	44	13	33	YES
Goal 8 - Algebra	3	10	15.8	0.75	23	38	73	40	5	18	YES
Goal 9 - Geometry	2	13	14.8	1.6	6	20	87	32	8	26	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	6	9.2	1.47	25	42	67	44	7	23	YES
Total	11	56.6	85.6	3.83	19	37	75	40	6	23	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 6

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	3	21.2	21	1.90	12	1.26	57	5	YES	25	2	0.79	0.02	YES
Goal 7 - Measurement	1	6.4	24.8	5.15	5.6	0.49	88	6	YES	29	5	0.54	0.02	NO
Goal 8 - Algebra	3	10	15.8	0.75	8.2	0.75	82	7	YES	18	1	0.82	0.04	YES
Goal 9 - Geometry	2	13	14.8	1.6	10.6	0.49	82	4	YES	17	2	0.80	0.01	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	6	9.2	1.47	4.2	0.4	70	7	YES	11	2	0.76	0.02	YES
Total	11	56.6	85.6	3.83	8.12	3.02	76	13		20	7	0.74	0.10	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 6

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	NO
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 6 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	2	2	2	2	2
60	1	1	2	2	1
61	2	3	2	2	2
62	1	1	1	1	1
63	1	1	1	1	1
64	2	1	2	1	2
65	1	1	2	1	2
66					
67					
68					
69					
70					
71	2	1	1	2	1
72	2	2	2	2	2
73					
74	2	2	3	3	2
75					

Intraclass Correlation: 0.7927
Pairwise Comparison: 0.6882

DOK Levels and Objectives Coded by Each Reviewer for Grade 6

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	6.6.04		1	6.6.04		2	6.6.04		2	6.6.03		1	6.6.04	
2	2	6.6.11		2	6.6.02		2	6.6.11		2	6.6.11		1	6.6.11	
3	1	6.6.05		1	6.6.01		1	6.6.05		1	6.6.05		1	6.6.05	
4	1	6.6.03		1	6.6.03		2	6.6.03		2	6.6.03		1	6.6.03	
5	1	6.6.04		1	6.6.04		2	6.6.04		2	6.6.04		2	6.6.04	
6	2	6.6.11		1	6.6.12		2	6.6.11		2	6.6.12		2	6.6.11	
7	2	6.6.13		2	6.6.17		2	6.6.17		2	6.6.17		2	6.6.17	
8	2	6.6.17		1	6.6.17		2	6.6.17		2	6.6.13		2	6.6.13	
9	2	6.6.12		2	8.6.10		2	6.6.11		2	6.6.12		2	6.6.12	
10	2	6.6.12		2	6.6.12		2	6.6.12		2	6.6.12		2	6.6.12	
11	2	6.6.16		1	6.6.16		2	6.6.16		2	6.6.16		1	6.6.16	
12	2	6.6.13		2	6.6.13		2	6.6.13		2	6.6.13		2	6.6.13	
13	2	6.6.20		1	6.6.17		2	6.6.17		2	6.6.17		2	6.6.21	
14	1	6.6.15		1	6.6.15		1	6.6.15		1	6.6.15		1	6.6.15	
15	1	6.6.03		2	6.6.18		2	6.6.18		2	6.6.18		2	6.6.18	
16	2	8.6.01		1	8.6.01		2	8.6.01		2	8.6.01		2	8.6.01	
17	1	8.6.09		1	6.6.12		1	8.6.09		2	8.6.09		1	8.6.09	
18	1	8.6.03		1	8.6.03		1	8.6.03		2	8.6.03		1	8.6.03	
19	2	10.6.01		1	10.6.01		2	10.6.01		2	10.6.01		2	10.6.01	
20	2	10.6.01		1	10.6.01		2	10.6.01		2	6.6.17		2	10.6.01	
21	1	10.6.04		1	10.6.04		1	10.6.04		1	10.6.04		1	10.6.04	
22	1	6.6.04		2	6B,C		1	10.6.05		2	10.6.05		2	6.6.19	
23	2	6.6.04	6.6.14	2	6.6.04		2	10.6.05		2	6.6.14		2	6.6.04	
24	2	9.6.06		1	9.6.06		2	9.6.06		2	9.6.06		2	9.6.06	
25	1	9.6.04		1	9.6.04		1	9.6.04		1	9.6.04		1	9.6.04	
26	2	9.6.09		1	9.6.09		2	9.6.09		2	9.6.09		2	9.6.09	
27	1	7.6.01		1	9.6.08		1	9.6.08		1	9.6.08		1	7.6.03	
28	1	7.6.02		1	7.6.02		1	7.6.02		1	7.6.02		1	7.6.02	
29	2	7.6.05		1	7.6.05		2	7.6.05		2	7.6.05		2	7.6.05	
30	2	7.6.06		2	7.6.06		2	7.6.06		2	7.6.06		2	7.6.06	
31	1	8.6.08		2	8.6.08		1	8.6.08		1	8.6.08		1	8.6.08	
32	2	10.6.01		1	10.6.01		2	10.6.01		1	10.6.01		2	10.6.01	
33	2	8.6.01		1	8.6.04		2	8.6.04		2	8.6.01		2	8.6.04	
34	1	7.6.01		1	9.6.04		2	7.6.01		2	7.6.01		1	7.6.01	
35	2	10.6.06		2	10.6.06		2	10.6.05		2	10.6.02		2	10.6.06	
36	2	8.6.05		1	8.6.05		1	8.6.05		2	8.6.05		2	8.6.06	
37	2	6.6.14		1	6.6.14		2	6.6.14		2	6.6.14		2	6.6.14	
38	2	7.6.01		2	9.6.13		1	9.6.13		1	9.6.13		2	7.6.01	
39	2	6.6.20		2	6B,C		2	10.6.01		2	6.6.04		2	6.6.21	
40	1	9.6.09		1	9.6.09		2	9.6.09		2	9.6.09		2	9.6.09	
41	1	6.6.14		1	6.6.14		2	6.6.14		2	6.6.14		2	6.6.14	
42	2	8.6.02		1	8.6.02		2	8.6.02		2	8.6.02		1	8.6.02	

DOK Levels and Objectives Coded by Each Reviewer for Grade 6

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	2	8.6.04		1	8.6.04		2	8.6.04		2	8.6.04		2	8.6.04	
44	2	9.6.03		2	9.6.03		2	9.6.03		2	9.6.03		2	9.6.03	
45	2	6.6.12		1	6.6.12		2	8.6.10		2	8.6.10		2	8.6.10	
46	2	8.6.01		2	8.6.01		2	8.6.10		2	8.6.01		2	8.6.01	
47	1	9.6.05		1	9.6.05		1	9.6.05		1	9.6.05		1	9.6.05	
48	2	7.6.06		2	7.6.06	7.6.01	2	7.6.01	7.6.06	2	7.6.06	7.6.01	2	7.6.06	
49	1	9.6.07		1	9.6.07		1	9.6.07		1	9.6.07		1	9.6.07	
50	1	10.6.04		1	10.6.04		1	10.6.04		2	10.6.04		1	10.6.04	
51	2	7A,B,C		1	7.6.02		2	7A,B,C	7.6.02	2	7.6.02		1	7.6.02	
52	2	9.6.12		2	9.6.12	6.6.19	2	9.6.12		2	9.6.12		2	9.6.12	
53	1	8.6.03		1	8.6.03		1	8.6.03		1	8.6.03		2	8.6.03	
54	2	9.6.11		2	9.6.11		1	9.6.11		1	9.6.11		1	9.6.11	
55	2	8.6.05		1	9.6.12	8.6.05	1	9.6.05		2	8.6.05		1	8.6.05	
56	2	8.6.08		2	8.6.08		2	8.6.08		2	8.6.08		2	8.6.08	
57	2	10.6.01	6.6.11	2	6.6.11		2	10.6.01		1	10.6.01		2	6.6.11	
58	2	10.6.03		1	10.6.01		2	10.6.01		2	10.6.01		2	10.6.01	
59	2	9.6.12		2	9.6.12		2	9.6.12		2	9.6.12		2	9.6.12	
60	1	7.6.01		1	7.6.01		2	7.6.01	6.6.12	2	7.6.01		1	7.6.01	
61	2	10.6.02		3	10.6.02		2	10.6.02		2	10.6.02		2	10.6.03	
62	1	8.6.09		1	8.6.09		1	8.6.09		1	8.6.07		1	8.6.09	
63	1	9.6.08		1	9.6.08		1	9.6.08		1	9.6.08		1	9.6.08	
64	2	9.6.09		1	9.6.09		2	9.6.09		1	9.6.09		2	9.6.09	
65	1	9.6.02		1	9.6.02		2	9.6.01		1	9.6.02		2	9.6.02	
66															
67															
68															
69															
70															
71	2	7.6.04		1	7.6.04		1	7.6.04		2	7.6.04		1	7.6.04	
72	2	8.6.01	8.6.04	2	8.6.01		2	8.6.01		2	8.6.01		2	8.6.01	
73															
74	2	7.6.06		2	7.6.06		3	7.6.06		3	7.6.06		2	7.6.06	7.6.01
75															

Objective Pairwise Comparison: 0.7375
Standard Pairwise Comparison: 0.898

Objectives Coded to Each Item by Reviewers for Grade 6

Low		Medium		High
0		5.706666		72

Item	R1	R2	R3	R4	R5	R6	R7	R8
1	6.6.03	6.6.04	6.6.04	6.6.04	6.6.04			
2	6.6.02	6.6.11	6.6.11	6.6.11	6.6.11			
3	6.6.01	6.6.05	6.6.05	6.6.05	6.6.05			
4	6.6.03	6.6.03	6.6.03	6.6.03	6.6.03			
5	6.6.04	6.6.04	6.6.04	6.6.04	6.6.04			
6	6.6.11	6.6.11	6.6.11	6.6.12	6.6.12			
7	6.6.13	6.6.17	6.6.17	6.6.17	6.6.17			
8	6.6.13	6.6.13	6.6.17	6.6.17	6.6.17			
9	6.6.11	6.6.12	6.6.12	6.6.12	8.6.10			
10	6.6.12	6.6.12	6.6.12	6.6.12	6.6.12			
11	6.6.16	6.6.16	6.6.16	6.6.16	6.6.16			
12	6.6.13	6.6.13	6.6.13	6.6.13	6.6.13			
13	6.6.17	6.6.17	6.6.17	6.6.20	6.6.21			
14	6.6.15	6.6.15	6.6.15	6.6.15	6.6.15			
15	6.6.03	6.6.18	6.6.18	6.6.18	6.6.18			
16	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01			
17	6.6.12	8.6.09	8.6.09	8.6.09	8.6.09			
18	8.6.03	8.6.03	8.6.03	8.6.03	8.6.03			
19	10.6.01	10.6.01	10.6.01	10.6.01	10.6.01			
20	6.6.17	10.6.01	10.6.01	10.6.01	10.6.01			
21	10.6.04	10.6.04	10.6.04	10.6.04	10.6.04			
22	6.6.04	6B,C	6.6.19	10.6.05	10.6.05			
23	6.6.04	6.6.04	6.6.04	6.6.14	6.6.14	10.6.05		
24	9.6.06	9.6.06	9.6.06	9.6.06	9.6.06			
25	9.6.04	9.6.04	9.6.04	9.6.04	9.6.04			
26	9.6.09	9.6.09	9.6.09	9.6.09	9.6.09			
27	7.6.01	7.6.03	9.6.08	9.6.08	9.6.08			
28	7.6.02	7.6.02	7.6.02	7.6.02	7.6.02			
29	7.6.05	7.6.05	7.6.05	7.6.05	7.6.05			
30	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06			
31	8.6.08	8.6.08	8.6.08	8.6.08	8.6.08			
32	10.6.01	10.6.01	10.6.01	10.6.01	10.6.01			
33	8.6.01	8.6.01	8.6.04	8.6.04	8.6.04			
34	7.6.01	7.6.01	7.6.01	7.6.01	9.6.04			
35	10.6.02	10.6.05	10.6.06	10.6.06	10.6.06			
36	8.6.05	8.6.05	8.6.05	8.6.05	8.6.06			
37	6.6.14	6.6.14	6.6.14	6.6.14	6.6.14			
38	7.6.01	7.6.01	9.6.13	9.6.13	9.6.13			
39	6.6.04	6B,C	6.6.20	6.6.21	10.6.01			
40	9.6.09	9.6.09	9.6.09	9.6.09	9.6.09			
41	6.6.14	6.6.14	6.6.14	6.6.14	6.6.14			
42	8.6.02	8.6.02	8.6.02	8.6.02	8.6.02			
43	8.6.04	8.6.04	8.6.04	8.6.04	8.6.04			
44	9.6.03	9.6.03	9.6.03	9.6.03	9.6.03			
45	6.6.12	6.6.12	8.6.10	8.6.10	8.6.10			
46	8.6.01	8.6.01	8.6.01	8.6.01	8.6.10			
47	9.6.05	9.6.05	9.6.05	9.6.05	9.6.05			
48	7.6.01	7.6.01	7.6.01	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06
49	9.6.07	9.6.07	9.6.07	9.6.07	9.6.07			
50	10.6.04	10.6.04	10.6.04	10.6.04	10.6.04			
51	7A,B,C	7A,B,C	7.6.02	7.6.02	7.6.02	7.6.02		
52	6.6.19	9.6.12	9.6.12	9.6.12	9.6.12	9.6.12		
53	8.6.03	8.6.03	8.6.03	8.6.03	8.6.03			
54	9.6.11	9.6.11	9.6.11	9.6.11	9.6.11			
55	8.6.05	8.6.05	8.6.05	8.6.05	9.6.05	9.6.12		
56	8.6.08	8.6.08	8.6.08	8.6.08	8.6.08			
57	6.6.11	6.6.11	6.6.11	10.6.01	10.6.01	10.6.01		

#										
58	10.6.01	10.6.01	10.6.01	10.6.01	10.6.03					
59	9.6.12	9.6.12	9.6.12	9.6.12	9.6.12					
60	6.6.12	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01				
61	10.6.02	10.6.02	10.6.02	10.6.02	10.6.03					
62	8.6.07	8.6.09	8.6.09	8.6.09	8.6.09					
63	9.6.08	9.6.08	9.6.08	9.6.08	9.6.08					
64	9.6.09	9.6.09	9.6.09	9.6.09	9.6.09					
65	9.6.01	9.6.02	9.6.02	9.6.02	9.6.02					
66										
67										
68										
69										
70										
71	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04	7.6.04
72	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01	8.6.01
	8.6.04	8.6.04								
73										
74	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01	7.6.01
	7.6.01	7.6.01	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	
	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06	7.6.06		
75										

Items Coded by Reviewers to Each Objective for Grade 6

Low		Medium		High
0		5.863014		70

Goal 6																			
6A																			
6.6.01	3																		
6.6.02	2																		
6.6.03	1	4	4	4	4	4	15												
6.6.04	1	1	1	1	5	5	5	5	5	22	23	23	23	39					
6.6.05	3	3	3	3															
6.6.06																			
6.6.07																			
6.6.08																			
6.6.09																			
6.6.10																			
6.6.11	2	2	2	2	6	6	6	9	57	57	57								
6B,C	22	39																	
6.6.12	6	6	9	9	9	10	10	10	10	10	17	45	45	60					
6.6.13	7	8	8	12	12	12	12	12											
6.6.14	23	23	37	37	37	37	37	41	41	41	41	41							
6.6.15	14	14	14	14	14														
6.6.16	11	11	11	11	11														
6.6.17	7	7	7	7	8	8	8	13	13	13	20								
6D																			
6.6.18	15	15	15	15															
6.6.19	22	52																	
6.6.20	13	39																	
6.6.21	13	39																	
Goal 7																			
7A,B,C	51	51																	
7.6.01	27	34	34	34	34	38	38	48	48	48	60	60	60	60	60	74	74	74	74	74
	74	74	74	74	74	74	74													
7.6.02	28	28	28	28	28	51	51	51	51										
7.6.03	27																		
7.6.04	71	71	71	71	71	71	71	71	71	71									
7.6.05	29	29	29	29	29														
7.6.06	30	30	30	30	30	48	48	48	48	48	74	74	74	74	74	74	74	74	74	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74		
	74	74	74	74	74	74	74	74	74	74	74	74							
Goal 8																			
8A																			
8.6.01	16	16	16	16	16	33	33	46	46	46	46	72	72	72	72	72	72	72	72	72
	72																			
8.6.02	42	42	42	42	42														
8.6.03	18	18	18	18	18	53	53	53	53	53									
8B																			
8.6.04	33	33	33	43	43	43	43	43	72	72									
8.6.05	36	36	36	36	55	55	55	55											
8.6.06	36																		
8.6.07	62																		
8C,D																			
8.6.08	31	31	31	31	31	56	56	56	56	56									
8.6.09	17	17	17	17	62	62	62	62											
8.6.10	9	45	45	45	46														
Goal 9																			
9A																			
9.6.01	65																		
9.6.02	65	65	65	65															
9.6.03	44	44	44	44	44														

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
9.6.04	25	25	25	25	25	34														
9.6.05	47	47	47	47	47	55														
9.6.06	24	24	24	24	24															
9.6.07	49	49	49	49	49															
9.6.08	27	27	27	63	63	63	63	63												
9B																				
9.6.09	26	26	26	26	26	40	40	40	40	40	64	64	64	64	64					
9.6.10																				
9.6.11	54	54	54	54	54															
9.6.12	52	52	52	52	52	55	59	59	59	59	59									
9.6.13	38	38	38																	
Goal 10																				
10A,B																				
10.6.01	19	19	19	19	19	20	20	20	20	32	32	32	32	32	39	57	57	57	58	58
	58	58																		
10.6.02	35	61	61	61	61															
10.6.03	58	61																		
10.6.04	21	21	21	21	21	50	50	50	50	50										
10C																				
10.6.05	22	22	23	35																
10.6.06	35	35	35																	

Number of Reviewers Coding an Item by Objective for Grade 6
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 6					
6A					
6.6.01	3:1				
6.6.02	2:1				
6.6.03	1:1	4:5	15:1		
6.6.04	1:4	5:5	22:1	23:3	39:1
6.6.05	3:4				
6.6.06					
6.6.07					
6.6.08					
6.6.09					
6.6.10					
6.6.11	2:4	6:3	9:1	57:3	
6B,C	22:1	39:1			
6.6.12	6:2	9:3	10:5	17:1	45:2	60:1
6.6.13	7:1	8:2	12:5		
6.6.14	23:2	37:5	41:5		
6.6.15	14:5				
6.6.16	11:5				
6.6.17	7:4	8:3	13:3	20:1	
6D					
6.6.18	15:4				
6.6.19	22:1	52:1			
6.6.20	13:1	39:1			
6.6.21	13:1	39:1			
Goal 7					
7A,B,C	51:2				
7.6.01	27:1	34:4	38:2	48:3	60:5	74:1
7.6.02	28:5	51:4			
7.6.03	27:1				
7.6.04	71:5				
7.6.05	29:5				
7.6.06	30:5	48:5	74:5		
Goal 8					
8A					
8.6.01	16:5	33:2	46:4	72:5	
8.6.02	42:5				
8.6.03	18:5	53:5			
8B					
8.6.04	33:3	43:5	72:1		
8.6.05	36:4	55:4			
8.6.06	36:1				
8.6.07	62:1				
8C,D					
8.6.08	31:5	56:5			
8.6.09	17:4	62:4			
8.6.10	9:1	45:3	46:1		
Goal 9					
9A					
9.6.01	65:1				
9.6.02	65:4				
9.6.03	44:5				
9.6.04	25:5	34:1			
9.6.05	47:5	55:1			
9.6.06	24:5				

9.6.07	49:5					
9.6.08	27:3	63:5				
9B						
9.6.09	26:5	40:5	64:5			
9.6.10						
9.6.11	54:5					
9.6.12	52:5	55:1	59:5			
9.6.13	38:3					
Goal 10						
10A,B						
10.6.01	19:5	20:4	32:5	39:1	57:3	58:4
10.6.02	35:1	61:4				
10.6.03	58:1	61:1				
10.6.04	21:5	50:5				
10C						
10.6.05	22:2	23:1	35:1			
10.6.06	35:3					

Number of Reviewers Coding an Objective by Item for Grade 6
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	6.6.03:1	6.6.04:4		
2	6.6.02:1	6.6.11:4		
3	6.6.01:1	6.6.05:4		
4	6.6.03:5			
5	6.6.04:5			
6	6.6.11:3	6.6.12:2		
7	6.6.13:1	6.6.17:4		
8	6.6.13:2	6.6.17:3		
9	6.6.11:1	6.6.12:3	8.6.10:1	
10	6.6.12:5			
11	6.6.16:5			
12	6.6.13:5			
13	6.6.17:3	6.6.20:1	6.6.21:1	
14	6.6.15:5			
15	6.6.03:1	6.6.18:4		
16	8.6.01:5			
17	6.6.12:1	8.6.09:4		
18	8.6.03:5			
19	10.6.01:5			
20	6.6.17:1	10.6.01:4		
21	10.6.04:5			
22	6.6.04:1	6B,C:1	6.6.19:1	10.6.05:2
23	6.6.04:3	6.6.14:2	10.6.05:1	
24	9.6.06:5			
25	9.6.04:5			
26	9.6.09:5			
27	7.6.01:1	7.6.03:1	9.6.08:3	
28	7.6.02:5			
29	7.6.05:5			
30	7.6.06:5			
31	8.6.08:5			
32	10.6.01:5			
33	8.6.01:2	8.6.04:3		
34	7.6.01:4	9.6.04:1		
35	10.6.02:1	10.6.05:1	10.6.06:3	
36	8.6.05:4	8.6.06:1		
37	6.6.14:5			
38	7.6.01:2	9.6.13:3		
39	6.6.04:1	6B,C:1	6.6.20:1	6.6.21:1	10.6.01:1
40	9.6.09:5			
41	6.6.14:5			
42	8.6.02:5			
43	8.6.04:5			
44	9.6.03:5			
45	6.6.12:2	8.6.10:3		
46	8.6.01:4	8.6.10:1		
47	9.6.05:5			
48	7.6.01:3	7.6.06:5		
49	9.6.07:5			
50	10.6.04:5			
51	7A,B,C:2	7.6.02:4		
52	6.6.19:1	9.6.12:5		
53	8.6.03:5			
54	9.6.11:5			
55	8.6.05:4	9.6.05:1	9.6.12:1	

56	8.6.08:5	
57	6.6.11:3	10.6.01:3
58	10.6.01:4	10.6.03:1
59	9.6.12:5	
60	6.6.12:1	7.6.01:5
61	10.6.02:4	10.6.03:1
62	8.6.07:1	8.6.09:4
63	9.6.08:5	
64	9.6.09:5	
65	9.6.01:1	9.6.02:4
66		
67		
68		
69		
70		
71	7.6.04:5	
72	8.6.01:5	8.6.04:1
73		
74	7.6.01:1	7.6.06:5
75		

Assessment Item DOK vs. Consensus DOK for Grade 6
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 6 [2]:						
6A [2]:						
6.6.01 [1]:	3:1 [1]					
6.6.02 [2]:	2:1 [2]					
6.6.03 [2]:	1:1 [2]	4:5 [1.4]	15:1 [1]			
6.6.04 [2]:	1:4 [1.25]	5:5 [1.6]	22:1 [1]	23:3 [2]	39:1 [2]	
6.6.05 [1]:	3:4 [1]					
6.6.06 [1]:						
6.6.07 [1]:						
6.6.08 [1]:						
6.6.09 [2]:						
6.6.10 [2]:						
6.6.11 [2]:	2:4 [1.75]	6:3 [2]	9:1 [2]	57:3 [2]		
6B,C [2]:	22:1 [2]	39:1 [2]				
6.6.12 [2]:	6:2 [1.5]	9:3 [2]	10:5 [2]	17:1 [1]	45:2 [1.5]	60:1 [2]
6.6.13 [2]:	7:1 [2]	8:2 [2]	12:5 [2]			
6.6.14 [2]:	23:2 [2]	37:5 [1.8]	41:5 [1.6]			
6.6.15 [1]:	14:5 [1]					
6.6.16 [2]:	11:5 [1.6]					
6.6.17 [3]:	7:4 [2]	8:3 [1.67]	13:3 [1.67]	20:1 [2]		
6D [2]:						
6.6.18 [2]:	15:4 [2]					
6.6.19 [2]:	22:1 [2]	52:1 [2]				
6.6.20 [1]:	13:1 [2]	39:1 [2]				
6.6.21 [2]:	13:1 [2]	39:1 [2]				
Goal 7 [2]:						
7A,B,C [2]:	51:2 [2]					
7.6.01 [2]:	27:1 [1]	34:4 [1.5]	38:2 [2]	48:3 [2]	60:5 [1.4]	74:1 [2]
7.6.02 [2]:	28:5 [1]	51:4 [1.5]				
7.6.03 [2]:	27:1 [1]					

7.6.04 [1]:	71:5 [1.4]			
7.6.05 [2]:	29:5 [1.8]			
7.6.06 [2]:	30:5 [2]	48:5 [2]	74:5 [2.4]	
Goal 8 [2]:				
8A [2]:				
8.6.01 [2]:	16:5 [1.8]	33:2 [2]	46:4 [2]	72:5 [2]
8.6.02 [2]:	42:5 [1.6]			
8.6.03 [1]:	18:5 [1.2]	53:5 [1.2]		
8B [2]:				
8.6.04 [2]:	33:3 [1.67]	43:5 [1.8]	72:1 [2]	
8.6.05 [2]:	36:4 [1.5]	55:4 [1.5]		
8.6.06 [2]:	36:1 [2]			
8.6.07 [2]:	62:1 [1]			
8C,D [2]:				
8.6.08 [2]:	31:5 [1.2]	56:5 [2]		
8.6.09 [1]:	17:4 [1.25]	62:4 [1]		
8.6.10 [2]:	9:1 [2]	45:3 [2]	46:1 [2]	
Goal 9 [1]:				
9A [1]:				
9.6.01 [2]:	65:1 [2]			
9.6.02 [1]:	65:4 [1.25]			
9.6.03 [2]:	44:5 [2]			
9.6.04 [1]:	25:5 [1]	34:1 [1]		
9.6.05 [1]:	47:5 [1]	55:1 [1]		
9.6.06 [2]:	24:5 [1.8]			
9.6.07 [1]:	49:5 [1]			
9.6.08 [1]:	27:3 [1]	63:5 [1]		
9B [2]:				
9.6.09 [2]:	26:5 [1.8]	40:5 [1.6]	64:5 [1.6]	
9.6.10 [2]:				
9.6.11 [1]:	54:5 [1.4]			
9.6.12 [2]:	52:5 [2]	55:1 [1]	59:5 [2]	
9.6.13 [1]:	38:3 [1.33]			
Goal 10 [2]:				
10A,B [2]:				

