

Arizona

Arizona's Instrument to Measure Standards Alternate

AIMS A

2009

Technical Report

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Foreword

The technical information herein is intended for use by those who evaluate tests, interpret scores, or use test results in making educational decisions. It is assumed that the reader has technical knowledge of test construction and measurement procedures, as stated in *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, 1999).

Table of Contents

FOREWORD	ii
TABLE OF CONTENTS	iii
FIGURES AND TABLES	vi
PART 1: EXECUTIVE SUMMARY	1
PART 2: INVOLVEMENT OF ARIZONA EDUCATORS AT ALL LEVELS	4
PART 3: TEST DESIGN	6
3.1 CONTENT STANDARDS	6
3.2 TEST BLUEPRINTS	12
3.3 DESCRIPTION OF AIMS A 2009 TESTS	15
3.3.1 <i>Grade 3-8 Mathematics (Criterion-referenced)</i>	15
3.3.2 <i>Grades 3-8 Reading (Criterion-referenced)</i>	15
3.3.3 <i>Grades 4, 8, 10 Science (Criterion-referenced)</i>	15
PART 4: TEST DEVELOPMENT.....	20
4.1 AIMS A TEST DEVELOPMENT AND EDITING PROCESS	20
4.1.1 <i>Blueprint Development</i>	20
4.1.2 <i>Item Writing and Editing</i>	20
4.1.3 <i>Item Specifications and Review Procedures</i>	20
4.1.4 <i>Test Construction Process</i>	21
4.1.5 <i>Quality Reviews</i>	21
4.2 DOCUMENTS AND MATERIALS DEVELOPMENT	21
4.3 STANDARD SETTING	23
PART 5: TEST ADMINISTRATION.....	24
5.1 ADAPTATIONS	24
5.1.1 <i>Overview of Adaptations</i>	24
5.2 TEST SECURITY	26
5.3 TEST ADMINISTRATION	26
PART 6: DATA FOR OPERATIONAL ANALYSIS.....	28
6.1 DATA.....	28
6.2 DESCRIPTIVE STATISTICS BY TEST	28
6.3 CLASSICAL ITEM ANALYSIS	30
PART 7: CALIBRATION, SCALING, AND SCORING	48
7.1 CALIBRATION METHODS	48
7.1.1 <i>Calibration Models</i>	48
7.1.2 <i>Calibration Software</i>	48
7.2 CALIBRATION RESULTS.....	48
7.2.1 <i>IRT Item Statistics</i>	48
7.3 SCALING METHODS	67
7.4 SCORING AND STANDARD ERROR OF MEASUREMENT	67
PART 8: TEST RESULTS.....	85
8.1 DATA.....	85
8.1.1 <i>AIMS A CRT State Test Results</i>	85
PART 9: VALIDITY EVIDENCE.....	109
9.1 RELIABILITY.....	109

9.1.1	<i>Measures of Internal Consistency</i>	109
9.2	VALIDITY	110
9.2.1	<i>Correlations among AIMS A Assessments</i>	110
PART 10: CLASSIFICATION		113
10.1	STANDARD SETTING TECHNICAL DOCUMENTATION	113
REFERENCES		116
APPENDIX A AIMS A ELIGIBILITY CRITERIA		119
APPENDIX B AIMS A SCORING RUBRIC		122
APPENDIX C ITEM WRITER SELECTION CRITERIA		123
APPENDIX D ITEM WRITING WORKSHOP FOR READING AND MATHEMATICS		125
APPENDIX E 2009 AIMS A MONITORING REVIEW		133
APPENDIX F 2009 AIMS A TEACHER SURVEY		134
APPENDIX G AIMS 2009 STANDARD SETTING REPORT		135
APPENDIX H AIMS 2009 EXAMPLE ITEM SPECIFICATION CARD		230