10.6.01 [3]:	19:5 [1.8]	20:4 [1.75]	32:5 [1.6]	39:1 [2]	57:3 [1.67]	58:4 [1.75]
10.6.02 [2]:	35:1 [2]	61:4 [2.25]				
10.6.03 [2]:	58:1 [2]	61:1 [2]				
10.6.04 [1]:	21:5 [1]	50:5 [1.2]				
10C [2]:						
10.6.05 [2]:	22:2 [1.5]	23:1 [2]	35:1 [2]			
10.6.06 [2]:	35:3 [2]					

Categorical Concurrence Between Standards and Assessment for Grade 7

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	3	17.2	1 2 3	5 11 1	29 64 5	34	2.97	YES
Goal 7 - Measurement	1	6	2	6	100	9.4	1.36	YES
Goal 8 - Algebra	3	12.2	1 2	2 10	16 83	16.2	0.98	YES
Goal 9 - Geometry	2	15.4	1 2	7 8	46 53	13.2	0.4	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8	2 3	7 1	87 12	11.2	0.75	YES
Total	11	58.8	1 2 3	14 42 2	24 72 3	84	1.90	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 7

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	3	17.2	34	2.97	17	37	74	41	8	25	YES
Goal 7 - Measurement	1	6	9.4	1.36	40	45	60	45	0	0	YES
Goal 8 - Algebra	3	12.2	16.2	0.98	7	25	85	34	8	25	YES
Goal 9 - Geometry	2	15.4	13.2	0.4	16	34	84	34	0	0	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8	11.2	0.75	30	41	67	41	3	12	YES
Total	11	58.8	84	1.90	19	37	76	39	4	18	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 7

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	3	17.2	34	2.97	11.6	0.8	68	5	YES	40	3	0.59	0.02	NO
Goal 7 - Measurement	1	6	9.4	1.36	5.4	0.49	90	8	YES	11	2	0.77	0.02	YES
Goal 8 - Algebra	3	12.2	16.2	0.98	10.2	0.4	84	5	YES	19	1	0.79	0.02	YES
Goal 9 - Geometry	2	15.4	13.2	0.4	10.8	0.4	70	3	YES	16	1	0.86	0.03	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8	11.2	0.75	6.4	0.49	80	6	YES	13	1	0.86	0.07	YES
Total	11	58.8	84	1.90	8.88	2.55	78	10		20	11	0.77	0.10	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 7

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	NO
Goal 7 - Measurement	YES	YES	YES	YES
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 7 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	1	1	1	2	2
60	2	1	2	2	2
61	2	2	2	2	2
62	2	2	2	2	2
63	2	2	2	2	2
64	2	1	2	2	2
65	2	1	2	2	2
66					
67					
68					
69					
70					
71	2	2	2	2	2
72	2	2	2	2	2
73					
74	2	2	3	3	3
75					

Intraclass Correlation: 0.835
Pairwise Comparison: 0.7662

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DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	6.7.07		2	6.7.07		2	6.7.07		2	6.7.07		2	6.7.07	
2	2	6.7.03		1	6.7.03		2	6.7.03		2	6.7.03		2	6.7.03	
3	2	6.7.05		2	6.7.05		1	6.7.05		2	6.7.05		2	6.7.05	
4	2	6.7.06		2	6.7.13		2	6.7.06		2	6.7.06		2	6.7.06	
5	2	6.7.08		1	6.7.12		2	6.7.12		2	6.7.08		2	6.7.12	
6	2	6.7.10		1	6.7.08		1	6.7.10		2	6.7.10		1	6.7.10	
7	1	6.7.09		2	6.7.09		1	6.7.09		1	6.7.09		1	6.7.09	
8	2	6.7.07		2	6.7.07		2	6.7.07		2	6.7.07		2	6.7.07	
9	2	6.7.08		2	6.7.08		2	6.7.08		2	6.7.08		2	6.7.08	
10	1	6.7.02		2	8A		2	8.7.04		2	6.7.02		2	6.7.02	
11	2	6.7.08		2	6.7.12		2	6.7.12		2	6.7.10		2	6.7.12	
12	2	6.7.15		2	6.7.15		2	6.7.15		2	6.7.15		2	6.7.15	
13	2	8.7.01		2	8.7.01		2	8.7.01		2	8.7.01		2	8.7.01	
14	2	8.7.08		2	8.7.08		2	8.7.06		2	8.7.06		2	8.7.08	
15	1	6.7.02		2	8A		2	8.7.02		2	8.7.02		2	8.7.02	
16	2	8.7.11		2	8.7.11		2	8.7.11		2	8.7.11		2	8.7.11	
17	2	8.7.06		1	8.7.01		2	8.7.05		2	8.7.06		2	8.7.01	
18	2	10.7.01		2	10.7.01		2	10.7.01		2	10.7.01		2	10.7.01	
19	2	10.7.02		3	10.7.02		2	10.7.02		2	10.7.02		2	10.7.02	
20	1	10.7.05		1	10.7.05		1	10.7.05		1	10.7.05		1	10.7.05	
21	2	6.7.03		1	6A		2	10.7.06		2	10.7.06		2	10.7.06	
22	2	10.7.07		1	10.7.08		2	10.7.08		2	10.7.08		2	10.7.08	
23	2	10.7.06		2	10.7.06		3	10.7.06		1	10.7.06		2	10.7.06	
24	1	9.7.09		1	9.7.09		1	9.7.09		1	9.7.09		1	9.7.09	
25	2	9.7.12		1	9.7.12		2	9.7.12		2	9.7.12		2	9.7.12	
26	1	9A		1	9.7.08		2	9.7.08		1	9A		1	9.7.08	
27	1	9.7.10		1	9.7.10		1	9.7.10		1	9.7.10		1	9.7.10	
28	1	7.7.04		1	7.7.04		2	7.7.04		2	7.7.04		1	7.7.04	
29	1	7.7.05		1	7.7.05		2	7.7.05		1	7.7.05		2	7.7.05	
30	2	7.7.06		2	7.7.06		2	7.7.06		2	7.7.06		2	7.7.06	7.7.01
31	2	8.7.02		2	8.7.02		2	8.7.02		2	8.7.02		2	8.7.02	
32	1	7.7.03		1	7.7.03		1	9.7.09		2	7.7.03		1	7.7.03	
33	2	9.7.14		2	9.7.14		2	9.7.14		2	9.7.14		2	9.7.14	
34	2	8.7.07		2	8.7.07	10.7.01	2	10.7.01		2	8.7.07		2	8.7.07	
35	1	9.7.05		1	9.7.05		1	9.7.05		1	9.7.05		1	9.7.05	
36	1	8.7.04		1	6.7.10		2	8.7.04		2	8.7.04		2	8.7.04	
37	2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10	
38	2	6.7.13		1	6.7.13		2	6.7.13		2	6.7.13		1	6.7.13	
39	2	7.7.02		2	7.7.02		2	7.7.02		2	7.7.02		2	7.7.02	
40	2	9.7.11		1	9.7.11		2	9.7.11		1	9.7.11		2	9.7.11	
41	2	6.7.14	6.7.15	1	6.7.08	6.7.15	2	6.7.15		2	6.7.08		2	6.7.15	
42	1	8.7.05		1	8.7.05		1	8.7.05		1	8.7.05		1	8.7.05	

DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	1	9.7.13		2	9.7.13		2	9.7.14		2	9.7.13		2	9.7.13	
44	1	7.7.02		1	7.7.01	7.7.02	2	7.7.02	7.7.01	2	7.7.02		2	7.7.02	
45	2	7.7.06	6.7.15	2	7.7.06		2	7.7.06		2	7.7.06		2	7.7.06	
46	1	9.7.04		1	9.7.04		1	9.7.04		1	9.7.04		1	9.7.04	
47	2	10.7.07		1	10.7.08		2	10.7.08		2	10.7.08		2	10.7.08	
48	2	6.7.13		2	6.7.13		2	7.7.02	6.7.13	2	6.7.13		1	6.7.13	7.7.02
49	2	8.7.03		2	8.7.03	7.7.02	2	8.7.02		1	8.7.03		2	8.7.03	
50	2	6.7.08		2	6.7.17		2	6.7.17		2	6.7.17		2	6.7.17	
51	1	9.7.06		1	9.7.06		1	9.7.06		1	9.7.07		1	9.7.06	
52	2	10.7.05		2	10.7.05		2	6.7.17		2	10.7.05		2	10.7.05	
53	1	8.7.09		1	8.7.09		2	8.7.09		2	8.7.09		2	8.7.09	
54	1	6.7.09		1	6.7.09		1	8.7.03		1	6.7.09		1	6.7.09	
55	2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10	
56	2	8.7.07	8.7.08	3	8.7.07		2	10.7.02		2	10.7.03		2	8.7.07	
57	2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10		2	8.7.10	
58	2	9.7.11		1	9.7.11		2	9.7.11		2	9.7.11		2	9.7.11	
59	1	9.7.14		1	9.7.14		1	9.7.14		2	9.7.14		2	9.7.14	
60	2	9.7.03		1	9.7.03		2	9.7.03		2	9.7.03		2	9.7.03	
61	2	10.7.03		2	10.7.02		2	10.7.02		2	10.7.02		2	10.7.03	
62	2	6.7.17		2	6.7.17		2	6.7.17		2	6.7.17		2	6.7.17	
63	2	7.7.06		2	7.7.06	7.7.01	2	7.7.06		2	7.7.06		2	7.7.06	7.7.01
64	2	6.7.15		1	6.7.15		2	6.7.15		2	6.7.15		2	6.7.15	
65	2	8.7.01		1	8.7.01		2	8.7.01		2	8.7.06		2	8.7.01	
66															
67															
68															
69															
70															
71	2	6.7.12	6.7.08	2	6.7.08		2	8.7.12		2	6.7.08		2	6.7.08	
72	2	10.7.07		2	10.7.07		2	10.7.07		2	10.7.07		2	10.7.07	
73															
74	2	6.7.15		2	6.7.08		3	6.7.15		3	6.7.08		3	6.7.15	
75															

Objective Pairwise Comparison: 0.7021
Standard Pairwise Comparison: 0.9099

Objectives Coded to Each Item by Reviewers for Grade 7

Low		Medium		High
0		5.6		60

1	6.7.07	6.7.07	6.7.07	6.7.07	6.7.07	
2	6.7.03	6.7.03	6.7.03	6.7.03	6.7.03	
3	6.7.05	6.7.05	6.7.05	6.7.05	6.7.05	
4	6.7.06	6.7.06	6.7.06	6.7.06	6.7.13	
5	6.7.08	6.7.08	6.7.12	6.7.12	6.7.12	
6	6.7.08	6.7.10	6.7.10	6.7.10	6.7.10	
7	6.7.09	6.7.09	6.7.09	6.7.09	6.7.09	
8	6.7.07	6.7.07	6.7.07	6.7.07	6.7.07	
9	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	
10	6.7.02	6.7.02	6.7.02	8A	8.7.04	
11	6.7.08	6.7.10	6.7.12	6.7.12	6.7.12	
12	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	
13	8.7.01	8.7.01	8.7.01	8.7.01	8.7.01	
14	8.7.06	8.7.06	8.7.08	8.7.08	8.7.08	
15	6.7.02	8A	8.7.02	8.7.02	8.7.02	
16	8.7.11	8.7.11	8.7.11	8.7.11	8.7.11	
17	8.7.01	8.7.01	8.7.05	8.7.06	8.7.06	
18	10.7.01	10.7.01	10.7.01	10.7.01	10.7.01	
19	10.7.02	10.7.02	10.7.02	10.7.02	10.7.02	
20	10.7.05	10.7.05	10.7.05	10.7.05	10.7.05	
21	6A	6.7.03	10.7.06	10.7.06	10.7.06	
22	10.7.07	10.7.08	10.7.08	10.7.08	10.7.08	
23	10.7.06	10.7.06	10.7.06	10.7.06	10.7.06	
24	9.7.09	9.7.09	9.7.09	9.7.09	9.7.09	
25	9.7.12	9.7.12	9.7.12	9.7.12	9.7.12	
26	9A	9A	9.7.08	9.7.08	9.7.08	
27	9.7.10	9.7.10	9.7.10	9.7.10	9.7.10	
28	7.7.04	7.7.04	7.7.04	7.7.04	7.7.04	
29	7.7.05	7.7.05	7.7.05	7.7.05	7.7.05	
30	7.7.01	7.7.06	7.7.06	7.7.06	7.7.06	7.7.06
31	8.7.02	8.7.02	8.7.02	8.7.02	8.7.02	
32	7.7.03	7.7.03	7.7.03	7.7.03	9.7.09	
33	9.7.14	9.7.14	9.7.14	9.7.14	9.7.14	
34	8.7.07	8.7.07	8.7.07	8.7.07	10.7.01	10.7.01
35	9.7.05	9.7.05	9.7.05	9.7.05	9.7.05	
36	6.7.10	8.7.04	8.7.04	8.7.04	8.7.04	
37	8.7.10	8.7.10	8.7.10	8.7.10	8.7.10	
38	6.7.13	6.7.13	6.7.13	6.7.13	6.7.13	
39	7.7.02	7.7.02	7.7.02	7.7.02	7.7.02	
40	9.7.11	9.7.11	9.7.11	9.7.11	9.7.11	
41	6.7.08	6.7.08	6.7.14	6.7.15	6.7.15	6.7.15	6.7.15
42	8.7.05	8.7.05	8.7.05	8.7.05	8.7.05	
43	9.7.13	9.7.13	9.7.13	9.7.13	9.7.14	
44	7.7.01	7.7.01	7.7.02	7.7.02	7.7.02	7.7.02	7.7.02
45	6.7.15	7.7.06	7.7.06	7.7.06	7.7.06	7.7.06
46	9.7.04	9.7.04	9.7.04	9.7.04	9.7.04	
47	10.7.07	10.7.08	10.7.08	10.7.08	10.7.08	
48	6.7.13	6.7.13	6.7.13	6.7.13	6.7.13	7.7.02	7.7.02
49	7.7.02	8.7.02	8.7.03	8.7.03	8.7.03	8.7.03
50	6.7.08	6.7.17	6.7.17	6.7.17	6.7.17	
51	9.7.06	9.7.06	9.7.06	9.7.06	9.7.07	
52	6.7.17	10.7.05	10.7.05	10.7.05	10.7.05	
53	8.7.09	8.7.09	8.7.09	8.7.09	8.7.09	
54	6.7.09	6.7.09	6.7.09	6.7.09	8.7.03	
55	8.7.10	8.7.10	8.7.10	8.7.10	8.7.10	
56	8.7.07	8.7.07	8.7.07	8.7.08	10.7.02	10.7.03
57	8.7.10	8.7.10	8.7.10	8.7.10	8.7.10	

#									
58	9.7.11	9.7.11	9.7.11	9.7.11	9.7.11				
59	9.7.14	9.7.14	9.7.14	9.7.14	9.7.14				
60	9.7.03	9.7.03	9.7.03	9.7.03	9.7.03				
61	10.7.02	10.7.02	10.7.02	10.7.03	10.7.03				
62	6.7.17	6.7.17	6.7.17	6.7.17	6.7.17				
63	7.7.01	7.7.01	7.7.06	7.7.06	7.7.06	7.7.06	7.7.06		
64	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15				
65	8.7.01	8.7.01	8.7.01	8.7.01	8.7.06				
66									
67									
68									
69									
70									
71	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.12	6.7.12
	8.7.12	8.7.12								
72	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07	10.7.07
73										
74	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08
	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	
	6.7.08	6.7.08	6.7.08	6.7.08	6.7.08	6.7.15	6.7.15	6.7.15	6.7.15	
	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	
	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	
	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15	
	6.7.15	6.7.15	6.7.15	6.7.15	6.7.15					
75										

281

Items Coded by Reviewers to Each Objective for Grade 7

Low		Medium		High
0		5.6		51

Goal 6

Objective																			
6A	21																		
6.7.01																			
6.7.02	10	10	10	15															
6.7.03	2	2	2	2	2	21													
6.7.04																			
6.7.05	3	3	3	3	3														
6.7.06	4	4	4	4															
6.7.07	1	1	1	1	1	8	8	8	8	8									

6B,C

Objective																			
6.7.08	5	5	6	9	9	9	9	9	11	41	41	50	71	71	71	71	71	71	71	71
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	
	74	74	74	74	74														
6.7.09	7	7	7	7	7	54	54	54	54										
6.7.10	6	6	6	6	11	36													
6.7.11																			
6.7.12	5	5	5	11	11	11	71	71											
6.7.13	4	38	38	38	38	38	48	48	48	48	48								

6D

Objective																			
6.7.14	41																		
6.7.15	12	12	12	12	12	41	41	41	41	45	64	64	64	64	64	74	74	74	74	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	
	74	74	74	74	74	74	74	74	74	74	74	74							
6.7.16																			
6.7.17	50	50	50	50	52	62	62	62	62	62									

Goal 7

7A,B,C

Objective														
7.7.01	30	44	44	63	63									
7.7.02	39	39	39	39	39	44	44	44	44	44	48	48	49	
7.7.03	32	32	32	32										
7.7.04	28	28	28	28	28									
7.7.05	29	29	29	29	29									
7.7.06	30	30	30	30	30	45	45	45	45	45	63	63	63	63	63

Goal 8

Objective															
8A	10	15													
8.7.01	13	13	13	13	13	17	17	65	65	65	65				
8.7.02	15	15	15	31	31	31	31	31	49						
8.7.03	49	49	49	49	54										
8.7.04	10	36	36	36	36										
8.7.05	17	42	42	42	42	42									

8B

Objective					
8.7.06	14	14	17	17	65
8.7.07	34	34	34	34	56	56	56
8.7.08	14	14	14	56	
8.7.09	53	53	53	53	53

8C,D

Objective															
8.7.10	37	37	37	37	37	55	55	55	55	55	57	57	57	57	57
8.7.11	16	16	16	16	16										
8.7.12	71	71													

Goal 9

Objective					
9A	26	26			
9.7.01					
9.7.02					
9.7.03	60	60	60	60	60
9.7.04	46	46	46	46	46
9.7.05	35	35	35	35	35
9.7.06	51	51	51	51	

ID												
9.7.07	51											
9.7.08	26	26	26									
9.7.09	24	24	24	24	24	32						
9.7.10	27	27	27	27	27							
9B												
9.7.11	40	40	40	40	40	58	58	58	58	58		
9.7.12	25	25	25	25	25							
9.7.13	43	43	43	43								
9.7.14	33	33	33	33	33	43	59	59	59	59	59	
9.7.15												
Goal 10												
10A,B												
10.7.01	18	18	18	18	18	34	34					
10.7.02	19	19	19	19	19	56	61	61	61			
10.7.03	56	61	61									
10.7.04												
10.7.05	20	20	20	20	20	52	52	52	52			
10C												
10.7.06	21	21	21	23	23	23	23	23				
10.7.07	22	47	72	72	72	72	72	72	72	72	72	72
10.7.08	22	22	22	22	47	47	47	47				

Number of Reviewers Coding an Item by Objective for Grade 7
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 6								
6A	21:1							
6.7.01								
6.7.02	10:3	15:1						
6.7.03	2:5	21:1						
6.7.04								
6.7.05	3:5							
6.7.06	4:4							
6.7.07	1:5	8:5						
6B,C								
6.7.08	5:2	6:1	9:5	11:1	41:2	50:1	71:4	74:2
6.7.09	7:5	54:4						
6.7.10	6:4	11:1	36:1					
6.7.11								
6.7.12	5:3	11:3	71:1					
6.7.13	4:1	38:5	48:5					
6D								
6.7.14	41:1							
6.7.15	12:5	41:4	45:1	64:5	74:3			
6.7.16								
6.7.17	50:4	52:1	62:5					
Goal 7								
7A,B,C								
7.7.01	30:1	44:2	63:2					
7.7.02	39:5	44:5	48:2	49:1				
7.7.03	32:4							
7.7.04	28:5							
7.7.05	29:5							
7.7.06	30:5	45:5	63:5					
Goal 8								
8A	10:1	15:1						
8.7.01	13:5	17:2	65:4					
8.7.02	15:3	31:5	49:1					
8.7.03	49:4	54:1						
8.7.04	10:1	36:4						
8.7.05	17:1	42:5						
8B								
8.7.06	14:2	17:2	65:1					
8.7.07	34:4	56:3						
8.7.08	14:3	56:1						
8.7.09	53:5							
8C,D								
8.7.10	37:5	55:5	57:5					
8.7.11	16:5							
8.7.12	71:1							
Goal 9								
9A	26:2							
9.7.01								
9.7.02								
9.7.03	60:5							
9.7.04	46:5							
9.7.05	35:5							
9.7.06	51:4							
9.7.07	51:1							
9.7.08	26:3							

9.7.09	24:5	32:1	
9.7.10	27:5		
9B			
9.7.11	40:5	58:5	
9.7.12	25:5		
9.7.13	43:4		
9.7.14	33:5	43:1	59:5
9.7.15			
Goal 10			
10A,B			
10.7.01	18:5	34:2	
10.7.02	19:5	56:1	61:3
10.7.03	56:1	61:2	
10.7.04			
10.7.05	20:5	52:4	
10C			
10.7.06	21:3	23:5	
10.7.07	22:1	47:1	72:5
10.7.08	22:4	47:4	

Number of Reviewers Coding an Objective by Item for Grade 7
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

Item			
1	6.7.07:5		
2	6.7.03:5		
3	6.7.05:5		
4	6.7.06:4	6.7.13:1	
5	6.7.08:2	6.7.12:3	
6	6.7.08:1	6.7.10:4	
7	6.7.09:5		
8	6.7.07:5		
9	6.7.08:5		
10	6.7.02:3	8A:1	8.7.04:1
11	6.7.08:1	6.7.10:1	6.7.12:3
12	6.7.15:5		
13	8.7.01:5		
14	8.7.06:2	8.7.08:3	
15	6.7.02:1	8A:1	8.7.02:3
16	8.7.11:5		
17	8.7.01:2	8.7.05:1	8.7.06:2
18	10.7.01:5		
19	10.7.02:5		
20	10.7.05:5		
21	6A:1	6.7.03:1	10.7.06:3
22	10.7.07:1	10.7.08:4	
23	10.7.06:5		
24	9.7.09:5		
25	9.7.12:5		
26	9A:2	9.7.08:3	
27	9.7.10:5		
28	7.7.04:5		
29	7.7.05:5		
30	7.7.01:1	7.7.06:5	
31	8.7.02:5		
32	7.7.03:4	9.7.09:1	
33	9.7.14:5		
34	8.7.07:4	10.7.01:2	
35	9.7.05:5		
36	6.7.10:1	8.7.04:4	
37	8.7.10:5		
38	6.7.13:5		
39	7.7.02:5		
40	9.7.11:5		
41	6.7.08:2	6.7.14:1	6.7.15:4
42	8.7.05:5		
43	9.7.13:4	9.7.14:1	
44	7.7.01:2	7.7.02:5	
45	6.7.15:1	7.7.06:5	
46	9.7.04:5		
47	10.7.07:1	10.7.08:4	
48	6.7.13:5	7.7.02:2	
49	7.7.02:1	8.7.02:1	8.7.03:4
50	6.7.08:1	6.7.17:4	
51	9.7.06:4	9.7.07:1	
52	6.7.17:1	10.7.05:4	
53	8.7.09:5		
54	6.7.09:4	8.7.03:1	
55	8.7.10:5		

56	8.7.07:3	8.7.08:1	10.7.02:1	10.7.03:1
57	8.7.10:5			
58	9.7.11:5			
59	9.7.14:5			
60	9.7.03:5			
61	10.7.02:3	10.7.03:2		
62	6.7.17:5			
63	7.7.01:2	7.7.06:5		
64	6.7.15:5			
65	8.7.01:4	8.7.06:1		
66				
67				
68				
69				
70				
71	6.7.08:4	6.7.12:1	8.7.12:1	
72	10.7.07:5			
73				
74	6.7.08:2	6.7.15:3		
75				

Assessment Item DOK vs. Consensus DOK for Grade 7
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 6 [2]:							
6A [2]:	21:1 [1]						
6.7.01 [1]:							
6.7.02 [2]:	10:3 [1.67]	15:1 [1]					
6.7.03 [2]:	2:5 [1.8]	21:1 [2]					
6.7.04 [1]:							
6.7.05 [2]:	3:5 [1.8]						
6.7.06 [2]:	4:4 [2]						
6.7.07 [2]:	1:5 [2]	8:5 [2]					
6B,C [2]:							
6.7.08 [2]:	5:2 [2]	6:1 [1]	9:5 [2]	11:1 [2]	41:2 [1.5]	50:1 [2]	71:4 [2]	74:2 [2.5]
6.7.09 [1]:	7:5 [1.2]	54:4 [1]					
6.7.10 [1]:	6:4 [1.5]	11:1 [2]	36:1 [1]				
6.7.11 [2]:							
6.7.12 [3]:	5:3 [1.67]	11:3 [2]	71:1 [2]				
6.7.13 [2]:	4:1 [2]	38:5 [1.6]	48:5 [1.8]				
6D [2]:							
6.7.14 [2]:	41:1 [2]						
6.7.15 [2]:	12:5 [2]	41:4 [1.75]	45:1 [2]	64:5 [1.8]	74:3 [2.67]		
6.7.16 [1]:							
6.7.17 [2]:	50:4 [2]	52:1 [2]	62:5 [2]				
Goal 7 [2]:							
7A,B,C [2]:							
7.7.01 [2]:	30:1 [2]	44:2 [1.5]	63:2 [2]				
7.7.02 [2]:	39:5 [2]	44:5 [1.6]	48:2 [1.5]	49:1 [2]			
7.7.03 [2]:	32:4 [1.25]						
7.7.04 [2]:	28:5 [1.4]						
7.7.05 [2]:	29:5 [1.4]						
7.7.06 [2]:	30:5 [2]	45:5 [2]	63:5 [2]				
Goal 8 [2]:							

8A [2]:	10:1 [2]	15:1 [2]	
8.7.01 [2]:	13:5 [2]	17:2 [1.5]	65:4 [1.75]
8.7.02 [2]:	15:3 [2]	31:5 [2]	49:1 [2]
8.7.03 [1]:	49:4 [1.75]	54:1 [1]	
8.7.04 [2]:	10:1 [2]	36:4 [1.75]	
8.7.05 [1]:	17:1 [2]	42:5 [1]	
8B [2]:			
8.7.06 [2]:	14:2 [2]	17:2 [2]	65:1 [2]
8.7.07 [2]:	34:4 [2]	56:3 [2.33]	
8.7.08 [2]:	14:3 [2]	56:1 [2]	
8.7.09 [2]:	53:5 [1.6]		
8C,D [2]:			
8.7.10 [2]:	37:5 [2]	55:5 [2]	57:5 [2]
8.7.11 [2]:	16:5 [2]		
8.7.12 [2]:	71:1 [2]		
Goal 9 [2]:			
9A [1]:	26:2 [1]		
9.7.01 [1]:			
9.7.02 [2]:			
9.7.03 [2]:	60:5 [1.8]		
9.7.04 [1]:	46:5 [1]		
9.7.05 [1]:	35:5 [1]		
9.7.06 [1]:	51:4 [1]		
9.7.07 [2]:	51:1 [1]		
9.7.08 [2]:	26:3 [1.33]		
9.7.09 [1]:	24:5 [1]	32:1 [1]	
9.7.10 [1]:	27:5 [1]		
9B [2]:			
9.7.11 [2]:	40:5 [1.6]	58:5 [1.8]	
9.7.12 [2]:	25:5 [1.8]		
9.7.13 [2]:	43:4 [1.75]		
9.7.14 [2]:	33:5 [2]	43:1 [2]	59:5 [1.4]
9.7.15 [1]:			
Goal 10 [2]:			
10A,B [2]:			

10.7.01 [3]:	18:5 [2]	34:2 [2]	
10.7.02 [2]:	19:5 [2.2]	56:1 [2]	61:3 [2]
10.7.03 [2]:	56:1 [2]	61:2 [2]	
10.7.04 [2]:			
10.7.05 [2]:	20:5 [1]	52:4 [2]	
10C [2]:			
10.7.06 [2]:	21:3 [2]	23:5 [2]	
10.7.07 [2]:	22:1 [2]	47:1 [2]	72:5 [2]
10.7.08 [2]:	22:4 [1.75]	47:4 [1.75]	

Categorical Concurrence Between Standards and Assessment for Grade 8

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
Goal 6 - Number Sense	3	18	1 2 3	7 10 1	38 55 5	21.6	2.73	YES
Goal 7 - Measurement	1	6	2	6	100	10.4	2.58	YES
Goal 8 - Algebra	3	13	1 2 3	2 10 1	15 76 7	19.6	1.85	YES
Goal 9 - Geometry	2	12	1 2	4 8	33 66	13	1.79	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8.2	2 3	4 4	50 50	20	0	YES
Total	11	57.2	1 2 3	13 38 6	22 66 10	84.6	1.36	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 8

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
Goal 6 - Number Sense	3	18	21.6	2.73	17	32	74	39	9	28	YES
Goal 7 - Measurement	1	6	10.4	2.58	8	22	92	22	0	0	YES
Goal 8 - Algebra	3	13	19.6	1.85	24	36	70	39	6	22	YES
Goal 9 - Geometry	2	12	13	1.79	19	35	70	40	11	29	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8.2	20	0	52	49	38	47	10	29	WEAK
Total	11	57.2	84.6	1.36	23	38	70	41	8	25	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 8

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
Goal 6 - Number Sense	3	18	21.6	2.73	12.6	1.50	70	8	YES	26	3	0.74	0.04	YES
Goal 7 - Measurement	1	6	10.4	2.58	4.8	0.75	80	12	YES	12	3	0.64	0.10	WEAK
Goal 8 - Algebra	3	13	19.6	1.85	9	0.63	69	5	YES	23	2	0.80	0.04	YES
Goal 9 - Geometry	2	12	13	1.79	7.6	0.49	63	4	YES	15	2	0.80	0.03	YES
Goal 10 - Data Analysis, Statistics, and Probability	2	8.2	20	0	5.4	0.49	66	5	YES	24	0	0.51	0.03	NO
Total	11	57.2	84.6	1.36	7.88	2.93	70	9		20	6	0.70	0.13	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 8

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
Goal 6 - Number Sense	YES	YES	YES	YES
Goal 7 - Measurement	YES	YES	YES	WEAK
Goal 8 - Algebra	YES	YES	YES	YES
Goal 9 - Geometry	YES	YES	YES	YES
Goal 10 - Data Analysis, Statistics, and Probability	YES	WEAK	YES	NO

Depth-of-Knowledge Levels by Item and Reviewers for Grade 8 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	2	2	1	2	1
60	2	1	2	1	1
61	2	2	2	2	2
62	1	2	2	1	1
63	1	1	2	2	1
64	2	1	1	2	2
65	2	2	2	2	2
66					
67					
68					
69					
70					
71	2	2	1	2	2
72	2	1	2	1	1
73					
74	3	2	2	3	3
75					

Intraclass Correlation: 0.7168
Pairwise Comparison: 0.6706

DOK Levels and Objectives Coded by Each Reviewer for Grade 8

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	1	6.8.04		1	6.8.01		1	6.8.01		1	6.8.01		1	6.8.01	
2	2	6.8.09		2	6.8.16		2	6.8.16		2	6.8.16		2	6.8.16	
3	2	6.8.07		2	6.8.06		2	6.8.06		2	6.8.06		2	6.8.07	
4	1	6.8.06		2	6.8.06		2	6.8.06		2	6.8.06		1	6.8.06	
5	2	6.8.03		2	6.8.03	6.8.17	2	6.8.03		2	6.8.03		1	6.8.03	
6	1	6.8.02		1	6.8.02		2	6.8.02		2	6.8.02		2	8.8.02	
7	2	8.8.13	6.8.16	2	6.8.16		2	6.8.15		2	6.8.16		2	8.8.13	
8	1	6.8.05		2	6.8.05		1	6.8.05		2	6.8.09		1	6.8.05	
9	1	6.8.18		2	6.8.13	6.8.18	2	6.8.18		2	6.8.18		2	6.8.13	
10	1	6.8.10		1	6.8.10		1	8.8.11		1	6.8.10		1	6.8.10	
11	2	6.8.18		1	6.8.18		2	6.8.18		2	6.8.09		1	6.8.09	
12	2	8.8.01		1	8.8.01		2	8.8.01		2	8.8.01		2	8.8.01	
13	2	7.8.06	6.8.16	2	7.8.06		2	7.8.06		2	6.8.16		2	7.8.06	
14	2	8.8.12		1	8.8.12		2	8.8.05		1	8.8.12	8.8.05	2	8.8.12	8.8.05
15	2	8.8.07		2	8.8.07		1	8.8.07		2	8.8.07		2	8.8.07	
16	1	8.8.03		2	8.8.03		2	8.8.04		2	8.8.04		2	8.8.04	
17	1	8.8.12		1	8.8.12		2	8.8.12		2	8.8.12		1	8.8.12	
18	2	8.8.07		2	8.8.07		2	8.8.07		2	8.8.07		2	8.8.07	
19	1	10.8.05		1	10.8.05		2	10.8.05		2	10.8.05		1	10.8.05	
20	2	10.8.07		1	10.8.08		2	10.8.08		2	10.8.08		1	10.8.08	
21	2	10.8.06		2	10.8.06		2	10.8.06		2	10C		2	10.8.06	
22	2	9.8.08		2	9.8.08		1	9.8.09		2	9.8.01		1	9.8.08	
23	2	7.8.02		2	7.8.02		2	9.8.11		2	6.8.16		2	7.8.02	
24	1	9.8.04		1	9.8.05		1	9.8.04		1	9.8.04		1	9.8.04	
25	2	9.8.05		2	9.8.05		1	9.8.05		2	9.8.05		1	9.8.05	
26	2	7.8.06	6.8.16	2	7.8.01	6.8.16	2	7.8.06	7.8.01	2	7.8.06		2	7.8.06	7.8.01
27	1	7.8.02		2	7.8.02		2	7.8.02		2	7.8.02		2	7.8.02	
28	2	7.8.05		2	7.8.05	6.8.09	2	7.8.05		2	7.8.05		2	7.8.05	
29	2	9.8.03		1	9.8.03		1	9.8.03		1	9.8.03		1	9.8.03	
30	1	7.8.02		1	7.8.02		2	9.8.04		2	9.8.04		1	7.8.03	
31	2	7.8.02		2	7.8.02	6.8.18	2	6.8.18	7.8.02	2	6.8.18	7.8.02	2	6.8.18	7.8.02
32	2	8.8.01		2	8.8.01		2	8.8.01		2	8.8.01		2	8.8.01	
33	2	8.8.11		2	8.8.02		2	8.8.11		2	8.8.11		2	8.8.11	
34	1	9.8.04		1	9.8.04		2	9.8.04		2	7.8.02		2	9.8.04	
35	2	6.8.14		2	6.8.14		2	6.8.14		2	6.8.14		1	6.8.14	
36	1	8.8.03		2	8.8.04		2	8.8.04		2	8.8.04		1	8.8.04	
37	2	8.8.11		1	8.8.12		2	8.8.13		2	8.8.13		1	6.8.09	
38	1	8.8.10		2	8.8.10		2	8.8.10		2	8.8.10		2	8.8.10	
39	2	10.8.04		1	10.8.04		2	10.8.04		2	10.8.04		1	10.8.04	
40	2	9.8.10		1	9.8.10		2	9.8.10		2	9.8.10		2	9.8.10	
41	1	9.8.12		1	9.8.12		1	9.8.12		2	9.8.12		1	9.8.12	
42	2	6.8.18		1	6.8.09		2	6.8.09		2	6.8.09		2	6.8.09	

DOK Levels and Objectives Coded by Each Reviewer for Grade 8

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
43	2	8.8.11		2	7.8.02		2	7.8.02		2	7.8.02		2	8.8.13	7.8.02
44	2	8.8.09		2	8.8.07		2	8.8.07		2	8.8.07		2	8.8.09	
45	1	9.8.04		2	7.8.02		2	9.8.04		2	9.8.04		1	7.8.02	
46	2	10.8.06		2	10.8.06		2	10.8.06		2	10.8.06		2	10.8.06	
47	2	8.8.12		2	8.8.12		2	8.8.12		2	8.8.12		1	8.8.12	
48	1	6.8.09		1	6.8.09		1	6.8.09		1	6.8.09		1	6.8.02	
49	2	8.8.13		2	6.8.09		2	6.8.09		2	6.8.09		2	8.8.13	
50	1	6.8.11		1	6.8.11		2	6.8.11		1	6.8.11		1	6.8.11	
51	2	10.8.07		1	10.8.08		2	10.8.08		2	10.8.08		1	10.8.08	
52	2	9.8.10		1	9.8.10		2	9.8.10		2	9.8.10		2	9.8.10	
53	1	10.8.05		1	10.8.05		2	10.8.05		1	10.8.05		1	10.8.05	
54	2	7.8.04		2	7.8.04		2	7.8.04		2	7.8.04		2	7.8.04	
55	1	9.8.04		1	7.8.02		1	9.8.04		2	9.8.04		1	7.8.02	
56	2	6.8.12		2	6.8.12		2	6.8.08		2	6.8.11		2	6.8.12	
57	2	9.8.11		1	9.8.11	6.8.16	2	9.8.12	8.8.05	2	9.8.11		2	9.8.11	
58	1	8.8.05		1	8.8.05		2	8.8.08		1	8.8.05		1	8.8.05	
59	2	8.8.07		2	8.8.08		1	9.8.05		2	8.8.07		1	8.8.07	
60	2	9.8.05		1	9.8.05		2	8.8.13		1	9.8.05		1	9.8.06	
61	2	8.8.13		2	6.8.09		2	8.8.13		2	6.8.09		2	8.8.13	
62	1	8.8.12		2	8.8.12		2	8.8.12		1	8.8.12		1	8.8.12	
63	1	8.8.10		1	8.8.10		2	8.8.11		2	8.8.10		1	8.8.10	
64	2	9.8.08		1	9.8.08		1	9.8.09		2	9.8.08		2	9.8.08	
65	2	10.8.03		2	10.8.02		2	10.8.02		2	10.8.02		2	10.8.03	
66															
67															
68															
69															
70															
71	2	9.8.02		2	7.8.02		1	6.8.03		2	7.8.02		2	7.8.02	
72	2	6.8.03		1	6.8.03		2	6.8.03		1	6.8.03		1	6.8.03	
73															
74	3	10.8.07		2	10.8.08		2	10.8.08		3	10.8.08		3	10.8.07	
75															

Objective Pairwise Comparison: 0.6164
Standard Pairwise Comparison: 0.8472

Objectives Coded to Each Item by Reviewers for Grade 8

Low		Medium		High
0		5.64		60

Item									
1	6.8.01	6.8.01	6.8.01	6.8.01	6.8.04				
2	6.8.09	6.8.16	6.8.16	6.8.16	6.8.16				
3	6.8.06	6.8.06	6.8.06	6.8.07	6.8.07				
4	6.8.06	6.8.06	6.8.06	6.8.06	6.8.06				
5	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.17			
6	6.8.02	6.8.02	6.8.02	6.8.02	8.8.02				
7	6.8.15	6.8.16	6.8.16	6.8.16	8.8.13	8.8.13			
8	6.8.05	6.8.05	6.8.05	6.8.05	6.8.09				
9	6.8.13	6.8.13	6.8.18	6.8.18	6.8.18	6.8.18			
10	6.8.10	6.8.10	6.8.10	6.8.10	8.8.11				
11	6.8.09	6.8.09	6.8.18	6.8.18	6.8.18				
12	8.8.01	8.8.01	8.8.01	8.8.01	8.8.01				
13	6.8.16	6.8.16	7.8.06	7.8.06	7.8.06	7.8.06			
14	8.8.05	8.8.05	8.8.05	8.8.12	8.8.12	8.8.12	8.8.12		
15	8.8.07	8.8.07	8.8.07	8.8.07	8.8.07				
16	8.8.03	8.8.03	8.8.04	8.8.04	8.8.04				
17	8.8.12	8.8.12	8.8.12	8.8.12	8.8.12				
18	8.8.07	8.8.07	8.8.07	8.8.07	8.8.07				
19	10.8.05	10.8.05	10.8.05	10.8.05	10.8.05				
20	10.8.07	10.8.08	10.8.08	10.8.08	10.8.08				
21	10C	10.8.06	10.8.06	10.8.06	10.8.06				
22	9.8.01	9.8.08	9.8.08	9.8.08	9.8.09				
23	6.8.16	7.8.02	7.8.02	7.8.02	9.8.11				
24	9.8.04	9.8.04	9.8.04	9.8.04	9.8.05				
25	9.8.05	9.8.05	9.8.05	9.8.05	9.8.05				
26	6.8.16	6.8.16	7.8.01	7.8.01	7.8.01	7.8.06	7.8.06	7.8.06	7.8.06
27	7.8.02	7.8.02	7.8.02	7.8.02	7.8.02				
28	6.8.09	7.8.05	7.8.05	7.8.05	7.8.05	7.8.05			
29	9.8.03	9.8.03	9.8.03	9.8.03	9.8.03				
30	7.8.02	7.8.02	7.8.03	9.8.04	9.8.04				
31	6.8.18	6.8.18	6.8.18	6.8.18	7.8.02	7.8.02	7.8.02	7.8.02	7.8.02
32	8.8.01	8.8.01	8.8.01	8.8.01	8.8.01				
33	8.8.02	8.8.11	8.8.11	8.8.11	8.8.11				
34	7.8.02	9.8.04	9.8.04	9.8.04	9.8.04				
35	6.8.14	6.8.14	6.8.14	6.8.14	6.8.14				
36	8.8.03	8.8.04	8.8.04	8.8.04	8.8.04				
37	6.8.09	8.8.11	8.8.12	8.8.13	8.8.13				
38	8.8.10	8.8.10	8.8.10	8.8.10	8.8.10				
39	10.8.04	10.8.04	10.8.04	10.8.04	10.8.04				
40	9.8.10	9.8.10	9.8.10	9.8.10	9.8.10				
41	9.8.12	9.8.12	9.8.12	9.8.12	9.8.12				
42	6.8.09	6.8.09	6.8.09	6.8.09	6.8.18				
43	7.8.02	7.8.02	7.8.02	7.8.02	8.8.11	8.8.13			
44	8.8.07	8.8.07	8.8.07	8.8.09	8.8.09				
45	7.8.02	7.8.02	9.8.04	9.8.04	9.8.04				
46	10.8.06	10.8.06	10.8.06	10.8.06	10.8.06				
47	8.8.12	8.8.12	8.8.12	8.8.12	8.8.12				
48	6.8.02	6.8.09	6.8.09	6.8.09	6.8.09				
49	6.8.09	6.8.09	6.8.09	8.8.13	8.8.13				
50	6.8.11	6.8.11	6.8.11	6.8.11	6.8.11				
51	10.8.07	10.8.08	10.8.08	10.8.08	10.8.08				
52	9.8.10	9.8.10	9.8.10	9.8.10	9.8.10				
53	10.8.05	10.8.05	10.8.05	10.8.05	10.8.05				
54	7.8.04	7.8.04	7.8.04	7.8.04	7.8.04				
55	7.8.02	7.8.02	9.8.04	9.8.04	9.8.04				
56	6.8.08	6.8.11	6.8.12	6.8.12	6.8.12				
57	6.8.16	8.8.05	9.8.11	9.8.11	9.8.11	9.8.11	9.8.12		

58	8.8.05	8.8.05	8.8.05	8.8.05	8.8.08					
59	8.8.07	8.8.07	8.8.07	8.8.08	9.8.05					
60	8.8.13	9.8.05	9.8.05	9.8.05	9.8.06					
61	6.8.09	6.8.09	8.8.13	8.8.13	8.8.13					
62	8.8.12	8.8.12	8.8.12	8.8.12	8.8.12					
63	8.8.10	8.8.10	8.8.10	8.8.10	8.8.11					
64	9.8.08	9.8.08	9.8.08	9.8.08	9.8.09					
65	10.8.02	10.8.02	10.8.02	10.8.03	10.8.03					
66										
67										
68										
69										
70										
71	6.8.03	6.8.03	7.8.02	7.8.02	7.8.02	7.8.02	7.8.02	7.8.02	9.8.02	9.8.02
72	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03	6.8.03
73										
74	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07
	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	
	10.8.07	10.8.07	10.8.07	10.8.07	10.8.07	10.8.08	10.8.08	10.8.08	10.8.08	
	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	
	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	
	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08	
	10.8.08	10.8.08	10.8.08	10.8.08	10.8.08					
75										

Items Coded by Reviewers to Each Objective for Grade 8

Low		Medium		High
0		5.716216		44

Goal 6

6A

6.8.01	1	1	1	1													
6.8.02	6	6	6	6	48												
6.8.03	5	5	5	5	5	71	71	72	72	72	72	72	72	72	72	72	72
6.8.04	1																
6.8.05	8	8	8	8													
6.8.06	3	3	3	4	4	4	4	4									
6.8.07	3	3															
6.8.08	56																

6B,C

6.8.09	2	8	11	11	28	37	42	42	42	42	48	48	48	48	49	49	49	61	61
6.8.10	10	10	10	10															
6.8.11	50	50	50	50	50	56													
6.8.12	56	56	56																
6.8.13	9	9																	
6.8.14	35	35	35	35	35														

6D

6.8.15	7												
6.8.16	2	2	2	2	7	7	7	13	13	23	26	26	57
6.8.17	5												
6.8.18	9	9	9	9	11	11	11	31	31	31	31	42	

Goal 7

7A,B,C

7.8.01	26	26	26																	
7.8.02	23	23	23	27	27	27	27	27	30	30	31	31	31	31	31	34	43	43	43	43
	45	45	55	55	71	71	71	71	71	71										
7.8.03	30																			
7.8.04	54	54	54	54	54															
7.8.05	28	28	28	28	28															
7.8.06	13	13	13	13	26	26	26	26												

Goal 8

8A

8.8.01	12	12	12	12	12	32	32	32	32	32
8.8.02	6	33								
8.8.03	16	16	36							
8.8.04	16	16	16	36	36	36	36			
8.8.05	14	14	14	57	58	58	58	58		

8B

8.8.06

8.8.07	15	15	15	15	15	18	18	18	18	18	44	44	44	59	59	59
8.8.08	58	59														
8.8.09	44	44														
8.8.10	38	38	38	38	38	63	63	63	63							

8C,D

8.8.11	10	33	33	33	33	37	43	63												
8.8.12	14	14	14	14	17	17	17	17	17	37	47	47	47	47	47	62	62	62	62	62
8.8.13	7	7	37	37	43	49	49	60	61	61	61									

Goal 9

9A

9.8.01	22															
9.8.02	71	71														
9.8.03	29	29	29	29	29											
9.8.04	24	24	24	24	30	30	34	34	34	34	45	45	45	55	55	55
9.8.05	24	25	25	25	25	25	59	60	60	60						
9.8.06	60															

Label																			
9.8.07																			
9.8.08	22	22	22	64	64	64	64												
9.8.09	22	64																	
9B																			
9.8.10	40	40	40	40	40	52	52	52	52	52									
9.8.11	23	57	57	57	57														
9.8.12	41	41	41	41	41	57													
Goal 10																			
10A,B																			
10.8.01																			
10.8.02	65	65	65																
10.8.03	65	65																	
10.8.04	39	39	39	39	39														
10.8.05	19	19	19	19	19	53	53	53	53	53									
10C	21																		
10.8.06	21	21	21	21	46	46	46	46	46										
10.8.07	20	51	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
	74	74	74	74	74	74														
10.8.08	20	20	20	20	51	51	51	51	74	74	74	74	74	74	74	74	74	74	74	74
	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74		
	74	74	74	74	74														

Number of Reviewers Coding an Item by Objective for Grade 8 (Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Goal 6								
6A								
6.8.01	1:4							
6.8.02	6:4	48:1						
6.8.03	5:5	71:1	72:5					
6.8.04	1:1							
6.8.05	8:4							
6.8.06	3:3	4:5						
6.8.07	3:2							
6.8.08	56:1							
6B,C								
6.8.09	2:1	8:1	11:2	28:1	37:1	42:4	48:4	49:3	61:2
6.8.10	10:4							
6.8.11	50:5	56:1						
6.8.12	56:3							
6.8.13	9:2							
6.8.14	35:5							
6D								
6.8.15	7:1							
6.8.16	2:4	7:3	13:2	23:1	26:2	57:1		
6.8.17	5:1							
6.8.18	9:4	11:3	31:4	42:1				
Goal 7								
7A,B,C								
7.8.01	26:3							
7.8.02	23:3	27:5	30:2	31:5	34:1	43:4	45:2	55:2	71:3
7.8.03	30:1							
7.8.04	54:5							
7.8.05	28:5							
7.8.06	13:4	26:4						
Goal 8								
8A								
8.8.01	12:5	32:5						
8.8.02	6:1	33:1						
8.8.03	16:2	36:1						
8.8.04	16:3	36:4						
8.8.05	14:3	57:1	58:4					
8B								
8.8.06								
8.8.07	15:5	18:5	44:3	59:3				
8.8.08	58:1	59:1						
8.8.09	44:2							
8.8.10	38:5	63:4						
8C,D								
8.8.11	10:1	33:4	37:1	43:1	63:1			
8.8.12	14:4	17:5	37:1	47:5	62:5			
8.8.13	7:2	37:2	43:1	49:2	60:1	61:3		
Goal 9								
9A								
9.8.01	22:1							
9.8.02	71:1							
9.8.03	29:5							
9.8.04	24:4	30:2	34:4	45:3	55:3			
9.8.05	24:1	25:5	59:1	60:3				
9.8.06	60:1							

9.8.07			
9.8.08	22:3	64:4	
9.8.09	22:1	64:1	
9B			
9.8.10	40:5	52:5	
9.8.11	23:1	57:4	
9.8.12	41:5	57:1	
Goal 10			
10A,B			
10.8.01			
10.8.02	65:3		
10.8.03	65:2		
10.8.04	39:5		
10.8.05	19:5	53:5	
10C	21:1		
10.8.06	21:4	46:5	
10.8.07	20:1	51:1	74:2
10.8.08	20:4	51:4	74:3

Number of Reviewers Coding an Objective by Item for Grade 8
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	6.8.01:4	6.8.04:1		
2	6.8.09:1	6.8.16:4		
3	6.8.06:3	6.8.07:2		
4	6.8.06:5			
5	6.8.03:5	6.8.17:1		
6	6.8.02:4	8.8.02:1		
7	6.8.15:1	6.8.16:3	8.8.13:2	
8	6.8.05:4	6.8.09:1		
9	6.8.13:2	6.8.18:4		
10	6.8.10:4	8.8.11:1		
11	6.8.09:2	6.8.18:3		
12	8.8.01:5			
13	6.8.16:2	7.8.06:4		
14	8.8.05:3	8.8.12:4		
15	8.8.07:5			
16	8.8.03:2	8.8.04:3		
17	8.8.12:5			
18	8.8.07:5			
19	10.8.05:5			
20	10.8.07:1	10.8.08:4		
21	10C:1	10.8.06:4		
22	9.8.01:1	9.8.08:3	9.8.09:1	
23	6.8.16:1	7.8.02:3	9.8.11:1	
24	9.8.04:4	9.8.05:1		
25	9.8.05:5			
26	6.8.16:2	7.8.01:3	7.8.06:4	
27	7.8.02:5			
28	6.8.09:1	7.8.05:5		
29	9.8.03:5			
30	7.8.02:2	7.8.03:1	9.8.04:2	
31	6.8.18:4	7.8.02:5		
32	8.8.01:5			
33	8.8.02:1	8.8.11:4		
34	7.8.02:1	9.8.04:4		
35	6.8.14:5			
36	8.8.03:1	8.8.04:4		
37	6.8.09:1	8.8.11:1	8.8.12:1	8.8.13:2
38	8.8.10:5			
39	10.8.04:5			
40	9.8.10:5			
41	9.8.12:5			
42	6.8.09:4	6.8.18:1		
43	7.8.02:4	8.8.11:1	8.8.13:1	
44	8.8.07:3	8.8.09:2		
45	7.8.02:2	9.8.04:3		
46	10.8.06:5			
47	8.8.12:5			
48	6.8.02:1	6.8.09:4		
49	6.8.09:3	8.8.13:2		
50	6.8.11:5			
51	10.8.07:1	10.8.08:4		
52	9.8.10:5			
53	10.8.05:5			
54	7.8.04:5			
55	7.8.02:2	9.8.04:3		