Figures and Tables

FIGURE 3.1.1 ARIZONA ALTERNATE READING CONCEPTS AND STRANDS	7
FIGURE 3.1.2 ARIZONA ALTERNATE MATHEMATICS CONCEPTS AND STRANDS	8
FIGURE 3.1.3 ARIZONA ALTERNATE SCIENCE CONCEPTS AND STRANDS GRADES 4, 8, AND HIGH SCHOOL.....	10
TABLE 3.2.1 AIMS A BLUEPRINT FOR READING	12
TABLE 3.2.2 AIMS A BLUEPRINT FOR MATHEMATICS	13
TABLE 3.2.3 AIMS A BLUEPRINT FOR SCIENCE	14
TABLE 3.3.1 2009 AIMS A TEST STRUCTURE READING	16
TABLE 3.3.2 2009 AIMS A TEST STRUCTURE MATH.....	17
TABLE 3.3.3 2009 AIMS A TEST STRUCTURE SCIENCE	18
TABLE 3.3.4 RAW SCORE AND SCALE SCORE RANGES OF AIMS A 2009 ASSESSMENTS	19
TABLE 4.1.1 NUMBER OF FIELD TEST ITEMS SELECTED	22
TABLE 4.1.2 CRT ITEM SELECTION.....	22
TABLE 5.1.1 2009 AIMS A ADAPTATIONS PROVIDED.....	25
FIGURE 5.2.1 2009 AIMS A TEST SECURITY AGREEMENT.....	27
TABLE 6.2.1 2009 AIMS A CLASSICAL TEST ANALYSIS STATISTICS	29
TABLE 6.2.2 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 3	31
TABLE 6.2.3 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 4	32
TABLE 6.2.4 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 5	33
TABLE 6.2.5 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 6	34
TABLE 6.2.6 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 7	35
TABLE 6.2.7 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS GRADE 8	36
TABLE 6.2.8 2009 AIMS A CLASSICAL ITEM ANALYSIS MATHEMATICS HIGH SCHOOL	37
TABLE 6.2.9 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 3	38
TABLE 6.2.10 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 4	39
TABLE 6.2.11 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 5	40
TABLE 6.2.12 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 6	41
TABLE 6.2.13 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 7	42
TABLE 6.2.14 2009 AIMS A CLASSICAL ITEM ANALYSIS READING GRADE 8	43
TABLE 6.2.15 2009 AIMS A CLASSICAL ITEM ANALYSIS READING HIGH SCHOOL	44
TABLE 6.2.16 2009 AIMS A CLASSICAL ITEM ANALYSIS SCIENCE GRADE 4	45
TABLE 6.2.17 2009 AIMS A CLASSICAL ITEM ANALYSIS SCIENCE GRADE 8	46
TABLE 6.2.18 2009 AIMS A CLASSICAL ITEM ANALYSIS SCIENCE HIGH SCHOOL	47
TABLE 7.2.1.1 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 3.....	50
TABLE 7.2.1.2 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 4.....	51
TABLE 7.2.1.3 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 5.....	52
TABLE 7.2.1.4 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 6.....	53
TABLE 7.2.1.5 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 7.....	54
TABLE 7.2.1.6 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS GRADE 8.....	55
TABLE 7.2.1.7 2009 AIMS A IRT ITEM STATISTICS MATHEMATICS HIGH SCHOOL.....	56
TABLE 7.2.1.8 2009 AIMS A IRT ITEM STATISTICS READING GRADE 3	57
TABLE 7.2.1.9 2009 AIMS A IRT ITEM STATISTICS READING GRADE 4	58
TABLE 7.2.1.10 2009 AIMS A IRT ITEM STATISTICS READING GRADE 5	59
TABLE 7.2.1.11 2009 AIMS A IRT ITEM STATISTICS READING GRADE 6.....	60
TABLE 7.2.1.12 2009 AIMS A IRT ITEM STATISTICS READING GRADE 7.....	61
TABLE 7.2.1.13 2009 AIMS A IRT ITEM STATISTICS READING GRADE 8.....	62
TABLE 7.2.1.14 2009 AIMS A IRT ITEM STATISTICS READING HIGH SCHOOL.....	63
TABLE 7.2.1.15 2009 AIMS A IRT ITEM STATISTICS SCIENCE GRADE 4	64
TABLE 7.2.1.16 2009 AIMS A IRT ITEM STATISTICS SCIENCE GRADE 8	65
TABLE 7.2.1.17 2009 AIMS A IRT ITEM STATISTICS SCIENCE GRADE HS	66
TABLE 7.4.1 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 3	68
TABLE 7.4.2 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 4	69
TABLE 7.4.3 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 5	70