56	6.8.08:1	6.8.11:1	6.8.12:3	
57	6.8.16:1	8.8.05:1	9.8.11:4	9.8.12:1
58	8.8.05:4	8.8.08:1		
59	8.8.07:3	8.8.08:1	9.8.05:1	
60	8.8.13:1	9.8.05:3	9.8.06:1	
61	6.8.09:2	8.8.13:3		
62	8.8.12:5			
63	8.8.10:4	8.8.11:1		
64	9.8.08:4	9.8.09:1		
65	10.8.02:3	10.8.03:2		
66				
67				
68				
69				
70				
71	6.8.03:1	7.8.02:3	9.8.02:1	
72	6.8.03:5			
73				
74	10.8.07:2	10.8.08:3		
75				

Assessment Item DOK vs. Consensus DOK for Grade 8
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

Goal 6 [2]:								
6A [2]:								
6.8.01 [1]:	1:4 [1]							
6.8.02 [1]:	6:4 [1.5]	48:1 [1]						
6.8.03 [2]:	5:5 [1.8]	71:1 [1]	72:5 [1.4]					
6.8.04 [1]:	1:1 [1]							
6.8.05 [1]:	8:4 [1.25]							
6.8.06 [2]:	3:3 [2]	4:5 [1.6]						
6.8.07 [2]:	3:2 [2]							
6.8.08 [2]:	56:1 [2]							
6B,C [2]:								
6.8.09 [2]:	2:1 [2]	8:1 [2]	11:2 [1.5]	28:1 [2]	37:1 [1]	42:4 [1.75]	48:4 [1]	49:3 [2]	61:2 [2]
6.8.10 [1]:	10:4 [1]							
6.8.11 [1]:	50:5 [1.2]	56:1 [2]						
6.8.12 [2]:	56:3 [2]							
6.8.13 [3]:	9:2 [2]							
6.8.14 [2]:	35:5 [1.8]							
6D [2]:								
6.8.15 [1]:	7:1 [2]							
6.8.16 [2]:	2:4 [2]	7:3 [2]	13:2 [2]	23:1 [2]	26:2 [2]	57:1 [1]		
6.8.17 [2]:	5:1 [2]							
6.8.18 [2]:	9:4 [1.75]	11:3 [1.67]	31:4 [2]	42:1 [2]				
Goal 7 [2]:								
7A,B,C [2]:								
7.8.01 [2]:	26:3 [2]							
7.8.02 [2]:	23:3 [2]	27:5 [1.8]	30:2 [1]	31:5 [2]	34:1 [2]	43:4 [2]	45:2 [1.5]	55:2 [1]	71:3 [2]
7.8.03 [2]:	30:1 [1]							
7.8.04 [2]:	54:5 [2]							
7.8.05 [2]:	28:5 [2]							
7.8.06 [2]:	13:4 [2]	26:4 [2]						
Goal 8 [2]:								
8A [2]:								
8.8.01 [3]:	12:5 [1.8]	32:5 [2]						
8.8.02 [2]:	6:1 [2]	33:1 [2]						
8.8.03 [1]:	16:2 [1.5]	36:1 [1]						
8.8.04 [2]:	16:3 [2]	36:4 [1.75]						
8.8.05 [1]:	14:3 [1.67]	57:1 [2]	58:4 [1]					
8B [2]:								
8.8.06 [2]:								
8.8.07 [2]:	15:5 [1.8]	18:5 [2]	44:3 [2]	59:3 [1.67]				
8.8.08 [2]:	58:1 [2]	59:1 [2]						
8.8.09 [2]:	44:2 [2]							
8.8.10 [2]:	38:5 [1.8]	63:4 [1.25]						
8C,D [2]:								
8.8.11 [2]:	10:1 [1]	33:4 [2]	37:1 [2]	43:1 [2]	63:1 [2]			
8.8.12 [2]:	14:4 [1.5]	17:5 [1.4]	37:1 [1]	47:5 [1.8]	62:5 [1.4]			
8.8.13 [2]:	7:2 [2]	37:2 [2]	43:1 [2]	49:2 [2]	60:1 [2]	61:3 [2]		
Goal 9 [2]:								
9A [2]:								

9.8.01 [2]:	22:1 [2]				
9.8.02 [2]:	71:1 [2]				
9.8.03 [1]:	29:5 [1.2]				
9.8.04 [2]:	24:4 [1]	30:2 [2]	34:4 [1.5]	45:3 [1.67]	55:3 [1.33]
9.8.05 [1]:	24:1 [1]	25:5 [1.6]	59:1 [1]	60:3 [1.33]	
9.8.06 [2]:	60:1 [1]				
9.8.07 [2]:					
9.8.08 [2]:	22:3 [1.67]	64:4 [1.75]			
9.8.09 [1]:	22:1 [1]	64:1 [1]			
9B [2]:					
9.8.10 [2]:	40:5 [1.8]	52:5 [1.8]			
9.8.11 [2]:	23:1 [2]	57:4 [1.75]			
9.8.12 [1]:	41:5 [1.2]	57:1 [2]			
Goal 10 [3]:					
10A,B [3]:					
10.8.01 [3]:					
10.8.02 [3]:	65:3 [2]				
10.8.03 [2]:	65:2 [2]				
10.8.04 [3]:	39:5 [1.6]				
10.8.05 [3]:	19:5 [1.4]	53:5 [1.2]			
10C [2]:	21:1 [2]				
10.8.06 [2]:	21:4 [2]	46:5 [2]			
10.8.07 [2]:	20:1 [2]	51:1 [2]	74:2 [3]		
10.8.08 [2]:	20:4 [1.5]	51:4 [1.5]	74:3 [2.33]		

Alignment Analysis of Standards and Assessments

Illinois Science Grades 4 and 7

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November 8, 2006

Executive Summary

At a two-day alignment institute conducted September 27 and 28, 2006, in Springfield, Illinois, five reviewers analyzed the agreement between the three Illinois science state goals and assessments for grades 4 and 7. The five reviewers included content area experts, a state science curriculum coordinator, and science teachers. Two reviewers were from Illinois and three, including the group leader, were from other states.

The overall results from the study indicate that the alignment for grade 4 is acceptable whereas the alignment for grade 7 needs some improvement. At grade 4, the assessment had a sufficient number of items for each of the three state goals and at a comparable level of complexity as compared to the complexity of the 72 performance indicators. The grade 4 assessment also had an adequate coverage of content to meet the minimal acceptable level for Range with items appropriately distributed among the performance indicators.

At grade 7, similar to grade 4, the assessment had a sufficient number of items and at an appropriate level of complexity. However, the items on the grade 7 assessment only addressed about one-third of the 101 performance indicators under State Goal 12 (life, physical, and earth/space sciences). This is below the acceptable level of 50% for Range-of-Knowledge Correspondence used in this analysis. The very large number of performance indicators is a contributing factor to the failure to achieve Range at grade 7. If the analysis was done at the next level up, at the learning standard level, then all six of the learning standards under State Goal 12 had three to seven items and would fully meet having Range at that level. To achieve an acceptable Range at the performance indicator level would require replacing about 20 items, 12 from State Goal 12 and four each of the other two state goals. Also, at grade 7 the Balance was weak for State Goal 11, but this was not considered an issue because the other three alignment criteria were fully met for this learning goal. Two or more reviewers coded a relatively high number of items (17 or about 20%) on the grade 7 assessment to generic performance indicators signifying that they felt these items did not precisely match what was expected by the statement of the performance indicators. This suggests narrowly worded or performance indicators that do not fully cover the content under a learning standard. Overall, the alignment at grade 7 needs improvement either by reducing the number of performance indicators or replacing about 20 items.

Acknowledgements

Introduction

The alignment of expectations for student learning with assessments for measuring students' attainment of these expectations is an essential attribute for an effective learning goals-based education system. Alignment is defined as the degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide an education system toward students learning what they are expected to know and do. As such, alignment is a quality of the relationship between expectations and assessments and not an attribute of any one of these two system components. Alignment describes the match between expectations and assessment that can be legitimately improved by changing either student expectations or the assessments. As a relationship between two or more system components, alignment is determined by using the multiple criteria described in detail in a National Institute of Science Education (NISE) research monograph, Criteria for Alignment of Expectations and Assessments in Mathematics and Science Education (Webb, 1997).

A two-day Alignment Analysis Institute was conducted September 27 and 28, 2006 in Springfield, Illinois. Five people, including science content experts, a state science curriculum coordinator, and science teachers, met to analyze the agreement between the state's science learning goals and assessments for grades 4 and 8. Two of the reviewers were from Illinois and three, including the group leader, were from other states.

The State of Illinois uses the terminology of state goals, learning standards, and performance indicators in their science content expectations. The state had three science state goals (example: State Goal 11—Understand the process of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems). Each of these state goals was further described using one to six learning standards. Each learning standard had from 2 to 30 performance indicators (or sometimes referred to as

objectives). For this analysis, data were coded using the performance indicators (objectives) and reported by the three state goals.

Reviewers were trained to identify the depth-of-knowledge of objectives and assessment items. This training included reviewing the definitions of the four depth-of-knowledge (DOK) levels and then reviewing examples of each. Then for each grade, the reviewers participated in 1) a consensus process to determine the depth-of-knowledge levels of the objectives and 2) individual analyses of the assessment items.

To derive the results from the analysis, the reviewers' responses are averaged. Any variance among reviewers is considered legitimate, with the true depth-of-knowledge level for the item falling somewhere in between the two or more assigned values. Such variation could signify a lack of clarity in how the objectives were written, the robustness of an item that can legitimately correspond to more than one objective, and/or a depth of knowledge that falls in between two of the four defined levels. Reviewers were allowed to identify one assessment item as corresponding to up to three objectives—one primary hit (objective) and up to two secondary hits. However, reviewers could only code one depth-of-knowledge level to each assessment item even if the item corresponded to more than one objective. Finally, in addition to learning the process, reviewers were asked to provide suggestions for improving the process.

Reviewers were instructed to focus primarily on the alignment between the state learning goals and assessments. However, they were encouraged to offer their opinion on the quality of the learning goals, or of the assessment activities/items, by writing a note about the item. Reviewers could also indicate whether there was a source-of-challenge issue with the item—i.e., a problem with the item that might cause the student who knows the material to give a wrong answer, or enable someone who does not have the knowledge being tested to answer the item correctly. For example, a science item that involves an excessive amount of reading may represent a source-of-challenge issue because the skill required to answer is more a reading skill than a science skill.

The results produced from the institute pertain only to the issue of agreement between the Illinois state goals and the state assessment instruments. Note that this alignment analysis does not serve as external verification of the general quality of the state's goals or assessments. Rather, only the degree of alignment is discussed in these results. For these results, the averages of the reviewers' coding were used to determine whether the alignment criteria were met.

This report describes the results of an alignment study of learning goals and grade- level operational tests in science for grades 3-8 in Illinois. The study addressed specific criteria related to the content agreement between the state learning goals and grade-level assessments. Four criteria received major attention: categorical concurrence, depth-of-knowledge consistency, range-of-knowledge correspondence, and balance of representation.

Alignment Criteria Used for This Analysis

This analysis judged the alignment between the standards and the assessments on the basis of four criteria. Information is also reported on the quality of items by identifying items with Sources-of-Challenge and other issues. For each alignment criterion, an acceptable level was defined by what would be required to assure that a student had met the standards.

Categorical Concurrence
An important aspect of alignment between standards and assessments is whether both address the same content categories. The categorical-concurrence criterion provides a very general indication of alignment if both documents incorporate the same content. The criterion of categorical concurrence between standards and assessment is met if the same or consistent categories of content appear in both documents. This criterion was judged by determining whether the assessment included items measuring content from each standard. The analysis assumed that the assessment had to have at least six items for measuring content from a standard in order for an acceptable level of categorical concurrence to exist between the standard and the assessment. The number of items, six, is based on estimating the number of items that could produce a reasonably reliable subscale for estimating students' mastery of content on that subscale. Of course, many factors have to be considered in determining what a reasonable number is, including the reliability of the subscale, the mean score, and cutoff score for determining mastery. Using a procedure developed by Subkoviak (1988) and assuming that the cutoff score is the mean and that the reliability of one item is .1, it was estimated that six items would produce an agreement coefficient of at least .63. This indicates that about 63% of the group would be consistently classified as masters or nonmasters if two equivalent test administrations were employed. The agreement coefficient would increase if the cutoff score is increased to one standard deviation from the mean to .77 and, with a cutoff score of 1.5 standard deviations from the mean, to .88. Usually states do not report student results by standards or require students to achieve a specified cutoff score on subscales related to a standard. If a state did do this, then the state would seek a higher agreement coefficient than .63. Six items were assumed as a minimum for an assessment measuring content knowledge related to a standard, and as a basis for making some decisions about students' knowledge of that standard. If the mean for six items is 3 and one standard deviation is one item, then a cutoff score set at 4 would produce an agreement coefficient of .77. Any fewer items with a mean of one-half of the items would require a cutoff that would only allow a student to miss one item. This would be a very stringent requirement, considering a reasonable standard error of measurement on the subscale.

Depth-of-Knowledge Consistency
Standards and assessments can be aligned not only on the category of content covered by each, but also on the basis of the complexity of knowledge required by each. Depth-of-knowledge consistency between standards and assessment indicates alignment if what is elicited from students on the assessment is as demanding cognitively as what students are expected to know and do as stated in the standards. For consistency to exist between the assessment and the standard, as judged in this analysis, at least 50% of the items corresponding to a standard had to be at or above the level of knowledge of the standard: 50%, a conservative cutoff point, is based on the assumption that a minimal passing score

for any one standard of 50% or higher would require the student to successfully answer at least some items at or above the depth-of-knowledge level of the corresponding standard. For example, assume an assessment included six items related to one standard and students were required to answer correctly four of those items to be judged proficient—i.e., 67% of the items. If three, 50%, of the six items were at or above the depth-of-knowledge level of the corresponding standards, then for a student to achieve a proficient score would require the student to answer correctly at least one item at or above the depth-of-knowledge level of one standard. Some leeway was used in this analysis on this criterion. If a standard had between 40% and 50% of items at or above the depth-of-knowledge levels of the standards, then it was reported that the criterion was "weakly" met.

Interpreting and assigning depth-of-knowledge levels to both objectives within standards and assessment items is an essential requirement of alignment analysis. These descriptions help to clarify what the different levels represent in science:

Level 1 (Recall and Reproduction) is the recall of information such as a fact, definition, term, or a simple procedure, as well as performance of a simple science process or procedure. Level 1 only requires students to demonstrate a rote response, use a well-known formula, follow a set procedure (e.g., a recipe), or perform a clearly defined series of steps. A "simple" procedure is well defined and typically involves only one step. Verbs such as "identify," "recall," "recognize," "use," "calculate," and "measure" generally represent cognitive work at the recall and reproduction level. Simple word problems that can be directly translated into and solved by a formula are considered Level 1. Verbs such as "describe" and "explain" could be classified at different DOK levels, depending on the complexity of what is to be described and explained.

A student answering a Level 1 item either knows the answer or does not: that is, the answer does not need to be "figured out," or "solved." In other words, if the knowledge necessary to answer an item automatically provides the answer to the item, then the item is at Level 1. If the knowledge necessary to answer the item does not automatically provide the answer, the item is at least at Level 2.

Level 2 (Skills and Concepts) includes the engagement of some mental processing beyond recalling or reproducing a response. The content knowledge or process involved is more complex than at Level 1. Items require students to make some decisions as to how to approach the question or problem. Keywords that generally distinguish a Level 2 item include "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." These actions imply more than one step. For example, to compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects. Level 2 activities include making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts.

Some action verbs, such as "explain," "describe," or "interpret," could be classified at different DOK levels, depending on the complexity of the action. For example,

interpreting information from a simple graph, requiring reading information from the graph, is at Level 2. An item that requires interpretation from a complex graph, such as making decisions regarding features of the graph that need to be considered and how information from the graph can be aggregated, is at Level 3.

Level 3 (Strategic Thinking) requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. The cognitive demands at Level 3 are complex and abstract. The complexity does not result only from the fact that there could be multiple answers, a possibility for both Levels 1 and 2, but because the multi-step task requires more demanding reasoning. In most instances, requiring students to explain their thinking is at Level 3; requiring a very simple explanation, or a word or two, should be at Level 2. An activity that has more than one possible answer and requires students to justify the response they give would most likely be at Level 3. Experimental designs in Level 3 typically involve more than one dependent variable. Other Level 3 activities include drawing conclusions from observations; citing evidence and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve non-routine problems.

Level 4 (Extended Thinking). Tasks at Level 4 have high cognitive demands and are very complex. Students are required to make several connections—relate ideas within the content area or among content areas—and have to select or devise one approach among many alternatives on how the situation can be solved. Many on-demand assessment instruments will not include any assessment activities that could be classified as Level 4. However, standards, goals, and objectives can be stated in such a way as to expect students to perform extended thinking. "Develop generalizations of the results obtained and the strategies used and apply them to new problem situations," is an example of a grade 8 objective that is at Level 4. Many, but not all, performance assessments and open-ended assessment activities requiring significant thought will be Level 4.

Level 4 requires complex reasoning, experimental design and planning, and probably will require an extended period of time either for the science investigation required by an objective, or for carrying out the multiple steps of an assessment item. However, the extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. For example, if a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as a Level 2 activity. However, if the student conducts a river study that requires taking into consideration a number of variables, this would be at Level 4.

Range-of-Knowledge Correspondence
For standards and assessments to be aligned, the breadth of knowledge required on both should be comparable. The range-of-knowledge criterion is used to judge whether a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer the assessment items/activities. The criterion for correspondence between span of knowledge for a standard and an assessment considers the number of objectives within the standard

with one related assessment item/activity. Fifty percent of the objectives for a standard had to have at least one related assessment item in order for the alignment on this criterion to be judged acceptable. This level is based on the assumption that students' knowledge should be tested on content from over half of the domain of knowledge for a standard. This assumes that each benchmark for a standard should be given equal weight. Depending on the balance in the distribution of items and the need to have a low number of items related to any one objective, the requirement that assessment items need to be related to more than 50% of the objectives for an standard increases the likelihood that students will have to demonstrate knowledge on more than one objective per standard to achieve a minimal passing score. As with the other criteria, a state may choose to make the acceptable level on this criterion more rigorous by requiring an assessment to include items related to a greater number of the objectives. However, any restriction on the number of items included on the test will place an upper limit on the number of objectives that can be assessed. Range-of-knowledge correspondence is more difficult to attain if the content expectations are partitioned among a greater number of standards and a large number of objectives. If 50% or more of the objectives for a standard had a corresponding assessment item, then the Range-of-knowledge correspondence criterion was met. If between 40% and 50% of the objectives for a standard had a corresponding assessment item, the criterion was "weakly" met.

Balance of Representation

In addition to comparable depth and breadth of knowledge, aligned standards and assessments require that knowledge be distributed equally in both. The range-of-knowledge criterion only considers the number of objectives within a standard hit a standard with a corresponding item); it does not take into consideration how the hits (or assessment items/activities) are distributed among these objectives. The balance-of-representation criterion is used to indicate the degree to which one objective is given more emphasis on the assessment than another. An index is used to judge the distribution of assessment items. This index only considers the objectives for a standard that have at least one hit—i.e., one related assessment item per objective. The index is computed by considering the difference in the proportion of objectives and the proportion of hits assigned to the objective. An index value of 1 signifies perfect balance and is obtained if the hits (corresponding items) related to a standard are equally distributed among the objectives for the given standard. Index values that approach 0 signify that a large proportion of the hits are on only one or two of all of the objectives hit. Depending on the number of objectives and the number of hits, a unimodal distribution (most items related to one objective and only one item related to each of the remaining objectives) has an index value of less than .5. A bimodal distribution has an index value of around .55 or .6. Index values of .7 or higher indicate that items/activities are distributed among all of the objectives at least to some degree (e.g., every objective has at least two items) and is used as the acceptable level on this criterion. Index values between .6 and .7 indicate the balance-of-representation criterion has only been "weakly" met.

Source-of-Challenge Criterion

Source of Challenge

The Source-of-Challenge criterion is only used to identify items on which the major cognitive demand is inadvertently placed and is other than the targeted science objective, concept, or application. Cultural bias or specialized knowledge could be reasons for an item to have a Source-of-Challenge problem. Such item characteristics may result in some students not answering an assessment item, or answering an assessment item incorrectly, or at a lower level, even though they possess the understanding and skills being assessed.

Findings

Reviewers judged that the majority of performance indicators at both grades had a DOK Level 1 (recall and reproduction). Interestingly, a higher percentage of the grade 4 than grade 7 performance indicators were judged to have higher DOK levels, level 2 (skill and concept) and level 3 (strategic thinking)—29% at grade 4 compared to 19% at grade 7. Reviewers' debriefing comments note that a large number of the performance indicators expect students to "understand" something. Reviewers generally coded understand as recall of a definition, principle, or cause and effect relationship rather than to explain and interpret the principle which would be a DOK level 2 (skill and concept).

Table 1
Percent of Objectives by Depth-of-Knowledge (DOK) Levels for Science
Performance Indicators

Grade	Total number of performance indicators	DOK Level	# of objs by Level	% within std by Level
4	72	1	50	69
		2	20	27
		3	2	2
7	124	1	99	79
		2	23	18
		3	2	1

If no particular performance indicator is targeted by a given assessment item, reviewers are instructed to code the item at the level of a learning goal or a standard. This coding to a generic objective or performance indicator sometimes indicates that the item is inappropriate for the grade level. However, if the item is grade-appropriate, then this situation may instead indicate that there is a piece of content not expressly or precisely described in the objectives. These items may highlight areas in the performance indicators that should be changed or made more precise. Table 2 displays the assessment items coded to generic objectives by more than one reviewer. Two or more reviewers coded seven grade 4 items to the generic performance indicators. Five of these items were coded to a generic performance indicator by three or more reviewers. Seventeen grade 7 items were coded by two or more reviewers to generic performance indicators. Reviewers' notes and comments do not reveal the precise reasons they did not feel a performance indicator precisely matched the item. The items should be reviewed to see if the science required by the item does not fully match the wording in the performance indicator, suggesting perhaps a need for rewording some of the performance indicators.

Table 2
Science Items Coded to Generic Objectives by More Than One Reviewer,

Grade	Assessment Item	Generic Objective (Number of Reviewers)
4	53	11A (2)
4	14	12B (5)
4	38	12C (3)
4	8	12E (5)
4	21	12F (5)
4	54	12F (2)
4	5	13A (2)
7	1	12A (2)
7	11	12A (2)
7	27	12A (2)
7	67	12A (2)

7	13	12B (2)
7	51	12B (2)
7	73	12B (3)
7	23	12C (3)
7	52	12C (3)
7	72	12C (2)
7	40	12D (2)
7	43	12D (4)
7	5	12E (3)
7	36	12F (4)
7	69	12F (3)
7	45	13B (2)
7	62	13B (2)

Alignment of Curriculum Standards and Assessments

The results of the analysis for each of the four alignment criteria are summarized in Table 4.1 and 4.2. "YES" indicates that an acceptable level was attained between the assessment and the standard on the criterion. "WEAK" indicates that the criterion was nearly met, within a margin that could simply be due to error in the system. "NO" indicates that the criterion was not met by a noticeable margin—10% over an acceptable level for Depth-of-Knowledge Consistency, 10% over an acceptable level for Range-of-Knowledge Correspondence, and .1 under an index value of .7 for Balance of Representation.

The assessment at each grade level had 75 items (Table 3). Each of these items was worth one point. Thus, the total possible points on both the grade 4 and grade 7 assessments were 75 points.

Table 3
Number of items and point value by grade for Illinois Assessments, Grades 4 and 7

Grade Level	Number of Items	Number of Multi-Point Items	Total Point Value
4	75	0	75
7	75	0	75

In general, the alignment between the three state goals for science and the assessments for grade 4 is reasonable, but needs improvement for grade 7. The alignment at grade 4 is acceptable with only one minor alignment issue with Range for State Goal 13. Otherwise the grade 4 assessment has a sufficient number of items for each of the three state goals at an appropriate level of complexity and coverage. The assessment and state goals for grade 7 meet most of the alignment criteria, but have an issue with Range for State Goal

12. The Range issue is in part due to the large number of performance indicators under State Goal 12. If the analysis was done at the learning standard level rather than the performance indicator level, then the coverage would be considered appropriate. There also is a weak Balance for State Goal 11, but this is not considered critical because of the other alignment criteria were fully met. More detail is given for each grade below.

Grade 4

Alignment at grade 4 between the three science state goals and the assessment is acceptable. The alignment issue found with a weak level on the Range-of-Knowledge Correspondence criterion (49% of the performance indicators) is within the accuracy of the process. With a reanalysis it is likely that this issue would be removed. At most one item corresponding to State Goal 13 needs to be replaced by an item that measures content related to a performance indicator not currently targeted. With this minor modification, the assessment and the state goals would be considered to have met all four alignment criteria and to be fully aligned.

Table 4.1
Summary of Acceptable Levels on Alignment Criteria for Science Grade 4
Standards and Assessments

Grade 4	Alignment Criteria			
Standards	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 – Process of scientific inquiry and technological design	YES	YES	YES	YES
12 – Life, physical and earth/space sciences.	YES	YES	YES	YES
13 - Science, technology and society	YES	YES	WEAK	YES

Grade 7

At grade 7, the alignment among the three state goals and science assessment needs improvement by strengthening the Range for State Goal 12. State Goal 12 has 101 performance indicators. Even though the assessment had a fairly large number of items, 44, corresponding to State Goal 12, only about one-third of the performance indicators had a corresponding item. The main cause of the alignment issue is the large number of performance indicators under State Goal 12. If the analysis was performed at the learning standard level (12.A, 12.B, 12.C, 12.D, 12.E, and 12.F) then the range would be good. The majority of reviewers identified from three to seven items as targeting content under each of the six learning standards. These items also are distributed fairly evenly among the performance indicators under each standard. At most two items were identified as

corresponding to any one performance indicator. Reviewers also did not find a precise match for all of the items corresponding to State Goal 12. Five of the six learning standards under State Goal 12 had at least one item assigned to the learning standard level (a generic performance indicator). Thus, the assessment does address a range of content under State Goal 12, but the large number of performance indicators places a large constraint in achieving full alignment when coding items to this most specific level.

Overall 20 more performance indicators under State Goal 12 need to be assessed to achieve an acceptable level for Range. Without changing the number of performance indicators under State Goal 12, at least 12 of the 44 items that measure students' content knowledge under that state goal needs to be replaced by items that each targets a performance indicator that currently does not have any items. In addition four items for each of the other two goals (11 and 13) need to be replaced by items that measure additional performance indicators under State Goal 12 in order to achieve full alignment.

The weak balance for State Goal 11 is not considered an important alignment issue because the assessment has an adequate number of items with an appropriate level of complexity that cover a sufficient number of the performance indicators. Overall, the alignment between the assessment and state goals for grade 7 is conditional. If the analysis is performed at the learning goal level, then the alignment is reasonable and acceptable. However, if the analysis is done at the performance indicator level, then the alignment needs improvement by increasing the coverage of performance indicators under State Goal 12 by replacing about 20 items on the assessment with items that measure untested performance indicators or by reducing the number of performance indicators under that state goal.

Table 4.2
Summary of Acceptable Levels on Alignment Criteria for Science Grade 7
Standards and Assessments

Grade 7	Alignment Criteria			
Standards	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 – Process of scientific inquiry and technological design	YES	YES	YES	WEAK
12 – Life, physical and earth/space sciences.	YES	YES	NO	YES
13 - Science, technology and society	YES	YES	YES	YES

Reliability Among Reviewers

The overall intraclass correlation among the Science reviewers' assignment of DOK levels to items was moderately high (Table 5). An intraclass correlation value greater than 0.8 generally indicates a high level of agreement among the reviewers. A pairwise comparison is used to determine the degree of reliability of reviewer coding at the objective level and at the standard level. The standard pairwise comparison values are moderate, while the objective values for grade 4 is reasonable, but for grade 7 is a little low primarily because of the large number of performance indicators.

Table 5
Intraclass and Pairwise Comparisons, Illinois Alignment Analysis for Science

Grade	Intraclass Correlation	Pairwise Comparison:	Pairwise: Objective	Pairwise: Standard
4	.79	.66	.69	.92
7	.68	.65	.45	.84

Summary

At a two-day alignment institute conducted September 27 and 28, 2006, in Springfield, Illinois, five reviewers analyzed the agreement between the three Illinois science state goals and assessments for grades 4 and 7. The five reviewers included content area experts, a state science curriculum coordinator, and science teachers. Two reviewers were from Illinois and three, including the group leader, were from other states.

The overall results from the study indicate that the alignment for grade 4 is acceptable whereas the alignment for grade 7 needs some improvement. At grade 4, the assessment had a sufficient number of items for each of the three state goals and at a comparable level of complexity as compared to the complexity of the 72 performance indicators. The grade 4 assessment also had an adequate coverage of content to meet the minimal acceptable level for Range with items appropriately distributed among the performance indicators.

At grade 7, similar to grade 4, the assessment had a sufficient number of items and at an appropriate level of complexity. However, the items on the grade 7 assessment only addressed about one-third of the 101 performance indicators under State Goal 12 (life, physical, and earth/space sciences). This is below the acceptable level of 50% for Range-of-Knowledge Correspondence used in this analysis. The very large number of performance indicators is a contributing factor to the failure to achieve Range at grade 7. If the analysis was done at the next level up, at the learning standard level, then all six of the learning standards under State Goal 12 had three to seven items and would fully meet having Range at that level. To achieve an acceptable Range at the performance indicator level would require replacing about 20 items, 12 from State Goal 12 and four each of the other two state goals. Also, at grade 7 the Balance was weak for State Goal 11, but this was not considered an issue because the other three alignment criteria were fully met for this learning goal. Two or more reviewers coded a relatively high number of items (17 or

about 20%) on the grade 7 assessment to generic performance indicators signifying that they felt these items did not precisely match what was expected by the statement of the performance indicators. This suggests narrowly worded or performance indicators that do not fully cover the content under a learning standard. Overall, the alignment at grade 7 needs improvement either by reducing the number of performance indicators or replacing about 20 items.

References

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Grade 4 Science Standards and Group Consensus DOK Values

Level	Description	DOK
11	Understand the process of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	2
11A	SCIENTIFIC INQUIRY	2
11.4.01	Understand how to design and perform simple experiments.	1
11.4.02	Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data.	2
11.4.03	Compare observations of individual and group results.	2
11.4.04	Distinguish among the following: recording the data from an experiment, organizing the data into a more useful form, analyzing it to identify relevant patterns, and reporting and displaying results.	2
11B	TECHNOLOGICAL DESIGN	3
11.4.05	Identify a design problem and identify possible solutions. Assess designs or plans to build a prototype.	3
11.4.06	Assess given test results on a prototype (i.e., draw conclusions about the effectiveness of the design using given criteria). Analyze data and rebuild and retest prototype as necessary.	3
12	Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	1
12A	LIVING THINGS	2
12.4.01	Distinguish between living and non-living things.	2
12.4.02	Identify the basic divisions of animals and their common characteristics (e.g., define mammal, fish, bird, reptile, amphibian, insect, arachnid; give examples of each).	1
12.4.03	Identify the life cycle of familiar animals and compare their various stages: birth, growth and development, reproduction, and death. Understand that metamorphosis occurs in some animals (e.g., butterflies, frogs).	2
12.4.04	Identify the basic needs of living things: animals need air, water, food, and shelter; plants need air, water, nutrients, and light.	1
12.4.05	Understand the functions of component parts of living things.	1
12.4.06	Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction.	2
12B	ENVIRONMENT AND INTERACTION OF LIVING THINGS	1
12.4.07	Understand the concept of food chains and food webs and the related classifications of plants or animals (e.g., producers, decomposers, consumers, herbivores, carnivores).	1

Level	Description	DOK
12.4.08	Know that the world contains many kinds of environments, and that different animals and plants are suited to live in different environments.	1
12.4.09	Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things.	1
12.4.10	Identify the basic classifications of animals based on how they interact with their environment [e.g., (a) Some animals are active in the daytime (diurnal), others in the night time (nocturnal). (b) Some animals have a body temperature that stays the same regardless of significant temperature changes in their immediate environment (warm blooded), others have a body temperature that rises and falls with the temperature changes of their environment (cold blooded). (c) Some animals are herbivores, others are carnivores].	1
12.4.11	Understand that an ecosystem is made of living and nonliving things.	1
12.4.12	Understand that some animals survive winter by being fitted for an active life during winter (e.g., penguins), others by hibernation (e.g., certain bears), and others by migration (e.g., monarch butterflies).	1
12.4.13	Understand that human activities can change the number of species in an area, whether by increasing it or decreasing it.	2
12C	MATTER AND ENERGY	1
12.4.14	Understand that matter is usually found in 3 states: liquid, solid, and gas and be able to identify the properties of each. Understand that water can be found in all three forms.	1
12.4.15	Understand that an increase in temperature generally causes things to expand, and that a decrease in temperature generally causes things to contract. Understand that particles move more slowly in a solid than they do in a liquid or a gas.	1
12.4.16	Understand that some substances will dissolve in water and some will not. Understand the property of density.	2
12.4.17	Understand that a magnet attracts iron, but not plastic, paper, and other nonmetals; nor does it attract all metals (since it does not attract copper or aluminum). Identify conductors and insulators.	1
12.4.18	Understand that rubbing together certain objects produces a static electrical charge; in particular, rubbing a balloon on someone's hair or walking in a dry room can build up a charge on the person walking (which is felt as a shock when that person touches someone else). Understand that objects can be positively charged, or negatively charged.	1
12.4.19	Understand that objects of like charge repel each other and that objects of opposite charge attract each other.	1
12.4.20	Understand that electrical energy can be converted to other types of energy such as heat, light, or mechanical energy.	1
12.4.21	Understand that besides static electricity, there is also such a thing as current electricity. For example, given a battery, bulb, and wire, students will understand the proper configuration to make the bulb light.	1
12.4.22	Understand that lighter colors reflect more light, darker absorb more, and that the color one sees depends on what kind of light is reflected (rather than absorbed) by the object seen.	2
12.4.23	Understand that white light can be broken into all the colors of the rainbow by means of prisms.	1
12.4.24	Understand that light travels in a straight line and can be reflected, refracted, transmitted, and absorbed by matter	1
12D	FORCE AND MOTION	2
12.4.25	Define a force as a push or a pull that tends to move an object. Understand that forces may be balanced or unbalanced. Know that when the forces applied to an object are balanced, the motion or rest of that object does not change.	1
12.4.26	Identify the basic forces, such as friction, magnetism, and gravity. Identify which force is operative in a simple scenario.	2
12.4.27	Identify simple machines (lever, inclined plane, pulley, screw, and wheel and axle) and understand how they function. Understand know how they apply forces with advantage, and identify which machine is suited for accomplishing a simple task.	2
12.4.28	Identify equilibrium conditions (e.g., in a diagram of balanced weights on levers or pulleys).	2
12E	EARTH SCIENCE	1
12.4.29	Understand that Earth's basic materials are land, water, and air.	1
12.4.30	Understand that a natural resource is any material found on Earth that is used by people. Understand the difference between renewable and nonrenewable resources. Know that fossil fuels come from animals and plants, and that oil, coal, and natural gas are examples of fossil fuels.	1
12.4.31	Identify which everyday materials decompose most slowly (e.g., plastics, glass and ceramics decompose slower than metals, wood, or food substances).	2

Level	Description	DOK
12.4.32	Understand that the surface of the earth changes. Know that some changes are due to slow processes (e.g., erosion, weathering), whereas others are due to sudden events (e.g., landslides, volcanic eruptions, earthquakes, asteroid impacts).	1
12.4.33	Understand that some rocks contain plant and animal fossils. Know how they were formed.	2
12.4.34	Identify the three basic kinds of rocks: igneous, sedimentary, and metamorphic and the processes that created them. Use information to identify physical properties of minerals.	2
12.4.35	Understand that movement in parts of the earth's crust causes earthquakes.	1
12.4.36	Understand that the main cause of erosion is moving water. Understand that when water erodes landmasses, it carries the land away by rainfall and rivers and re-deposits it in the form of pebbles, sand, silt, and mud. Understand that the delta of a river is formed by such deposits. Understand that deposition of new soil over a flood plain is what makes a river valley fertile. Identify other causes of erosion besides erosion by water (e.g., wind, chemical erosion).	1
12.4.37	Understand that land formations (mountains, valleys, shorelines, and caves) change slowly over time, and identify the major natural causes of such changes: (a) Slow causes: erosion, caused by wind, rain, glaciers, water freezing inside cracks of rocks (which expands and splits the rocks), the growth of tree roots; (b) Sudden causes: rare catastrophes (e.g., earthquakes, volcanic activity, asteroid impacts, floods).	1
12.4.38	Name and distinguish the different kinds of clouds based on their appearance and place in the atmosphere: cirrus, cumulus, and stratus.	1
12.4.39	Identify types of precipitation and the conditions that cause them to form.	1
12.4.40	Understand that weather changes from day to day and over the seasons. Identify the order of the seasons and the different characteristics of each season.	1
12.4.41	Understand that weather is described using measurements of temperature, wind direction and speed, amounts of precipitation, humidity, and air pressure.	1
12.4.42	Understand that weather systems can be tracked—and their motions roughly predicted.	1
12.4.43	Understand the stages of the water cycle: evaporation, condensation, and precipitation.	1
12.4.44	Understand that most of Earth's surface is covered by water, and identify the major kinds of land and water formations: continent, mountain, valley, island, cave, ocean, lake, and river.	1
12F	ASTRONOMY	1
12.4.45	Understand that moons and planets do not produce their own light—the light we see when we look at them is the sunlight which they reflect.	1
12.4.46	Identify the relative positions of the earth, moon, and sun during a solar eclipse, a lunar eclipse, a full moon, a half moon, and a new moon. Given a diagram of the earth, moon, and sun, identify which of these is depicted.	2
12.4.47	Identify the order of planets from the sun, and know that the further planets take longer to go around the sun. Understand that all planets in our solar system revolve around the sun. Because Earth revolves around the sun, objects (e.g., stars, planets, constellations) in the sky appear to change positions throughout the year. Know that it takes Earth 365 ¼ days to revolve around the sun.	1
12.4.48	Understand that the earth rotates on its axis and this is responsible for the change from day to night. Understand that the tilt of the earth is responsible for the seasons.	1
12.4.49	Define a constellation as a group of stars that form a pattern in the sky. Understand that constellations are useful in the study of space because they help create a map of the sky. Know that locations in the sky are often described using the names of constellations.	1
12.4.50	Understand that the Milky Way is our galaxy, so-called because there appears to be a milky-white path or road in the sky.	1
12.4.51	Understand that the mass of a body stays the same on different planets but the weight changes depending on the mass of the planet.	1
13	Understand the relationships among science, technology and society in historical and contemporary contexts.	1
13A	SAFETY AND PRACTICES OF SCIENCE	1
13.4.01	Identify the basic safety equipment used in science, (e.g., gloves, goggles, lab coats, tongs).	1
13.4.02	Identify the basic safety procedures (e.g., "Keep your clothes and hair away from open flames," "Don't taste substances without permission.") when conducting science activities.	1
13.4.03	Explain why similar results are expected when procedures are done the same way. Understand the importance of recording observations accurately and honestly.	2
13.4.04	Know that scientific results must be reproducible. Know that different scientists study different subjects but work in similar ways.	1
13.4.05	Know that scientists accept a theory that is supported by tests and experiments until it is disproved or improved upon.	1

Level	Description	DOK
13.4.06	Recognize that scientists share results so that each scientist may build upon what he or she learns from others.	1
13.4.07	Understand that when an experiment is performed a few times and yields conflicting results, one must repeat it many times. Understand that one should also try to find an explanation for the conflicting results.	1
13.4.08	Identify important contributions men and women have made to science and technology.	1
13.4.09	Understand the impact of different scientific discoveries on society.	2
13.4.10	Identify occupations in the field of science.	1
13.4.11	Identify ways that science and technology affect people's lives (e.g., in transportation, medicine, agriculture, communication) and careers.	2
13.4.12	Identify ways that technology has changed local, national, or global environments.	2
13.4.13	Identify ways to reduce, reuse, and recycle materials.	1
13.4.14	Know that using measuring tools results in greater accuracy than making estimates.	1
13.4.15	Identify basic scientific instruments and their functions (e.g., ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope, telescope).	1

Grade 7 Science Standards and Group Consensus DOK Values

Level	Description	DOK
11	Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.	2
11A	SCIENTIFIC INQUIRY	2
11.7.01	Understand how to follow procedures relating to scientific investigations including formulating hypotheses, controlling variables, collecting and recording and analyzing data, interpreting results, and reporting and displaying results.	2
11.7.02	Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. Recognize the common units of the metric system.	2
11.7.03	Define a theory as an explanation or model based on observation, experimentation, and reasoning; especially one that has been tested and confirmed as a general principle helping to explain and predict natural phenomena.	1
11.7.04	Define a variable as some factor which changes in different phases of an experiment. Define a constant as something kept the same in every phase of the experiment. Understand that most scientific experiments are designed so that only one variable is tested in each experiment. Identify constants and variables in described experiments.	1
11.7.05	Define the control group or control setup as a group of subjects that are the same in all important ways as the subjects on which we are performing the experiment, except that the control is isolated from what we suspect to be the cause we are seeking to evaluate—the control helps to increase our certainty that the suspected cause really is the cause.	1
11.7.06	Analyze patterns in data from an experiment to determine whether the information gathered helps to answer a given question or hypothesis (e.g., all of the plants fertilized in a vegetable garden grew taller than the ones not fertilized. Understand that this is an indication that the fertilizer caused the plants to grow taller.)	2
11B	TECHNOLOGICAL DESIGN	2
11.7.07	Identify a design problem and establish criteria for determining the success of a solution.	2
11.7.08	Compare design solutions; select which one is best given certain restrictions on available materials, tools, cost effectiveness, and safety.	2
11.7.09	Given certain tests which could be performed on a prototype, identify which one is testing for a given feature (e.g., "Given certain tests to be performed on a car, which one is testing for its fuel efficiency?").	2
11.7.10	Identify improvements to a prototype indicated by given test results.	2
12	Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.	1
12A	LIVING THINGS	1
12.7.01	Understand how scientists classify organisms. Identify common insects, flowers, birds, reptiles, and mammals using a dichotomous key.	1
12.7.02	Understand that all living things are composed of cells: small parts which function similarly in all living things. Understand that different tissues have different, specialized cells with specific functions. Understand the levels of organization in living organisms—cells, tissues, organs, and organ systems.	1
12.7.03	Identify the main differences between plant cells and animal cells, namely that plant cells have chloroplasts and cell walls (which provide rigidity to the plant, since plants have no skeletons). Identify the basic cell organelles and their functions.	1

Level	Description	DOK
12.7.04	Understand that some organisms are unicellular, others multi-cellular. Understand that some unicellular organisms are like tiny animals, able to propel themselves or change their shape and that they are endowed with sensation.	1
12.7.05	Understand that the nucleus of cell contains the genetic information for the plant or animal to which it belongs.	1
12.7.06	Understand that cells divide to increase their numbers, and the process of cell division called mitosis results in two daughter cells each with identical sets of chromosomes.	1
12.7.07	Understand that multi-cellular organisms begin as zygotes (a single egg cell fertilized by a single sperm cell) and that a zygote grows by cell division and that as the cells multiply, they also differentiate. Understand the process of meiosis.	1
12.7.08	Understand the distinction between sexual and asexual reproduction. Understand that the offspring of sexual reproduction inherits half its genes from each parent.	1
12.7.09	Understand that only some animals are capable of limb-regeneration (e.g., sea stars, some amphibians, many crustaceans).	1
12.7.10	Understand that an inherited trait can be determined by one or more genes.	1
12.7.11	Understand that DNA (deoxyribonucleic acid) is the genetic material of each living thing—like a blueprint or set of instructions for building the organism—and that it is located in the chromosomes of each cell.	1
12.7.12	Understand that heredity is based on the probability of inheriting a given trait for which one or both of the parents carries a gene, and that this probability can be calculated given the genetic make-up of the parents with regard to that kind of trait (e.g., blue eyes)using a Punnett Square.	1
12.7.13	Understand that male animals produce sperm cells, and females produce egg cells, and that the combination of these cells results in fertilization.	1
12.7.14	Understand the basics of plant reproduction and define and state the purposes of pollen, ovules, seeds, and fruit.	1
12.7.15	Identify the common characteristics of plants and plant growth. Understand the purpose of various plant parts such as roots, stems, and leaves.	1
12.7.16	Understand that energy for life primarily derives from the sun; understand the process of photosynthesis.	1
12.7.17	Identify the basic anatomy of leaves: blade, vein, and petiole; classify leaves as dicot or monocot, simple or compound, and palmately compound or pinnately compound.	1
12.7.18	Classify roots as either fibrous roots or tap roots.	1
12.7.19	Understand that flowers are the reproductive organs of flowering plants and that their function is to produce male gametes (sperm) and female gametes (eggs) and to provide a structure for fertilization.	1
12.7.20	Understand that some of the structures of flowers are adaptations that enable plants to reproduce sexually while they remain stationary. Understand that a plant's production of pollen is one such adaptation, since it can be transported (by wind, water, insects or other organisms) to the parts of the flowers that contain eggs. Know that this process is called pollination.	1
12.7.21	Identify a seed as a reproductive structure consisting of a plant embryo and its stored food. Understand that in flowering plants the seeds develop in a structure called a fruit, which houses and protect seeds and may also help to disperse them to new locations.	1
12.7.22	Understand natural selection or survival of the fittest, and understand that this is thought to be one of the explanations for how animals and plants change over time and that it was the explanation given by Charles Darwin.	1
12.7.23	Understand that fossils of complete skeletons are rare, and that many skeletons have to be reconstructed based on what scientists believed the whole body to look like. Understand that the fossil record is not complete or representative of the times in which the fossilized animals and plants lived.	1
12.7.24	Understand how fossils provide evidence that animals and plants have changed over time, and that new species of organisms changed over time out of older ones.	2
12B	ENVIRONMENT AND INTERACTION OF LIVING THINGS	1
12.7.25	Understand that three important cycles for the survival of living things in Earth's ecosystems are the carbon dioxide-oxygen cycle, the water cycle, and the nitrogen cycle.	1
12.7.26	Understand that the number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., the quantity of light and water, the range of temperatures, soil composition). Know that given adequate biotic and abiotic resources and no disease or predators, populations can increase at rapid rates. Understand that lack of resources and other factors (e.g., predation, climate) limit the growth of populations in specific niches in the ecosystem.	1
12.7.27	Understand that competitive feeding habits between species can have a negative effect on their populations. Understand that animals and plants compete for food, shelter, mates, and other things necessary for life and reproduction.	1
12.7.28	Distinguish the various members of a food web and identify the order of dependence among these members.	2
12.7.29	Understand that many plants depend upon certain animals for pollination and the spreading out of their seeds, and therefore to reproduce. Conversely, understand that animals depend on plants for food (either immediately, like	1

Level	Description	DOK
	herbivores; or intermediately, like carnivores) and shelter.	
12.7.30	Understand that the behavior of different organisms influences and is influenced by their environment (e.g., hunger, changes in available resources).	1
12.7.31	Understand that animals have parts well suited to the places they live in and to their needs.	1
12.7.32	Identify and describe the major biomes and habitats and their characteristics: desert, grassland, savannah, tropical forest, coniferous forest, tundra, freshwater, and saltwater.	1
12C	MATTER AND ENERGY	1
12.7.33	Understand that matter can be changed in different ways. 1. Physically, a change in the size shape or state of matter (e.g., the melting of an ice cube, tearing of paper). 2. Chemically, where matter can change into another kind of matter (e.g., burning of wood, rusting of iron).	1
12.7.34	Define and distinguish the properties of matter: mass, weight, volume, density, color, odor, shape, texture, and hardness.	2
12.7.35	Understand the phases of matter and how they depend on how the atoms and molecules of a substance move.	1
12.7.36	Understand the concepts of melting point, boiling point, and freezing point, and understand the concepts of evaporation, condensation, and sublimation.	1
12.7.37	Understand that there is another state of matter called plasma, which can be produced under artificial conditions on Earth. The sun's matter is in the plasma state, as is the matter of the other stars.	1
12.7.38	Understand that substances can be grouped by similarities in their physical properties.	1
12.7.39	Define element as a substance that cannot be broken down into simpler substances by chemical interactions. Understand that there are over 100 known elements that combine in many ways to form many kinds of compounds. Each element has its own number on the periodic table.	1
12.7.40	Identify the properties common to most metals (e.g., luster, malleability, ductility, the ability to conduct electricity).	1
12.7.41	Identify simple compounds (e.g., H_2O, $NaCl$).	1
12.7.42	Define atom as the smallest part of an element that still has the properties of that element.	1
12.7.43	Identify the 3 subatomic building blocks and their properties. Know that the electron has a negative charge, the proton has a positive charge, and the neutron is electrically neutral.	1
12.7.44	Understand that a molecule made of two or more atoms.	1
12.7.45	Identify the number of different kinds of elements in a chemical formula.	1
12.7.46	Understand that during a chemical change atoms are neither created nor destroyed but are rearranged to make new substances.	1
12.7.47	Identify the basic properties of acids and bases. Know the relationship between acids, bases, and indicators (e.g., blue litmus paper changes to red when placed in an acid).	1
12.7.48	Know the laws of the conservation of matter and energy. Apply the conservation of matter as a reason why the number and kinds of atoms in a chemical change remains constant.	1
12.7.49	Understand that energy appears in many forms, such as heat, light, sound, chemical, mechanical, solar, nuclear, and electromagnetic energy. Understand the basic characteristics of each of these kinds of energy. Understand the nature of kinetic and potential energy.	1
12.7.50	Understand that heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature (thermal equilibrium).	1
12.7.51	Understand that energy can be transferred by radiation, conduction, and convection.	1
12.7.52	Identify electrical conductors and insulators. Define and give examples of each. Understand that electricity can be converted into heat and light by forcing an electrical current through a conductor. Understand that this is what happens in a toaster and in a light bulb.	1
12.7.53	Understand that light travels in straight lines as long as it is traveling through one uniform medium.	1
12.7.54	Understand that almost all of Earth's energy comes from the sun. Understand that this energy is in the form of visible and invisible light with a range of wavelengths (electromagnetic spectrum).	1
12.7.55	Understand that visible light is a small band within a very broad electromagnetic spectrum.	1
12.7.56	Understand that when a light beam hits an object and is reflected off of it, the angle of incidence equals the angle of reflection.	1
12.7.57	Understand that light travels at different speeds in different materials. Understand that this is why light refracts—or changes direction—namely because it goes from one material in which it moves at one speed into another material through which it moves at a different speed.	1
12.7.58	Understand that the angle of refraction is determined by (1) the angle of incidence and (2) the index of refraction of the new material which the light is entering.	1
12.7.59	Understand that many lenses operate by refracting light beams that hit their surface in such a way that they will all meet at one point called a focal point. Understand that this is the way refracting telescopes increase the ability of an image to be magnified, and this is also how they magnify it with another lens. Likewise, know that light microscopes	1

Level	Description	DOK
	and magnifying glasses work in the same way.	
12.7.60	Understand that light has a dual nature—exhibiting particle properties and also wave properties—depending on the situation.	1
12.7.61	Identify the basic properties of waves: frequency, wavelength, and velocity.	1
12.7.62	Understand that in the spectrum of visible light, lower frequency colors are toward red, and higher frequency colors are toward blue.	1
12D	FORCE AND MOTION	1
12.7.63	Understand the concept of force as any influence that tends to accelerate an object. Know that a force, for example, can speed up an object, or slow it down, or change its direction. Understand that forces can be measured in various ways. Understand how to calculate the acceleration of an object.	1
12.7.64	Identify and understand Newton's laws of motion. The first law of motion states that things at rest or in motion tend to stay at rest or continue in motion unless some force is applied to them. Newton's second law of motion (force = mass × acceleration) shows how force, mass, and acceleration are related. The third law states that for every action there is an equal and opposite reaction.	1
12.7.65	Understand the concept of work. A force acting through distance is work. Recognize applications of simple machines (wedge, lever, inclined plane, pulley, screw, and wheel and axle) in common tools.	2
12.7.66	Understand that density is mass per volume, and that what is denser than something else at the same volume will have more mass, but at the same mass it will have less volume. Understand that less dense bodies have greater buoyant force in water.	1
12.7.67	Understand that the gravitational force between two bodies decreases as the bodies get farther apart from each other. Know that the gravitational force between two bodies decreases as their masses decrease.	1
12.7.68	Understand how to calculate average speeds, given the distance traveled and the time taken.	1
12.7.69	Distinguish between mass and weight. Know that the mass of a body remains the same regardless of where it is but that the weight of it depends on how strong the force of gravity is in its current location.	1
12E	EARTH SCIENCE	1
12.7.70	Understand that lithospheric plates constantly move at rates of centimeters per year in response to movements in the mantle. Understand that major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from these plate motions. Understand that over very longs periods of time (millions of years), old mountains wear down, but new ones arise from catastrophic volcanic and earthquake activity.	1
12.7.71	Understand that land forms are the result of combination of constructive and destructive forces. Understand that constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, whereas destructive forces include weathering and erosion.	1
12.7.72	Understand that soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria. Understand that soils are often found in layers, with each having a different chemical composition and texture.	1
12.7.73	Understand that glaciers can move at a rate of centimeters per year (sometimes faster), and that in the past, glacial movement has carved new geological features on various continents.	1
12.7.74	Understand that radioactive elements are useful for dating materials because the time it takes for the atoms in them to break apart is known. Know that this information can be used to determine the age of a rock within a certain number of years.	1
12.7.75	Understand that that there are strata (layers) in many places in the crust of the earth. Understand that the crust of the earth is mostly igneous/metamorphic, with a relatively thin veneer of sedimentary rock layers in many, but not all places. Understand the principle of superposition: in a layered sedimentary sequence, the oldest rocks are usually at the bottom.	1
12.7.76	Compare seasonal climates in major regions of the globe, considering effects of latitude, altitude, and geography. (e.g., 1. Higher altitude generally means colder temperatures and lower air pressure; 2. Places along the equator have a 12–hour day and a 12–hour night every day of the year and do not have strict seasons; 3. Places along latitudes between the equator and one of the earth's poles have seasons and differing amounts of daylight throughout the year: they have a longest day, a shortest day, and two equinoxes on which the daylight lasts for 12 hours; 4. Places along the Arctic and Antarctic circles have one day of exactly 24–hour daylight and one day of exactly 24–hour darkness each year).	2
12.7.77	Understand that the solid Earth is layered with a crust, under which is a hot convecting mantle, and that at the center of the earth is a dense, metallic core.	1
12.7.78	Understand that some changes in the solid earth can be described as the rock cycle: rocks at the earth's surface weather, forming sediments that are buried, then compacted, heated, and often recrystalized into new rock. Eventually, those new rocks may be brought to the surface by the forces that drive plate motions, and thus the rock cycle continues. Identify the three basic kinds of rock. Igneous rock is the result of cooled magma; granite, pumice, and scoria are examples. Sedimentary rock is the result of fine particles from eroded rocks being re-deposited by water or wind; sandstone and limestone are examples. Metamorphic rock is the result of rocks being changed by high temperatures	1

Level	Description	DOK
	and/or pressures; marble is an example.	
12.7.79	Understand that the theory of plate tectonics explains the formation and movement of the earth's plates. Understand that the similar contours of the continents, seafloor spreading, and the location of frequent earthquakes and volcanoes provide evidence for plate tectonics.	1
12.7.80	Understand that movements of the earth's continental and oceanic plates have affected the distribution of living things on Earth. Understand that major earthquake and volcanic activity can give rise to new mountain ranges, severing different species from each other, which from then on undergo independent lines of gradual change, each adapting to its own, new ecosystem.	1
12.7.81	Understand that changes in climate (e.g., the ice ages) have affected the distribution of living things on Earth. A change in climate from warm to cold might force many animals to move closer to the equator in order to survive. Identify dynamic forces that affect land and water distributions between solid Earth, oceans, atmosphere, and organisms.	1
12.7.82	Understand that geologic layers and radioactive dating of rocks and meteorites provide evidence that the earth is about 4.6 billion years old, and that life has existed on Earth for over 3 billion years. Understand how to use a geologic time table.	2
12.7.83	Understand that life on Earth has been changed by major catastrophes (e.g., the impacts of asteroids, volcanic eruptions).	1
12.7.84	Understand that the atmosphere is a mixture of nitrogen, oxygen, argon, and trace gases that include water vapor and carbon dioxide. Understand that atmospheric conditions vary as one changes latitude and altitude. Understand that the atmosphere consists of layers and be able to distinguish the layers and their significance. Understand that the ozone layer protects life on Earth by absorbing ultraviolet radiation from the sun.	2
12.7.85	Understand that clouds, formed by the condensation of water vapor, affect weather and climate. Understand that clouds cause precipitation and lightning and that they insulate heat and moisture in the air.	1
12.7.86	Understand how jet streams affect weather. Identify weather fronts and understand how they are formed. Understand how to read and interpret weather maps.	2
12.7.87	Understand patterns of atmospheric movement and how they influence weather. Understand that oceans have a major affect on climate because water in the oceans holds and distributes a large amount of heat.	2
12.7.88	Understand the stages in the water cycle on Earth: evaporation, condensation, and precipitation.	1
12.7.89	Understand that water below the surface is groundwater and it forms when precipitation moves slowly downward through rocks and soil.	1
12.7.90	Know that about three fourths of the earth is covered with water. Understand that most of the earth's water is salt water (oceans), and only about 3 percent of the earth's water is freshwater. Know that freshwater is found mainly in icecaps, glaciers, lakes, groundwater, rivers, and the atmosphere.	1
12F	ASTRONOMY	1
12.7.91	Understand that objects in the solar system are for the most part in regular and predictable motion. Know that those motions explain such phenomena as the day, the year, the phases of the moon, and eclipses.	1
12.7.92	Understand that gravity is the force that keeps planets in orbit around the sun and governs the rest of the motion in the solar system. Know that changes in gravitational forces explain the phenomenon of the tides. Know that what an object weighs on Earth is different than what it weighs on the moon or other planets in our solar system. This is due to gravity.	1
12.7.93	Identify the differences among the planets in our solar system: the four closest planets to the Sun are called the inner planets. The inner planets are small and have rocky surfaces. The five farthest planets from the Sun are called the outer planets. All outer planets except Pluto are much larger than Earth, are made of gases, and have no solid surfaces.	1
12.7.94	Understand that rock samples taken by astronauts walking on the moon show that the earth and moon have a common history.	1
12.7.95	Understand that because it takes the moon the same amount of time to rotate on its axis as it does to revolve around the earth, the same side of the moon always faces the earth. Understand that the tides are affected by the positions of the moon.	1
12.7.96	Understand that valleys on the surface of a planet or moon might be evidence that water is or once was there.	1
12.7.97	Understand that the speed of a planet's rotation is one cause of the daily variations in temperature on its surface.	1
12.7.98	Understand that the cause of the earth's seasons and the change in the amount of daylight throughout the year is the tilt of its axis of rotation with respect to the plane of its orbit. Given a diagram of the earth depicting (1) its relative position to the sun and (2) the orientation of its axis of rotation and (3) some circle of latitude, identify the following: (a) the season of the year (if the circle of latitude is other than the equator), and (b) whether there is more daylight or more dark hours at that time of year. Understand why the seasons and daylight hours in opposite hemispheres are opposite to each other.	2
12.7.99	Understand that the sun is an average star. Know that a solar system consists of a sun and planets and other objects that	1

Level	Description	DOK
	revolve around it. Know that the planets closest to the sun are hotter than the planets farther away from the sun. Understand that the color of a star depends on its temperature.	
12.7.100	Identify the relative positions of the earth, moon, and sun when the moon appears full, new, half, and when a lunar or solar eclipse occurs. Given a diagram of the sun and the earth in some definite position with its axis of rotation drawn (and with the poles labeled), identify the earth in the positions of summer solstice, winter solstice, spring equinox, and fall equinox (for the northern hemisphere).	2
12.7.101	Define light year, how many kilometers it is, and know that galactic distances may be measured in millions and billions of light years.	1
13	Understand the relationships among science, technology and society in historical and contemporary contexts.	2
13A	SAFETY AND PRACTICES OF SCIENCE	1
13.7.01	Identify potential hazards in the laboratory and the means of reducing them.	1
13.7.02	Explain how peer review helps to assure the accurate use of data and improves the scientific process. Results from scientific investigations can be discussed.	2
13.7.03	Indicate that repeatability of results is necessary for the scientific community to accept someone's findings.	1
13.7.04	Understand that one set of data is not sufficient evidence for making a generalization. Identify the kind of reasoning called induction, and know that the more cases that are seen, the greater the certainty of the generalization drawn from those cases.	1
13.7.05	Understand that the scientific community has a standard procedure for determining nomenclature, units of measurement, and ways of presenting data.	1
13.7.06	Understand that important social decisions are made on the basis of risk/benefit analysis (e.g., whether to administer a smallpox vaccine or not).	1
13B	SCIENCE, TECHNOLOGY, SOCIETY	2
13.7.07	Compare the knowledge, skills, and methods of early and modern scientists.	2
13.7.08	Understand that the introduction of a new technology can affect human activities worldwide.	1
13.7.09	Describe how occupations use scientific and technological knowledge and skills.	2
13.7.10	Analyze the interaction of resource acquisitions, technological development and ecosystem impact.	3
13.7.11	Compare the effectiveness of reducing, reusing, and recycling in actual situations.	3
13.7.12	Analyze the effects of policies on science and technology issues.	2
13.7.13	Select appropriate scientific instruments and technological devices to take measurements, perform calculations, organize data, or make observations.	2

Data Analysis Tables Grades 4 and 7 Science

Brief Explanation of Data in the Alignment Tables by Column

Table 1

Standards #   Number of standards plus one for a generic standard for each standard.

Standards #   Average number of standards for reviewers. If the number is greater than the actual number in the standard, then at least one reviewer coded an item for the standard/standard but did not find any standard in the standard that corresponded to the item.

Level   The Depth-of-Knowledge level coded by the reviewers for the standards for each standard.

\# of standards
by Level   The number of standards coded at each level

% w/in std
by Level   The percent of standards coded at each level

Hits
Mean & SD   Mean and standard deviation number of items reviewers coded as corresponding to standard. The total is the total number of coded hits.

Cat. Conc.
Accept.   "Yes" indicates that the standard met the acceptable level for criterion. "Yes" if mean is six or more. "Weak" if mean is five to six. "No" if mean is less than five.

Table 2

First five columns repeat columns from Table 1.

Level of Item
w.r.t. Stand   Mean percent and standard deviation of items coded as "under" the Depth-of-Knowledge level of the corresponding standard, as "at" (the same) the Depth-of-Knowledge level of the corresponding standard, and as "above" the Depth-of-Knowledge level of the corresponding standard.

Depth-of-Know.
Consistency
Accept.   "Yes" indicates that 50% or more of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.
"Weak" indicates that 40% to 50% of the items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

"No" indicates that less than 40% items were rated as "at" or "above" the Depth-of-Knowledge level of the corresponding standards.

Table 3

First five columns repeat columns from Table 1 and 2.

Range of Stds.

Stds. Hit   Average number and standard deviation of the standards hit coded by reviewers.

% of Total   Average percent and standard deviation of the total standards that had at least one item coded.

Range of Know.

Accept.   "Yes" indicates that 50% or more of the standards had at least one coded standard.
"Weak" indicates that 40% to 50% of the standards had at least one coded standard.
"No" indicates that 40% or less of the standards had at least one coded standard.

Balance Index
% Hits in
Std/Ttl Hits   Average and standard deviation of the percent of the items hit for a standard of total number of hits (see total under the Hits column).

Index   Average and standard deviation of the Balance Index.

Note: BALANCE INDEX $\quad 1 - (\sum_{k=1} \left| 1/(O) - I_{(k)}/(H) \right|)/2$

Where O $\quad$ = Total number of standards hit for the standard
$I_{(k)}$ = Number of items hit corresponding to standard (k)
H $\quad$ = Total number of items hit for the standard

Bal. of Rep
Accept.   "Yes" indicates that the Balance Index was .7 or above (items evenly distributed among standards).
"Weak" indicates that the Balance Index was .6 to .7 (a high percentage of items coded as corresponding to two or three standards).
"No" indicates that the Balance Index was .6 or less (a high percentage of items coded as corresponding to one standard.)

Categorical Concurrence Between Standards and Assessment for Grade 4

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	1 2 3	1 3 2	16 50 33	16.8	1.6	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	1 2	38 13	74 25	47.6	1.50	YES
13 - Understand the relationships among science, techno ...	1	15.4	1 2	11 4	73 26	12.4	0.49	YES
Total	9	76.6	1 2 3	50 20 2	69 27 2	76.8	0.75	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 4

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	16.8	1.6	41	47	45	45	13	30	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	47.6	1.50	15	34	59	45	25	40	YES
13 - Understand the relationships among science, techno ...	1	15.4	12.4	0.49	0	0	93	23	7	23	YES
Total	9	76.6	76.8	0.75	16	35	63	44	21	38	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 4

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
11 - Understand the process of scientific inquiry and t ...	2	6.4	16.8	1.6	5.8	0.4	91	7	YES	22	2	0.79	0.05	YES
12 - Understand the fundamental concepts, principles an ...	6	54.8	47.6	1.50	32.6	0.8	60	2	YES	62	2	0.79	0.01	YES
13 - Understand the relationships among science, techno ...	1	15.4	12.4	0.49	7.6	1.2	49	6	WEAK	16	1	0.81	0.03	YES
Total	9	76.6	76.8	0.75	15.33	12.26	67	19		33	20	0.80	0.04	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 4

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 - Understand the process of scientific inquiry and t ...	YES	YES	YES	YES
12 - Understand the fundamental concepts, principles an ...	YES	YES	YES	YES
13 - Understand the relationships among science, techno ...	YES	YES	WEAK	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 4 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
58	1	1	2	2	1
59	1	2	2	1	1
60	1	1	1	2	1
61	1	1	1	1	1
62	1	1	2	1	1
63	1	2	1	1	1
64	2	2	3	2	1
65	1	2	2	2	1
66	1	1	2	2	1
67	1	1	1	2	1
68	1	1	2	1	1
69	1	1	1	1	1
70	1	1	1	1	1
71	1	2	1	2	1
72	1	2	2	2	1
73	1	2	2	2	1
74	1	2	1	1	1
75	2	2	2	1	1

Intraclass Correlation: 0.7871
Pairwise Comparison: 0.6653

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
1	2	11.4.02		2	12.4.14		2	11.4.02		2	11.4.02		2	11A	
2	1	12.4.46		2	12.4.46		2	12.4.06		1	12.4.46		1	12.4.46	
3	1	12.4.46		2	12.4.39		2	12.4.39		1	12.4.39		2	12.4.39	
4	2	12.4.24		2	11.4.02		2	12.4.24		2	11.4.02		2	12C	
5	1	13.4.15		1	13.4.15		1	13.4.14		1	13A		1	13A	
6	1	12.4.17		2	12.4.17		2	12.4.21		1	12.4.17		1	12.4.17	
7	2	12.4.07		1	12.4.06		2	12.4.07	12.4.13	2	12.4.07		1	12.4.07	
8	1	12E		1	12E		1	12E		1	12E		1	12E	
9	1	12.4.16		2	11.4.02		2	12.4.16		2	12.4.16		1	12.4.16	
10	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11A	
11	1	12.4.08		1	12.4.08		1	12.4.08		2	12.4.08		2	12.4.08	
12	1	12.4.38		1	12.4.38		1	12.4.38		1	12.4.38		2	12.4.38	
13	1	12.4.14		1	12.4.14		1	12.4.14		2	12.4.14		2	12.4.14	
14	2	12B		2	12B		2	12B		2	12B		1	12B	
15	1	12.4.33		1	12.4.33		2	12.4.33		2	12.4.33		1	12.4.33	
16	1	12.4.34		2	12.4.17		2	12.4.34		1	12.4.17		1	12.4.17	
17	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02	
18	1	12.4.04		1	12.4.09		1	12.4.09		2	12.4.09		2	12.4.09	
19	2	12.4.25		2	12.4.25		2	12.4.25		2	12.4.28		1	12.4.25	
20	2	12.4.04		2	12.4.06		2	12.4.04		2	12.4.04		2	12.4.04	
21	2	12F		2	12F		2	12F		2	12F		1	12F	
22	1	12.4.26		1	12.4.26		1	12.4.26		1	12.4.26		1	12.4.26	
23	2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02		2	11.4.02	
24	2	12.4.05		1	12.4.09		2	12.4.05		2	12.4.09		1	12.4.09	
25	1	12.4.47		2	12.4.47		2	12.4.47		2	11.4.02		2	11.4.02	
26	1	12.4.14		1	12.4.15		2	12.4.14		1	12.4.15		1	12.4.15	
27	2	12.4.13		2	12.4.13		2	12.4.13		1	12.4.13		1	12.4.13	
28	1	12.4.03		2	12.4.03		1	12.4.03		2	12.4.03		1	12.4.03	
29	2	11.4.02		2	11.4.02		3	11.4.02		2	11.4.02		2	12C	
30	1	12.4.05	12.4.09	1	12.4.05		1	12.4.09		1	12.4.05		1	12.4.05	12.4.09
31	2	11.4.01		2	11.4.04		2	11.4.01		2	11.4.02		2	11.4.01	
32	1	11.4.03		2	13.4.03		2	11.4.03		2	13.4.03		2	13.4.03	
33	1	12.4.50		1	12.4.50		1	12.4.50		1	12.4.05		1	12.4.50	
34	1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.10	
35	1	13.4.01		1	13.4.01		1	13.4.01		1	13.4.01		1	13.4.01	
36	1	12.4.27		1	12.4.28		2	12.4.28		2	12.4.20		2	12.4.28	
37	1	13.4.14		1	13.4.14		1	13.4.14		1	13.4.14		1	13.4.14	
38	1	12C		1	11.4.01		2	12.4.15		2	12C		2	12C	
39	1	12.4.36		1	12.4.36		2	12.4.36		1	12.4.36		1	12.4.36	

DOK Levels and Objectives Coded by Each Reviewer for Grade 4

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4	PObj4	S1Obj4
40	2	11.4.05	12.4.26	2	11.4.05	12.4.26	2	12.4.26		2	11.4.05	12.4.26	2	11.4.05	
41	1	12.4.01		1	12.4.01		2	12.4.01		1	12.4.01		1	12.4.01	
42	1	12.4.09		1	12.4.09		2	12.4.09		1	12.4.09		2	12B	
43	1	13.4.06		2	11.4.04		2	11.4.03		2	11.4.03		1	11.4.03	
44	1	12.4.24		1	12.4.24		1	12.4.24		1	12.4.24		1	12.4.24	
45	2	11.4.01		1	11.4.01		2	11.4.05	11.4.06	2	11.4.01		2	11.4.01	
46	1	12.4.50		1	12.4.50		1	12.4.50		1	12.4.05		1	12.4.50	
47	1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15	
48	2	12.4.26		2	11.4.06		3	11.4.06		2	11.4.01		2	11.4.02	
49	1	12.4.02		1	12.4.02		1	12.4.02		1	12.4.02		1	12.4.02	
50	1	12.4.04		1	12.4.04		1	12.4.04		1	12.4.04		1	12.4.04	
51	2	11.4.06		2	11.4.06		3	11.4.06		2	11.4.06		2	11.4.06	
52	1	13.4.08		1	13.4.08		1	13.4.08		1	13.4.08		1	13.4.08	
53	1	11.4.05		1	11.4.01		2	11.4.05		2	11A		2	11A	
54	1	12.4.48		2	12.4.48		2	12.4.48		2	12F		1	12F	
55	1	13.4.10		1	13.4.10		1	13.4.10		1	13.4.01		1	13.4.10	
56	2	12.4.27		2	12.4.27		2	12.4.27		2	12.4.27		2	12.4.27	
57	1	11.4.02		2	11.4.04		2	11.4.04		1	11.4.01		1	11.4.01	
58	1	13.4.14		1	13.4.14		2	13.4.15		2	13.4.15		1	13.4.14	
59	1	12.4.34		2	12.4.34		2	12.4.34		1	12.4.34		1	12.4.34	
60	1	12.4.49		1	12.4.49		1	12.4.49		2	12.4.49		1	12.4.49	
61	1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15		1	13.4.15	
62	1	12.4.48		1	12.4.48		2	12.4.48		1	12.4.48		1	12.4.48	
63	1	12.4.18		2	12.4.18		1	12.4.18		1	12.4.18		1	12.4.18	
64	2	11.4.01		2	11.4.03		3	11.4.03		2	11.4.03		1	11.4.03	
65	1	12.4.26		2	12.4.26		2	11.4.05		2	12.4.26		1	12.4.26	
66	1	12.4.15		1	12.4.15		2	12.4.15		2	12.4.15		1	12.4.15	
67	1	12.4.12		1	12.4.12		1	12.4.12		2	12A		1	12.4.12	
68	1	11.4.03		1	11.4.03		2	11.4.04		1	13.4.06		1	13.4.06	
69	1	12.4.17		1	12.4.17		1	12.4.17		1	12.4.17		1	12.4.17	
70	1	13.4.01		1	13.4.01		1	13.4.15	13.4.01	1	13.4.15		1	13.4.01	
71	1	13.4.02		2	13.4.02		1	13.4.02		2	13.4.02		1	13.4.02	
72	1	12.4.25		2	12.4.28		2	12.4.28		2	12.4.28		1	12.4.28	
73	1	11.4.05		2	11.4.05		2	11.4.05		2	11.4.05		1	11.4.05	
74	1	12.4.09		2	12.4.09		1	12.4.09		1	12.4.09		1	12.4.09	
75	2	12.4.25		2	12.4.28	11.4.02	2	12B		1	12.4.28		1	12.4.28	

Objective Pairwise Comparison: 0.6893
Standard Pairwise Comparison: 0.9174

Objectives Coded to Each Item by Reviewers for Grade 4

Low		Medium		High
5		5.12		8

1	11A	11.4.02	11.4.02	11.4.02	12.4.14			
2	12.4.06	12.4.46	12.4.46	12.4.46	12.4.46			
3	12.4.39	12.4.39	12.4.39	12.4.39	12.4.46			
4	11.4.02	11.4.02	12C	12.4.24	12.4.24			
5	13A	13A	13.4.14	13.4.15	13.4.15			
6	12.4.17	12.4.17	12.4.17	12.4.17	12.4.21			
7	12.4.06	12.4.07	12.4.07	12.4.07	12.4.07	12.4.13		
8	12E	12E	12E	12E	12E			
9	11.4.02	12.4.16	12.4.16	12.4.16	12.4.16			
10	11A	11.4.02	11.4.02	11.4.02	11.4.02			
11	12.4.08	12.4.08	12.4.08	12.4.08	12.4.08			
12	12.4.38	12.4.38	12.4.38	12.4.38	12.4.38			
13	12.4.14	12.4.14	12.4.14	12.4.14	12.4.14			
14	12B	12B	12B	12B	12B			
15	12.4.33	12.4.33	12.4.33	12.4.33	12.4.33			
16	12.4.17	12.4.17	12.4.17	12.4.34	12.4.34			
17	11.4.02	11.4.02	11.4.02	11.4.02	11.4.02			
18	12.4.04	12.4.09	12.4.09	12.4.09	12.4.09			
19	12.4.25	12.4.25	12.4.25	12.4.25	12.4.28			
20	12.4.04	12.4.04	12.4.04	12.4.04	12.4.06			
21	12F	12F	12F	12F	12F			
22	12.4.26	12.4.26	12.4.26	12.4.26	12.4.26			
23	11.4.02	11.4.02	11.4.02	11.4.02	11.4.02			
24	12.4.05	12.4.05	12.4.09	12.4.09	12.4.09			
25	11.4.02	11.4.02	12.4.47	12.4.47	12.4.47			
26	12.4.14	12.4.14	12.4.15	12.4.15	12.4.15			
27	12.4.13	12.4.13	12.4.13	12.4.13	12.4.13			
28	12.4.03	12.4.03	12.4.03	12.4.03	12.4.03			
29	11.4.02	11.4.02	11.4.02	11.4.02	12C			
30	12.4.05	12.4.05	12.4.05	12.4.05	12.4.09	12.4.09	12.4.09	
31	11.4.01	11.4.01	11.4.01	11.4.02	11.4.04			
32	11.4.03	11.4.03	13.4.03	13.4.03	13.4.03			
33	12.4.05	12.4.50	12.4.50	12.4.50	12.4.50			
34	13.4.10	13.4.10	13.4.10	13.4.10	13.4.10			
35	13.4.01	13.4.01	13.4.01	13.4.01	13.4.01			
36	12.4.20	12.4.27	12.4.28	12.4.28	12.4.28			
37	13.4.14	13.4.14	13.4.14	13.4.14	13.4.14			
38	11.4.01	12C	12C	12C	12.4.15			
39	12.4.36	12.4.36	12.4.36	12.4.36	12.4.36			
40	11.4.05	11.4.05	11.4.05	11.4.05	12.4.26	12.4.26	12.4.26	12.4.26
41	12.4.01	12.4.01	12.4.01	12.4.01	12.4.01			
42	12B	12.4.09	12.4.09	12.4.09	12.4.09			
43	11.4.03	11.4.03	11.4.03	11.4.04	13.4.06			
44	12.4.24	12.4.24	12.4.24	12.4.24	12.4.24			
45	11.4.01	11.4.01	11.4.01	11.4.01	11.4.05	11.4.06		
46	12.4.05	12.4.50	12.4.50	12.4.50	12.4.50			
47	13.4.15	13.4.15	13.4.15	13.4.15	13.4.15			
48	11.4.01	11.4.02	11.4.06	11.4.06	12.4.26			
49	12.4.02	12.4.02	12.4.02	12.4.02	12.4.02			
50	12.4.04	12.4.04	12.4.04	12.4.04	12.4.04			
51	11.4.06	11.4.06	11.4.06	11.4.06	11.4.06			
52	13.4.08	13.4.08	13.4.08	13.4.08	13.4.08			
53	11A	11A	11.4.01	11.4.05	11.4.05			
54	12F	12F	12.4.48	12.4.48	12.4.48			
55	13.4.01	13.4.10	13.4.10	13.4.10	13.4.10			
56	12.4.27	12.4.27	12.4.27	12.4.27	12.4.27			
57	11.4.01	11.4.01	11.4.02	11.4.04	11.4.04			

58	13.4.14	13.4.14	13.4.14	13.4.15	13.4.15	
59	12.4.34	12.4.34	12.4.34	12.4.34	12.4.34	
60	12.4.49	12.4.49	12.4.49	12.4.49	12.4.49	
61	13.4.15	13.4.15	13.4.15	13.4.15	13.4.15	
62	12.4.48	12.4.48	12.4.48	12.4.48	12.4.48	
63	12.4.18	12.4.18	12.4.18	12.4.18	12.4.18	
64	11.4.01	11.4.03	11.4.03	11.4.03	11.4.03	
65	11.4.05	12.4.26	12.4.26	12.4.26	12.4.26	
66	12.4.15	12.4.15	12.4.15	12.4.15	12.4.15	
67	12A	12.4.12	12.4.12	12.4.12	12.4.12	
68	11.4.03	11.4.03	11.4.04	13.4.06	13.4.06	
69	12.4.17	12.4.17	12.4.17	12.4.17	12.4.17	
70	13.4.01	13.4.01	13.4.01	13.4.01	13.4.15	13.4.15
71	13.4.02	13.4.02	13.4.02	13.4.02	13.4.02	
72	12.4.25	12.4.28	12.4.28	12.4.28	12.4.28	
73	11.4.05	11.4.05	11.4.05	11.4.05	11.4.05	
74	12.4.09	12.4.09	12.4.09	12.4.09	12.4.09	
75	11.4.02	12B	12.4.25	12.4.28	12.4.28	12.4.28

Items Coded by Reviewers to Each Objective for Grade 4

Low		Medium		High
0		4.517647		30

11																					
11A	1	10	53	53																	
11.4.01	31	31	31	38	45	45	45	45	48	53	57	57	64								
11.4.02	1	1	1	4	4	9	10	10	10	10	17	17	17	17	17	23	23	23	23	23	
	25	25	29	29	29	29	31	48	57	75											
11.4.03	32	32	43	43	43	64	64	64	64	68	68										
11.4.04	31	43	57	57	68																
11B																					
11.4.05	40	40	40	40	45	53	53	65	73	73	73	73	73								
11.4.06	45	48	48	51	51	51	51	51													
12																					
12A	67																				
12.4.01	41	41	41	41	41																
12.4.02	49	49	49	49	49																
12.4.03	28	28	28	28	28																
12.4.04	18	20	20	20	20	50	50	50	50	50											
12.4.05	24	24	30	30	30	30	33	46													
12.4.06	2	7	20																		
12B	14	14	14	14	14	42	75														
12.4.07	7	7	7	7																	
12.4.08	11	11	11	11	11																
12.4.09	18	18	18	18	24	24	24	30	30	30	42	42	42	42	74	74	74	74	74		
12.4.10																					
12.4.11																					
12.4.12	67	67	67	67																	
12.4.13	7	27	27	27	27	27															
12C	4	29	38	38	38																
12.4.14	1	13	13	13	13	13	26	26													
12.4.15	26	26	26	38	66	66	66	66	66												
12.4.16	9	9	9	9																	
12.4.17	6	6	6	6	16	16	16	69	69	69	69	69									
12.4.18	63	63	63	63	63																
12.4.19																					
12.4.20	36																				
12.4.21	6																				
12.4.22																					
12.4.23																					
12.4.24	4	4	44	44	44	44	44														
12D																					
12.4.25	19	19	19	19	72	75															
12.4.26	22	22	22	22	22	40	40	40	40	48	65	65	65	65							
12.4.27	36	56	56	56	56	56															
12.4.28	19	36	36	36	72	72	72	72	75	75	75										
12E	8	8	8	8	8																
12.4.29																					
12.4.30																					
12.4.31																					
12.4.32																					
12.4.33	15	15	15	15	15																
12.4.34	16	16	59	59	59	59	59														
12.4.35																					
12.4.36	39	39	39	39	39																
12.4.37																					
12.4.38	12	12	12	12	12																
12.4.39	3	3	3	3																	
12.4.40																					
12.4.41																					

Label																
12.4.42																
12.4.43																
12.4.44																
12F	21	21	21	21	21	54	54									
12.4.45																
12.4.46	2	2	2	2	3											
12.4.47	25	25	25													
12.4.48	54	54	54	62	62	62	62	62								
12.4.49	60	60	60	60	60											
12.4.50	33	33	33	33	46	46	46	46								
12.4.51																
13																
13A	5	5														
13.4.01	35	35	35	35	35	55	70	70	70	70						
13.4.02	71	71	71	71	71											
13.4.03	32	32	32													
13.4.04																
13.4.05																
13.4.06	43	68	68													
13.4.07																
13.4.08	52	52	52	52	52											
13.4.09																
13.4.10	34	34	34	34	34	55	55	55	55							
13.4.11																
13.4.12																
13.4.13																
13.4.14	5	37	37	37	37	37	58	58	58							
13.4.15	5	5	47	47	47	47	47	58	58	61	61	61	61	61	70	70

Number of Reviewers Coding an Item by Objective for Grade 4
(Item Number: Number of Reviewers)

Low		Medium		High
1		2		5

Objective												
11												
11A	1:1	10:1	53:2									
11.4.01	31:3	38:1	45:4	48:1	53:1	57:2	64:1					
11.4.02	1:3	4:2	9:1	10:4	17:5	23:5	25:2	29:4	31:1	48:1	57:1	75:1
11.4.03	32:2	43:3	64:4	68:2								
11.4.04	31:1	43:1	57:2	68:1								
11B												
11.4.05	40:4	45:1	53:2	65:1	73:5							
11.4.06	45:1	48:2	51:5									
12												
12A	67:1											
12.4.01	41:5											
12.4.02	49:5											
12.4.03	28:5											
12.4.04	18:1	20:4	50:5									
12.4.05	24:2	30:4	33:1	46:1								
12.4.06	2:1	7:1	20:1									
12B	14:5	42:1	75:1									
12.4.07	7:4											
12.4.08	11:5											
12.4.09	18:4	24:3	30:3	42:4	74:5							
12.4.10												
12.4.11												
12.4.12	67:4											
12.4.13	7:1	27:5										
12C	4:1	29:1	38:3									
12.4.14	1:1	13:5	26:2									
12.4.15	26:3	38:1	66:5									
12.4.16	9:4											
12.4.17	6:4	16:3	69:5									
12.4.18	63:5											
12.4.19												
12.4.20	36:1											
12.4.21	6:1											
12.4.22												
12.4.23												
12.4.24	4:2	44:5										
12D												
12.4.25	19:4	72:1	75:1									
12.4.26	22:5	40:4	48:1	65:4								
12.4.27	36:1	56:5										
12.4.28	19:1	36:3	72:4	75:3								
12E	8:5											
12.4.29												
12.4.30												
12.4.31												
12.4.32												
12.4.33	15:5											
12.4.34	16:2	59:5										
12.4.35												
12.4.36	39:5											
12.4.37												
12.4.38	12:5											
12.4.39	3:4											
12.4.40												
12.4.41												
12.4.42												

12.4.43					
12.4.44					
12F	21:5	54:2			
12.4.45					
12.4.46	2:4	3:1			
12.4.47	25:3				
12.4.48	54:3	62:5			
12.4.49	60:5				
12.4.50	33:4	46:4			
12.4.51					
13					
13A	5:2				
13.4.01	35:5	55:1	70:4		
13.4.02	71:5				
13.4.03	32:3				
13.4.04					
13.4.05					
13.4.06	43:1	68:2			
13.4.07					
13.4.08	52:5				
13.4.09					
13.4.10	34:5	55:4			
13.4.11					
13.4.12					
13.4.13					
13.4.14	5:1	37:5	58:3		
13.4.15	5:2	47:5	58:2	61:5	70:2

Number of Reviewers Coding an Objective by Item for Grade 4
(Objective: Number of Reviewers)

Low		Medium		High
1		2		5

1	11A:1	11.4.02:3	12.4.14:1	
2	12.4.06:1	12.4.46:4		
3	12.4.39:4	12.4.46:1		
4	11.4.02:2	12C:1	12.4.24:2	
5	13A:2	13.4.14:1	13.4.15:2	
6	12.4.17:4	12.4.21:1		
7	12.4.06:1	12.4.07:4	12.4.13:1	
8	12E:5			
9	11.4.02:1	12.4.16:4		
10	11A:1	11.4.02:4		
11	12.4.08:5			
12	12.4.38:5			
13	12.4.14:5			
14	12B:5			
15	12.4.33:5			
16	12.4.17:3	12.4.34:2		
17	11.4.02:5			
18	12.4.04:1	12.4.09:4		
19	12.4.25:4	12.4.28:1		
20	12.4.04:4	12.4.06:1		
21	12F:5			
22	12.4.26:5			
23	11.4.02:5			
24	12.4.05:2	12.4.09:3		
25	11.4.02:2	12.4.47:3		
26	12.4.14:2	12.4.15:3		
27	12.4.13:5			
28	12.4.03:5			
29	11.4.02:4	12C:1		
30	12.4.05:4	12.4.09:3		
31	11.4.01:3	11.4.02:1	11.4.04:1	
32	11.4.03:2	13.4.03:3		
33	12.4.05:1	12.4.50:4		
34	13.4.10:5			
35	13.4.01:5			
36	12.4.20:1	12.4.27:1	12.4.28:3	
37	13.4.14:5			
38	11.4.01:1	12C:3	12.4.15:1	
39	12.4.36:5			
40	11.4.05:4	12.4.26:4		
41	12.4.01:5			
42	12B:1	12.4.09:4		
43	11.4.03:3	11.4.04:1	13.4.06:1	
44	12.4.24:5			
45	11.4.01:4	11.4.05:1	11.4.06:1	
46	12.4.05:1	12.4.50:4		
47	13.4.15:5			
48	11.4.01:1	11.4.02:1	11.4.06:2	12.4.26:1
49	12.4.02:5			
50	12.4.04:5			
51	11.4.06:5			
52	13.4.08:5			
53	11A:2	11.4.01:1	11.4.05:2	
54	12F:2	12.4.48:3		
55	13.4.01:1	13.4.10:4		
56	12.4.27:5			
57	11.4.01:2	11.4.02:1	11.4.04:2	

58	13.4.14:3	13.4.15:2		
59	12.4.34:5			
60	12.4.49:5			
61	13.4.15:5			
62	12.4.48:5			
63	12.4.18:5			
64	11.4.01:1	11.4.03:4		
65	11.4.05:1	12.4.26:4		
66	12.4.15:5			
67	12A:1	12.4.12:4		
68	11.4.03:2	11.4.04:1	13.4.06:2	
69	12.4.17:5			
70	13.4.01:4	13.4.15:2		
71	13.4.02:5			
72	12.4.25:1	12.4.28:4		
73	11.4.05:5			
74	12.4.09:5			
75	11.4.02:1	12B:1	12.4.25:1	12.4.28:3

Assessment Item DOK vs. Consensus DOK for Grade 4
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

11 [2]:										
11A [2]:	1:1[2]	10:1[2]	53:2[2]							
11.4.01 [1]:	31:3[2]	38:1[1]	45:4[1.75]	48:1[2]	53:1[1]	57:2[1]	64:1[2]			
11.4.02 [2]:	1:3[2]	4:2[2]	9:1[2]	10:4[2]	17:5[2]	23:5[2]	25:2[2]	29:4[2.25]	31:1[2]	48:1[2]	57:1[1]	75:1[2]
11.4.03 [2]:	32:2[1.5]	43:3[1.67]	64:4[2]	68:2[1]						
11.4.04 [2]:	31:1[2]	43:1[2]	57:2[2]	68:1[2]						
11B [3]:										
11.4.05 [3]:	40:4[2]	45:1[2]	53:2[1.5]	65:1[2]	73:5[1.6]					
11.4.06 [3]:	45:1[2]	48:2[2.5]	51:5[2.2]							
12 [1]:										
12A [2]:	67:1[2]									
12.4.01 [2]:	41:5[1.2]									
12.4.02 [1]:	49:5[1]									
12.4.03 [2]:	28:5[1.4]									
12.4.04 [1]:	18:1[1]	20:4[2]	50:5[1]							
12.4.05 [1]:	24:2[2]	30:4[1]	33:1[1]	46:1[1]						
12.4.06 [2]:	2:1[2]	7:1[1]	20:1[2]							
12B [1]:	14:5[1.8]	42:1[2]	75:1[2]							
12.4.07 [1]:	7:4[1.75]									
12.4.08 [1]:	11:5[1.4]									
12.4.09 [1]:	18:4[1.5]	24:3[1.33]	30:3[1]	42:4[1.25]	74:5[1.2]					
12.4.10 [1]:										
12.4.11 [1]:										
12.4.12 [1]:	67:4[1]									
12.4.13 [2]:	7:1[2]	27:5[1.6]								
12C [1]:	4:1[2]	29:1[2]	38:3[1.67]							
12.4.14 [1]:	1:1[2]	13:5[1.4]	26:2[1.5]							
12.4.15 [1]:	26:3[1]	38:1[2]	66:5[1.4]							
12.4.16 [2]:	9:4[1.5]									
12.4.17	6:4[1.2	16:3[1.	69:5[1]							

[1]:	5]	33]		
12.4.18 [1]:	63:5[1.2]			
12.4.19 [1]:				
12.4.20 [1]:	36:1[2]			
12.4.21 [1]:	6:1[2]			
12.4.22 [2]:				
12.4.23 [1]:				
12.4.24 [1]:	4:2[2]	44:5[1]		
12D [2]:				
12.4.25 [1]:	19:4[1.75]	72:1[1]	75:1[2]	
12.4.26 [2]:	22:5[1]	40:4[2]	48:1[2]	65:4[1.5]
12.4.27 [2]:	36:1[1]	56:5[2]		
12.4.28 [2]:	19:1[2]	36:3[1.67]	72:4[1.75]	75:3[1.33]
12E [1]:	8:5[1]			
12.4.29 [1]:				
12.4.30 [1]:				
12.4.31 [2]:				
12.4.32 [1]:				
12.4.33 [2]:	15:5[1.4]			
12.4.34 [2]:	16:2[1.5]	59:5[1.4]		
12.4.35 [1]:				
12.4.36 [1]:	39:5[1.2]			
12.4.37 [1]:				
12.4.38 [1]:	12:5[1.2]			
12.4.39 [1]:	3:4[1.75]			
12.4.40 [1]:				
12.4.41 [1]:				
12.4.42 [1]:				
12.4.43 [1]:				
12.4.44 [1]:				
12F [1]:	21:5[1.8]	54:2[1.5]		
12.4.45 [1]:				
12.4.46 [2]:	2:4[1.25]	3:1[1]		
12.4.47	25:3[1.			

[1]:	67]			
12.4.48 [1]:	54:3[1. 67]	62:5[1. 2]		
12.4.49 [1]:	60:5[1. 2]			
12.4.50 [1]:	33:4[1]	46:4[1]		
12.4.51 [1]:				
13 [1]:				
13A [1]:	5:2[1]			
13.4.01 [1]:	35:5[1]	55:1[1]	70:4[1]	
13.4.02 [1]:	71:5[1. 4]			
13.4.03 [2]:	32:3[2]			
13.4.04 [1]:				
13.4.05 [1]:				
13.4.06 [1]:	43:1[1]	68:2[1]		
13.4.07 [1]:				
13.4.08 [1]:	52:5[1]			
13.4.09 [2]:				
13.4.10 [1]:	34:5[1]	55:4[1]		
13.4.11 [2]:				
13.4.12 [2]:				
13.4.13 [1]:				
13.4.14 [1]:	5:1[1]	37:5[1]	58:3[1]	
13.4.15 [1]:	5:2[1]	47:5[1]	58:2[2]	61:5[1]	70:2[1]

Categorical Concurrence Between Standards and Assessment for Grade 7

Standards			Level by Objective			Hits		Cat. Concurr.
Title	Goals #	Objs #	Level	# of objs by Level	% w/in std by Level	Mean	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	1 2	3 7	30 70	17.2	1.72	YES
12 - Understand the fundamental concepts, principles an ...	6	105.2	1 2	90 11	89 10	44.4	1.36	YES
13 - Understand the relationships among science, techno ...	2	13.8	1 2 3	6 5 2	46 38 15	14.8	1.47	YES
Total	10	129.8	1 2 3	99 23 2	79 18 1	76.4	1.02	

Depth-of-Knowledge Consistency Between Standards and Assessment for Grade 7

Standards			Hits		Level of Item w.r.t. Standard						DOK Consistency
					% Under		% At		% Above		
Title	Goals #	Objs #	M	S.D.	M	S.D.	M	S.D.	M	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	17.2	1.72	26	36	59	41	15	34	YES
12 - Understand the fundamental concepts, principles an ...	6	105.2	44.4	1.36	9	27	62	45	29	43	YES
13 - Understand the relationships among science, techno ...	2	13.8	14.8	1.47	40	48	49	47	10	27	YES
Total	10	129.8	76.4	1.02	17	35	59	45	23	40	

Range-of-Knowledge Correspondence and Balance of Representation Between Standards and Assessment for Grade 7

Standards			Hits		Range of Objectives				Rng. of Know.	Balance Index				Bal. of Represent.
					# Objs Hit		% of Total			% Hits in Std/Ttl Hits		Index		
Title	Goals #	Objs #	Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	
11 - Understand the processes of scientific inquiry and ...	2	10.8	17.2	1.72	6.2	1.17	58	14	YES	23	2	0.63	0.07	WEAK
12 - Understand the fundamental concepts, principles an ...	6	105.2	44.4	1.36	31.8	1.94	30	2	NO	58	2	0.80	0.03	YES
13 - Understand the relationships among science, techno ...	2	13.8	14.8	1.47	8.4	1.02	61	7	YES	19	2	0.78	0.05	YES
Total	10	129.8	76.4	1.02	15.47	11.67	50	17		33	18	0.74	0.09	

Summary of Attainment of Acceptable Alignment Level on Four Content Focus Criteria for Grade 7

Standards	Alignment Criteria			
	Categorical Concurrence	Depth-of-Knowledge Consistency	Range of Knowledge	Balance of Representation
11 - Understand the processes of scientific inquiry and ...	YES	YES	YES	WEAK
12 - Understand the fundamental concepts, principles an ...	YES	YES	NO	YES
13 - Understand the relationships among science, techno ...	YES	YES	YES	YES

Depth-of-Knowledge Levels by Item and Reviewers for Grade 7 Intraclass Correlation

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

Item	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5
59	2	2	2	2	1
60	1	1	1	1	1
61	2	2	1	1	1
62	1	1	2	1	1
63	1	1	1	1	1
64	2	1	1	1	2
65	1	1	1	1	1
66	2	1	2	1	2
67	1	2	1	1	1
68	1	1	1	1	1
69	2	2	2	2	1
70	1	1	2	1	1
71	2	1	2	2	1
72	2	2	2	2	1
73	1	1	2	1	2
74	1	1	1	1	2
75	2	2	3	2	2

Intraclass Correlation: 0.6754
Pairwise Comparison: 0.6533

DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4
1	2	12.7.01		2	11.7.02		1	12.7.01		1	12A		1
2	2	12E		1	12.7.83	11.7.02	2	12.7.80		1	11.7.02		1
3	1	12.7.64		1	12.7.64		1	12.7.34		2	12.7.64		2
4	1	12.7.43		2	12.7.43	11.7.02	1	12.7.39		1	11.7.02		1
5	1	12.7.78		1	12.7.66		2	12E		1	12E		1
6	2	12.7.100		1	12.7.100		2	12.7.91		1	12.7.10		1
7	2	12.7.02		2	11.7.02		1	12.7.82		1	11.7.02		2
8	2	11.7.04		1	11.7.02		1	12.7.16		1	12.7.15		1
9	2	11.7.02		1	11.7.02		1	12.7.76		2	11.7.02		2
10	2	11.7.02		1	11.7.02		1	11.7.01		2	11.7.02		2
11	1	12.7.15		1	12.7.31		1	12.7.15		1	12A		1
12	1	12.7.35		1	12.7.35		1	12.7.35		1	12.7.35		1
13	1	13.7.01		1	13.7.11		1	13.7.11		1	12B		1
14	2	12.7.52		2	11.7.09		2	11.7.08		2	12.7.52		2
15	2	11.7.02		1	11.7.02		1	11.7.02		1	12.7.68		2
16	1	12.7.26		1	12.7.26		2	11.7.02		2	12.7.26		1
17	2	12.7.25	12.7.36	1	12.7.25		1	12.7.88		2	12.7.88		2
18	2	11.7.02		1	11.7.02		2	11.7.02		2	11.7.02		2
19	1	11.7.02		1	11.7.02		2	12.7.06		2	11.7.02		2
20	1	12.7.36		1	12.7.36		2	12.7.50		2	12.7.36		1
21	2	11.7.05		1	11.7.01		2	11.7.01		2	13.7.04		2
22	2	12.7.30		2	12.7.30		2	12.7.30		2	12.7.30		2
23	2	12C		1	12.7.61		2	12.7.61		2	12C		1
24	1	12.7.78		1	12.7.78		1	12.7.78		1	12.7.71		1
25	1	12.7.79		1	12.7.80		1	12.7.80		1	12.7.80		1
26	2	11.7.01		2	11.7.02		1	11.7.02		2	11.7.01		2
27	1	12.7.17		1	12.7.15		1	12.7.31		1	12A		1
28	2	12.7.56		1	12.7.56		2	12.7.56		1	12.7.56		2
29	2	11.7.02		2	12.7.63		2	12.7.63		2	11.7.02		2
30	1	12.7.98		1	12.7.98		1	12.7.98		1	12.7.98		1
31	2	11.7.06		1	13.7.04		1	13.7.03		1	13.7.03		1
32	2	12.7.34		1	11.7.08		2	11B		2	12C		1
33	1	12.7.03		1	12.7.03		1	12.7.03		1	12.7.03		1
34	2	12B		1	11.7.02		1	13.7.11		2	11.7.02		2
35	1	12.7.65		1	12.7.65		1	12.7.63		1	12.7.65		2
36	1	12F		2	12F		2	12.7.98		2	12F		1
37	1	12C		1	13.7.13		2	13.7.13		2	11A		1
38	1	13A		1	13.7.09		1	13.7.09		1	13.7.09		1
39	1	13.7.03		1	13.7.02		2	13.7.03		1	13.7.03		1
40	2	11.7.08		2	12.7.63		1	12.7.63		2	12D		1
41	1	12.7.02		1	12.7.02		1	12.7.02		1	12.7.02		1
42	1	12.7.26		1	12.7.27		2	12.7.27		2	12.7.26		1
43	1	12D		1	12.7.64		1	12D		1	12D		1
44	2	11.7.01		2	11.7.06		2	11.7.05		1	13.7.03		2
45	1	13.7.10		1	13.7.10		2	13.7.11		1	13B		1
46	1	12.7.98		1	12.7.98		2	12.7.98		2	12.7.98		1
47	1	12.7.05		1	12.7.05		1	12.7.05		1	12.7.11		1
48	1	11.7.01		1	11.7.01		1	11.7.02		1	11A		1
49	1	12.7.48		2	12.7.45		2	12.7.46		2	12.7.46		2
50	1	11.7.01		1	11.7.01		1	11.7.01		1	11.7.01		1
51	1	12.7.72		1	12.7.28		2	12.7.28		1	12B		1
52	1	12C		1	12.7.35		2	12.7.35		1	12C		1
53	2	13.7.06		1	13.7.08		2	13.7.06		2	13.7.12	12.7.06	1
54	1	12.7.99		1	12.7.99		1	12.7.99		1	12.7.99		1
55	2	12.7.65		2	12.7.65		2	12.7.65		2	12.7.65		1
56	1	12.7.92		1	12.7.92		2	12.7.10		2	12.7.92		1

DOK Levels and Objectives Coded by Each Reviewer for Grade 7

Item	DOK0	PObj0	S1Obj0	DOK1	PObj1	S1Obj1	DOK2	PObj2	S1Obj2	DOK3	PObj3	S1Obj3	DOK4
57	1	13.7.02		1	13.7.03		1	13.7.03		1	13.7.03		1
58	1	12.7.04		1	12.7.04		1	12.7.02		1	12.7.04		1
59	2	11.7.10		2	11.7.07		2	11.7.07		2	11		1
60	1	12.7.16		1	12.7.16		1	12.7.16		1	12A		1
61	2	12.7.68		2	12.7.68		1	12.7.63		1	12D		1
62	1	13B		1	13.7.10		2	13.7.11		1	13B		1
63	1	13.7.01		1	13.7.01		1	13.7.01	13.7.13	1	13.7.01		1
64	2	11.7.04		1	11.7.04		1	11.7.04		1	11A		2
65	1	12.7.34		1	12.7.34		1	12.7.34		1	12.7.34		1
66	2	13.7.12		1	13.7.10		2	13.7.12		1	13B		2
67	1	12B		2	12.7.30		1	12.7.30		1	12A		1
68	1	13.7.01		1	13.7.01		1	13.7.01		1	13.7.01		1
69	2	12.7.98		2	12F		2	12.7.10		2	12F		1
70	1	13.7.04		1	13.7.02	13.7.03	2	11.7.01		1	13.7.04		1
71	2	13B		1	13.7.08		2	13.7.08		2	13.7.02	13.7.03	1
72	2	12.7.40		2	12.7.40		2	12.7.40		2	12C		1
73	1	12B		1	12.7.26		2	12B		1	12B		2
74	1	13.7.11		1	13.7.11		1	13.7.11		1	13B		2
75	2	11.7.10		2	12.7.63		3	11.7.08		2	11		2

Objective Pairwise Comparison: 0.4537
Standard Pairwise Comparison: 0.836

Objectives Coded to Each Item by Reviewers for Grade 7

Low		Medium		High
5		5.093333		6

1	11.7.02	12A	12A	12.7.01	12.7.01
2	11.7.02	11.7.02	11.7.02	12E	12.7.80	12.7.83
3	12.7.34	12.7.64	12.7.64	12.7.64	12.7.64
4	11.7.02	11.7.02	11.7.02	12.7.39	12.7.43	12.7.43
5	12.7.66	12E	12E	12E	12.7.78
6	12.7.10	12.7.91	12.7.100	12.7.100	12.7.100
7	11.7.02	11.7.02	11.7.02	12.7.02	12.7.82
8	11.7.02	11.7.04	12.7.15	12.7.16	12.7.30
9	11.7.02	11.7.02	11.7.02	12.7.76	12.7.76
10	11.7.01	11.7.02	11.7.02	11.7.02	11.7.02
11	12A	12A	12.7.15	12.7.15	12.7.31
12	12.7.35	12.7.35	12.7.35	12.7.35	12.7.35
13	12B	12B	13.7.01	13.7.11	13.7.11
14	11A	11.7.08	11.7.09	12.7.52	12.7.52
15	11.7.02	11.7.02	11.7.02	11.7.02	12.7.68
16	11.7.02	11.7.02	12.7.26	12.7.26	12.7.26
17	12.7.25	12.7.25	12.7.36	12.7.88	12.7.88	12.7.88
18	11.7.02	11.7.02	11.7.02	11.7.02	11.7.02
19	11.7.02	11.7.02	11.7.02	11.7.02	12.7.06
20	12C	12.7.36	12.7.36	12.7.36	12.7.50
21	11.7.01	11.7.01	11.7.05	13.7.04	13.7.04
22	12.7.30	12.7.30	12.7.30	12.7.30	12.7.30
23	12C	12C	12C	12.7.61	12.7.61
24	12.7.71	12.7.78	12.7.78	12.7.78	12.7.78
25	12.7.79	12.7.80	12.7.80	12.7.80	12.7.80
26	11.7.01	11.7.01	11.7.02	11.7.02	11.7.02
27	12A	12A	12.7.15	12.7.17	12.7.31
28	12.7.56	12.7.56	12.7.56	12.7.56	12.7.56
29	11.7.02	11.7.02	11.7.02	12.7.63	12.7.63
30	12.7.98	12.7.98	12.7.98	12.7.98	12.7.98
31	11.7.06	13.7.03	13.7.03	13.7.04	13.7.04
32	11B	11.7.08	12C	12.7.34	12.7.34
33	12.7.03	12.7.03	12.7.03	12.7.03	12.7.03
34	11.7.02	11.7.02	11.7.02	12B	13.7.11
35	12.7.63	12.7.65	12.7.65	12.7.65	12.7.65
36	12F	12F	12F	12F	12.7.98
37	11A	12C	12.7.66	13.7.13	13.7.13
38	13A	13.7.09	13.7.09	13.7.09	13.7.09
39	13.7.02	13.7.03	13.7.03	13.7.03	13.7.03
40	11.7.08	12D	12D	12.7.63	12.7.63
41	12.7.02	12.7.02	12.7.02	12.7.02	12.7.02
42	12.7.26	12.7.26	12.7.26	12.7.27	12.7.27
43	12D	12D	12D	12D	12.7.64
44	11.7.01	11.7.05	11.7.06	11.7.06	13.7.03
45	13B	13B	13.7.10	13.7.10	13.7.11
46	12.7.98	12.7.98	12.7.98	12.7.98	12.7.98
47	12.7.05	12.7.05	12.7.05	12.7.05	12.7.11
48	11A	11.7.01	11.7.01	11.7.01	11.7.02
49	12.7.33	12.7.45	12.7.46	12.7.46	12.7.48
50	11.7.01	11.7.01	11.7.01	11.7.01	11.7.01
51	12B	12B	12.7.28	12.7.28	12.7.72
52	12C	12C	12C	12.7.35	12.7.35
53	12.7.06	13.7.06	13.7.06	13.7.06	13.7.08	13.7.12
54	12.7.99	12.7.99	12.7.99	12.7.99	12.7.99
55	12.7.65	12.7.65	12.7.65	12.7.65	12.7.65
56	12.7.10	12.7.92	12.7.92	12.7.92	12.7.92
57	13.7.02	13.7.03	13.7.03	13.7.03	13.7.03

58	12A	12.7.02	12.7.04	12.7.04	12.7.04	
59	11	11.7.07	11.7.07	11.7.07	11.7.10	
60	12A	12.7.16	12.7.16	12.7.16	12.7.16	
61	12D	12.7.63	12.7.68	12.7.68	12.7.68	
62	12.7.89	13B	13B	13.7.10	13.7.11	
63	13.7.01	13.7.01	13.7.01	13.7.01	13.7.01	13.7.13
64	11A	11.7.04	11.7.04	11.7.04	11.7.04	
65	12.7.34	12.7.34	12.7.34	12.7.34	12.7.34	
66	13B	13.7.10	13.7.10	13.7.12	13.7.12	
67	12A	12A	12B	12.7.30	12.7.30	
68	13.7.01	13.7.01	13.7.01	13.7.01	13.7.01	
69	12.7.10	12F	12F	12F	12.7.98	
70	11.7.01	13.7.02	13.7.03	13.7.04	13.7.04	13.7.04
71	13.7.02	13.7.03	13.7.04	13B	13.7.08	13.7.08
72	12C	12C	12.7.40	12.7.40	12.7.40	
73	12B	12B	12B	12.7.26	12.7.26	
74	13B	13.7.11	13.7.11	13.7.11	13.7.11	
75	11	11A	11.7.08	11.7.10	12.7.63	

Items Coded by Reviewers to Each Objective for Grade 7

Low		Medium		High
0		2.768116		43

Objective																			
11	59	75																	
11A	14	37	48	64	75														
11.7.01	10	21	21	26	26	44	48	48	48	50	50	50	50	50	70				
11.7.02	1	2	2	2	4	4	4	7	7	7	8	9	9	9	10	10	10	10	15	15
	15	15	16	16	18	18	18	18	18	19	19	19	19	26	26	26	29	29	29
	34	34	34	48															
11.7.03																			
11.7.04	8	64	64	64	64														
11.7.05	21	44																	
11.7.06	31	44	44																
11B	32																		
11.7.07	59	59	59																
11.7.08	14	32	40	75															
11.7.09	14																		
11.7.10	59	75																	
12																			
12A	1	1	11	11	27	27	58	60	67	67									
12.7.01	1	1																	
12.7.02	7	41	41	41	41	41	58												
12.7.03	33	33	33	33	33														
12.7.04	58	58	58																
12.7.05	47	47	47	47															
12.7.06	19	53																	
12.7.07																			
12.7.08																			
12.7.09																			
12.7.10	6	56	69																
12.7.11	47																		
12.7.12																			
12.7.13																			
12.7.14																			
12.7.15	8	11	11	27															
12.7.16	8	60	60	60	60														
12.7.17	27																		
12.7.18																			
12.7.19																			
12.7.20																			
12.7.21																			
12.7.22																			
12.7.23																			
12.7.24																			
12B	13	13	34	51	51	67	73	73	73										
12.7.25	17	17																	
12.7.26	16	16	16	42	42	42	73	73											
12.7.27	42	42																	
12.7.28	51	51																	
12.7.29																			
12.7.30	8	22	22	22	22	22	67	67											
12.7.31	11	27																	
12.7.32																			
12C	20	23	23	23	32	37	52	52	52	72	72								
12.7.33	49																		
12.7.34	3	32	32	65	65	65	65	65											
12.7.35	12	12	12	12	12	52	52												
12.7.36	17	20	20	20															
12.7.37																			
12.7.38																			

Label												
12.7.39	4											
12.7.40	72	72	72									
12.7.41												
12.7.42												
12.7.43	4	4										
12.7.44												
12.7.45	49											
12.7.46	49	49										
12.7.47												
12.7.48	49											
12.7.49												
12.7.50	20											
12.7.51												
12.7.52	14	14										
12.7.53												
12.7.54												
12.7.55												
12.7.56	28	28	28	28	28							
12.7.57												
12.7.58												
12.7.59												
12.7.60												
12.7.61	23	23										
12.7.62												
12D	40	40	43	43	43	43	61					
12.7.63	29	29	35	40	40	61	75					
12.7.64	3	3	3	3	43							
12.7.65	35	35	35	35	55	55	55	55	55			
12.7.66	5	37										
12.7.67												
12.7.68	15	61	61	61								
12.7.69												
12E	2	5	5	5								
12.7.70												
12.7.71	24											
12.7.72	51											
12.7.73												
12.7.74												
12.7.75												
12.7.76	9	9										
12.7.77												
12.7.78	5	24	24	24	24							
12.7.79	25											
12.7.80	2	25	25	25	25							
12.7.81												
12.7.82	7											
12.7.83	2											
12.7.84												
12.7.85												
12.7.86												
12.7.87												
12.7.88	17	17	17									
12.7.89	62											
12.7.90												
12F	36	36	36	36	69	69	69					
12.7.91	6											
12.7.92	56	56	56	56								
12.7.93												
12.7.94												
12.7.95												
12.7.96												
12.7.97												
12.7.98	30	30	30	30	30	36	46	46	46	46	46	69

12.7.99	54	54	54	54	54							
12.7.100	6	6	6									
12.7.101												
13												
13A	38											
13.7.01	13	63	63	63	63	63	68	68	68	68	68	
13.7.02	39	57	70	71								
13.7.03	31	31	39	39	39	39	44	57	57	57	57	70	71
13.7.04	21	21	31	31	70	70	70	71				
13.7.05												
13.7.06	53	53	53									
13B	45	45	62	62	66	71	74					
13.7.07												
13.7.08	53	71	71									
13.7.09	38	38	38	38								
13.7.10	45	45	62	66	66							
13.7.11	13	13	34	45	62	74	74	74	74			
13.7.12	53	66	66									
13.7.13	37	37	63									

Number of Reviewers Coding an Item by Objective for Grade 7
(Item Number: Number of Reviewers)

Low			Medium		High
1			2		5

Objective	Items
11	59:1, 75:1
11A	14:1, 37:1, 48:1, 64:1, 75:1
11.7.01	10:1, 21:2, 26:2, 44:1, 48:3, 50:5, 70:1
11.7.02	1:1, 2:3, 4:3, 7:3, 8:1, 9:3, 10:4, 15:4, 16:2, 18:5, 19:4, 26:3, 29:3
	34:3, 48:1
11.7.03	
11.7.04	8:1, 64:4
11.7.05	21:1, 44:1
11.7.06	31:1, 44:2
11B	32:1
11.7.07	59:3
11.7.08	14:1, 32:1, 40:1, 75:1
11.7.09	14:1
11.7.10	59:1, 75:1
12	
12A	1:2, 11:2, 27:2, 58:1, 60:1, 67:2
12.7.01	1:2
12.7.02	7:1, 41:5, 58:1
12.7.03	33:5
12.7.04	58:3
12.7.05	47:4
12.7.06	19:1, 53:1
12.7.07	
12.7.08	
12.7.09	
12.7.10	6:1, 56:1, 69:1
12.7.11	47:1
12.7.12	
12.7.13	
12.7.14	
12.7.15	8:1, 11:2, 27:1
12.7.16	8:1, 60:4
12.7.17	27:1
12.7.18	
12.7.19	
12.7.20	
12.7.21	
12.7.22	
12.7.23	
12.7.24	
12B	13:2, 34:1, 51:2, 67:1, 73:3
12.7.25	17:2
12.7.26	16:3, 42:3, 73:2
12.7.27	42:2
12.7.28	51:2
12.7.29	
12.7.30	8:1, 22:5, 67:2
12.7.31	11:1, 27:1
12.7.32	
12C	20:1, 23:3, 32:1, 37:1, 52:3, 72:2
12.7.33	49:1
12.7.34	3:1, 32:2, 65:5
12.7.35	12:5, 52:2
12.7.36	17:1, 20:3
12.7.37	

12.7.38				
12.7.39	4:1			
12.7.40	72:3			
12.7.41				
12.7.42				
12.7.43	4:2			
12.7.44				
12.7.45	49:1			
12.7.46	49:2			
12.7.47				
12.7.48	49:1			
12.7.49				
12.7.50	20:1			
12.7.51				
12.7.52	14:2			
12.7.53				
12.7.54				
12.7.55				
12.7.56	28:5			
12.7.57				
12.7.58				
12.7.59				
12.7.60				
12.7.61	23:2			
12.7.62				
12D	40:2	43:4	61:1	
12.7.63	29:2	35:1	40:2	61:1	75:1
12.7.64	3:4	43:1		
12.7.65	35:4	55:5		
12.7.66	5:1	37:1		
12.7.67				
12.7.68	15:1	61:3		
12.7.69				
12E	2:1	5:3		
12.7.70				
12.7.71	24:1			
12.7.72	51:1			
12.7.73				
12.7.74				
12.7.75				
12.7.76	9:2			
12.7.77				
12.7.78	5:1	24:4		
12.7.79	25:1			
12.7.80	2:1	25:4		
12.7.81				
12.7.82	7:1			
12.7.83	2:1			
12.7.84				
12.7.85				
12.7.86				
12.7.87				
12.7.88	17:3			
12.7.89	62:1			
12.7.90				
12F	36:4	69:3		
12.7.91	6:1			
12.7.92	56:4			
12.7.93				
12.7.94				
12.7.95				
12.7.96				
12.7.97				

12.7.98	30:5	36:1	46:5	69:1	
12.7.99	54:5				
12.7.100	6:3				
12.7.101					
13					
13A	38:1				
13.7.01	13:1	63:5	68:5		
13.7.02	39:1	57:1	70:1	71:1	
13.7.03	31:2	39:4	44:1	57:4	70:1	71:1
13.7.04	21:2	31:2	70:3	71:1	
13.7.05					
13.7.06	53:3				
13B	45:2	62:2	66:1	71:1	74:1
13.7.07					
13.7.08	53:1	71:2			
13.7.09	38:4				
13.7.10	45:2	62:1	66:2		
13.7.11	13:2	34:1	45:1	62:1	74:4
13.7.12	53:1	66:2			
13.7.13	37:2	63:1			

Number of Reviewers Coding an Objective by Item for Grade 7
(Objective: Number of Reviewers)

Low			Medium		High
1			2		5

#					
1	11.7.02:1	12A:2	12.7.01:2		
2	11.7.02:3	12E:1	12.7.80:1	12.7.83:1	
3	12.7.34:1	12.7.64:4			
4	11.7.02:3	12.7.39:1	12.7.43:2		
5	12.7.66:1	12E:3	12.7.78:1		
6	12.7.10:1	12.7.91:1	12.7.100:3		
7	11.7.02:3	12.7.02:1	12.7.82:1		
8	11.7.02:1	11.7.04:1	12.7.15:1	12.7.16:1	12.7.30:1
9	11.7.02:3	12.7.76:2			
10	11.7.01:1	11.7.02:4			
11	12A:2	12.7.15:2	12.7.31:1		
12	12.7.35:5				
13	12B:2	13.7.01:1	13.7.11:2		
14	11A :1	11.7.08:1	11.7.09:1	12.7.52:2	
15	11.7.02:4	12.7.68:1			
16	11.7.02:2	12.7.26:3			
17	12.7.25:2	12.7.36:1	12.7.88:3		
18	11.7.02:5				
19	11.7.02:4	12.7.06:1			
20	12C:1	12.7.36:3	12.7.50:1		
21	11.7.01:2	11.7.05:1	13.7.04:2		
22	12.7.30:5				
23	12C:3	12.7.61:2			
24	12.7.71:1	12.7.78:4			
25	12.7.79:1	12.7.80:4			
26	11.7.01:2	11.7.02:3			
27	12A:2	12.7.15:1	12.7.17:1	12.7.31:1	
28	12.7.56:5				
29	11.7.02:3	12.7.63:2			
30	12.7.98:5				
31	11.7.06:1	13.7.03:2	13.7.04:2		
32	11B:1	11.7.08:1	12C:1	12.7.34:2	
33	12.7.03:5				
34	11.7.02:3	12B:1	13.7.11:1		
35	12.7.63:1	12.7.65:4			
36	12F:4	12.7.98:1			
37	11A :1	12C:1	12.7.66:1	13.7.13:2	
38	13A:1	13.7.09:4			
39	13.7.02:1	13.7.03:4			
40	11.7.08:1	12D:2	12.7.63:2		
41	12.7.02:5				
42	12.7.26:3	12.7.27:2			
43	12D:4	12.7.64:1			
44	11.7.01:1	11.7.05:1	11.7.06:2	13.7.03:1	
45	13B:2	13.7.10:2	13.7.11:1		
46	12.7.98:5				
47	12.7.05:4	12.7.11:1			
48	11A :1	11.7.01:3	11.7.02:1		
49	12.7.33:1	12.7.45:1	12.7.46:2	12.7.48:1	
50	11.7.01:5				
51	12B:2	12.7.28:2	12.7.72:1		
52	12C:3	12.7.35:2			
53	12.7.06:1	13.7.06:3	13.7.08:1	13.7.12:1	
54	12.7.99:5				
55	12.7.65:5				

56	12.7.10:1	12.7.92:4			
57	13.7.02:1	13.7.03:4			
58	12A:1	12.7.02:1	12.7.04:3		
59	11:1	11.7.07:3	11.7.10:1		
60	12A:1	12.7.16:4			
61	12D:1	12.7.63:1	12.7.68:3		
62	12.7.89:1	13B:2	13.7.10:1	13.7.11:1	
63	13.7.01:5	13.7.13:1			
64	11A :1	11.7.04:4			
65	12.7.34:5				
66	13B:1	13.7.10:2	13.7.12:2		
67	12A:2	12B:1	12.7.30:2		
68	13.7.01:5				
69	12.7.10:1	12F:3	12.7.98:1		
70	11.7.01:1	13.7.02:1	13.7.03:1	13.7.04:3	
71	13.7.02:1	13.7.03:1	13.7.04:1	13B:1	13.7.08:2
72	12C:2	12.7.40:3			
73	12B:3	12.7.26:2			
74	13B:1	13.7.11:4			
75	11:1	11A :1	11.7.08:1	11.7.10:1	12.7.63:1

Assessment Item DOK vs. Consensus DOK for Grade 7
(Item Number: Number of Reviewers [Average DOK])

Low DOK		Matched DOK		High DOK
1		2		5

11 [2]:	59:1[2]	75:1[2]									
11A [2]:	14:1[2]	37:1[2]	48:1[1]	64:1[1]	75:1[2]						
11.7.01 [2]:	10:1[1]	21:2[1.5]	26:2[2]	44:1[2]	48:3[1]	50:5[1]	70:1[2]				
11.7.02 [2]:	1:1[2]	2:3[1]	4:3[1.33]	7:3[1.67]	8:1[1]	9:3[1.67]	10:4[1.75]	15:4[1.5]	16:2[1.5]	18:5[1.8]	19:4[1.5]
	26:3[1.67]	29:3[2]	19:4[1.5]	26:3[1.67]	29:3[2]	34:3[1.67]	48:1[1]				
11.7.03 [1]:											
11.7.04 [1]:	8:1[2]	64:4[1.5]									
11.7.05 [1]:	21:1[2]	44:1[2]									
11.7.06 [2]:	31:1[2]	44:2[2]									
11B [2]:	32:1[2]										
11.7.07 [2]:	59:3[1.67]										
11.7.08 [2]:	14:1[2]	32:1[1]	40:1[2]	75:1[3]							
11.7.09 [2]:	14:1[2]										
11.7.10 [2]:	59:1[2]	75:1[2]									
12 [1]:											
12A [1]:	1:2[1]	11:2[1]	27:2[1]	58:1[1]	60:1[1]	67:2[1]					
12.7.01 [1]:	1:2[1.5]										
12.7.02 [1]:	7:1[2]	41:5[1]	58:1[1]								
12.7.03 [1]:	33:5[1]										
12.7.04 [1]:	58:3[1]										
12.7.05 [1]:	47:4[1]										
12.7.06 [1]:	19:1[2]	53:1[2]									
12.7.07 [1]:											
12.7.08 [1]:											
12.7.09 [1]:											
12.7.10 [1]:	6:1[1]	56:1[2]	69:1[2]								
12.7.11 [1]:	47:1[1]										
12.7.12 [1]:											
12.7.13 [1]:											
12.7.14 [1]:											
12.7.15 [1]:	8:1[1]	11:2[1]	27:1[1]								

12.7.16 [1]:	8:1[1]	60:4[1]				
12.7.17 [1]:	27:1[1]					
12.7.18 [1]:						
12.7.19 [1]:						
12.7.20 [1]:						
12.7.21 [1]:						
12.7.22 [1]:						
12.7.23 [1]:						
12.7.24 [2]:						
12B [1]:	13:2[1]	34:1[2]	51:2[1]	67:1[1]	73:3[1.33]	
12.7.25 [1]:	17:2[1.5]					
12.7.26 [1]:	16:3[1.33]	42:3[1.33]	73:2[1.5]			
12.7.27 [1]:	42:2[1.5]					
12.7.28 [2]:	51:2[1.5]					
12.7.29 [1]:						
12.7.30 [1]:	8:1[1]	22:5[2]	67:2[1.5]			
12.7.31 [1]:	11:1[1]	27:1[1]				
12.7.32 [1]:						
12C [1]:	20:1[1]	23:3[1.67]	32:1[2]	37:1[1]	52:3[1]	72:2[1.5]
12.7.33 [1]:	49:1[2]					
12.7.34 [2]:	3:1[1]	32:2[1.5]	65:5[1]			
12.7.35 [1]:	12:5[1]	52:2[1.5]				
12.7.36 [1]:	17:1[2]	20:3[1.33]				
12.7.37 [1]:						
12.7.38 [1]:						
12.7.39 [1]:	4:1[1]					
12.7.40 [1]:	72:3[2]					
12.7.41 [1]:						
12.7.42 [1]:						
12.7.43 [1]:	4:2[1.5]					
12.7.44 [1]:						
12.7.45 [1]:	49:1[2]					
12.7.46 [1]:	49:2[2]					
12.7.47 [1]:						

12.7.48 [1]:	49:1[1]				
12.7.49 [1]:					
12.7.50 [1]:	20:1[2]				
12.7.51 [1]:					
12.7.52 [1]:	14:2[2]				
12.7.53 [1]:					
12.7.54 [1]:					
12.7.55 [1]:					
12.7.56 [1]:	28:5[1.6]				
12.7.57 [1]:					
12.7.58 [1]:					
12.7.59 [1]:					
12.7.60 [1]:					
12.7.61 [1]:	23:2[1.5]				
12.7.62 [1]:					
12D [1]:	40:2[1.5]	43:4[1]	61:1[1]		
12.7.63 [1]:	29:2[2]	35:1[1]	40:2[1.5]	61:1[1]	75:1[2]
12.7.64 [1]:	3:4[1.5]	43:1[1]			
12.7.65 [2]:	35:4[1.25]	55:5[1.8]			
12.7.66 [1]:	5:1[1]	37:1[1]			
12.7.67 [1]:					
12.7.68 [1]:	15:1[1]	61:3[1.67]			
12.7.69 [1]:					
12E [1]:	2:1[2]	5:3[1.33]			
12.7.70 [1]:					
12.7.71 [1]:	24:1[1]				
12.7.72 [1]:	51:1[1]				
12.7.73 [1]:					
12.7.74 [1]:					
12.7.75 [1]:					
12.7.76 [2]:	9:2[1.5]				
12.7.77 [1]:					
12.7.78 [1]:	5:1[1]	24:4[1]			
12.7.79 [1]:	25:1[1]				

12.7.80 [1]:	2:1[2]	25:4[1]			
12.7.81 [1]:					
12.7.82 [2]:	7:1[1]				
12.7.83 [1]:	2:1[1]				
12.7.84 [2]:					
12.7.85 [1]:					
12.7.86 [2]:					
12.7.87 [2]:					
12.7.88 [1]:	17:3[1.67]				
12.7.89 [1]:	62:1[1]				
12.7.90 [1]:					
12F [1]:	36:4[1.5]	69:3[1.67]			
12.7.91 [1]:	6:1[2]				
12.7.92 [1]:	56:4[1.25]				
12.7.93 [1]:					
12.7.94 [1]:					
12.7.95 [1]:					
12.7.96 [1]:					
12.7.97 [1]:					
12.7.98 [2]:	30:5[1]	36:1[2]	46:5[1.4]	69:1[2]	
12.7.99 [1]:	54:5[1]				
12.7.100 [2]:	6:3[1.33]				
12.7.101 [1]:					
13 [2]:					
13A [1]:	38:1[1]				
13.7.01 [1]:	13:1[1]	63:5[1]	68:5[1]		
13.7.02 [2]:	39:1[1]	57:1[1]	70:1[1]	71:1[2]	
13.7.03 [1]:	31:2[1]	39:4[1.25]	44:1[1]	57:4[1]	70:1[1]	71:1[2]
13.7.04 [1]:	21:2[2]	31:2[1]	70:3[1]	71:1[1]	
13.7.05 [1]:					
13.7.06 [1]:	53:3[1.67]				
13B [2]:	45:2[1]	62:2[1]	66:1[1]	71:1[2]	74:1[1]
13.7.07 [2]:					
13.7.08 [1]:	53:1[1]	71:2[1.5]			
13.7.09 [2]:	38:4[1]				

13.7.10 [3]:	45:2[1]	62:1[1]	66:2[1.5]		
13.7.11 [3]:	13:2[1]	34:1[1]	45:1[2]	62:1[2]	74:4[1.25]
13.7.12 [2]:	53:1[2]	66:2[2]			
13.7.13 [2]:	37:2[1.5]	63:1[1]			