TABLE 7.4.4 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 6	71
TABLE 7.4.5 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 7	72
TABLE 7.4.6 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS GRADE 8	73
TABLE 7.4.7 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE MATHEMATICS HIGH SCHOOL	74
TABLE 7.4.8 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 3	75
TABLE 7.4.9 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 4	76
TABLE 7.4.10 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 5	77
TABLE 7.4.11 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 6	78
TABLE 7.4.12 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 7	79
TABLE 7.4.13 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING GRADE 8	80
TABLE 7.4.14 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE READING HIGH SCHOOL	81
TABLE 7.4.15 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE SCIENCE GRADE 4	82
TABLE 7.4.16 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE SCIENCE GRADE 8	83
TABLE 7.4.17 2009 AIMS A RAW SCORE TO SCALE SCORE TABLE SCIENCE HIGH SCHOOL	84
TABLE 8.1.1.1 2009 AIMS A LOSS AND HOSS TABLE	86
TABLE 8.1.1.2 2009 AIMS A STATE TEST RESULTS MATHEMATICS GRADES 3-8, HIGH SCHOOL	87
TABLE 8.1.1.3 2009 AIMS A STATE TEST RESULTS READING GRADES 3-8, HIGH SCHOOL	89
TABLE 8.1.1.4 2009 AIMS A STATE TEST RESULTS SCIENCE GRADES 4, 8, HS	91
TABLE 8.1.1.5 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 3	92
TABLE 8.1.1.6 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 4	93
TABLE 8.1.1.7 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 5	94
TABLE 8.1.1.8 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 6	95
TABLE 8.1.1.9 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 7	96
TABLE 8.1.1.10 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS GRADE 8	97
TABLE 8.1.1.11 2009 AIMS A FREQUENCY DISTRIBUTION MATHEMATICS HIGH SCHOOL	98
TABLE 8.1.1.12 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 3	99
TABLE 8.1.1.13 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 4	100
TABLE 8.1.1.14 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 5	101
TABLE 8.1.1.15 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 6	102
TABLE 8.1.1.16 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 7	103
TABLE 8.1.1.17 2009 AIMS A FREQUENCY DISTRIBUTION READING GRADE 8	104
TABLE 8.1.1.18 2009 AIMS A FREQUENCY DISTRIBUTION READING HS	105
TABLE 8.1.1.19 2009 AIMS A FREQUENCY DISTRIBUTION SCIENCE GRADE 4	106
TABLE 8.1.1.20 2009 AIMS A FREQUENCY DISTRIBUTION SCIENCE GRADE 8	107
TABLE 8.1.1.21 2009 AIMS A FREQUENCY DISTRIBUTION SCIENCE HIGH SCHOOL	108
TABLE 9.1.1.1 2009 AIMS A INTERNAL CONSISTENCY	110
TABLE 9.2.1.1 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 3	111
TABLE 9.2.1.2 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 4	111
TABLE 9.2.1.3 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 5	111
TABLE 9.2.1.4 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 6	111
TABLE 9.2.1.5 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 7	112
TABLE 9.2.1.6 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS GRADE 8	112
TABLE 9.2.1.7 2009 AIMS A CORRELATIONS AMONG ASSESSMENTS HIGH SCHOOL	112
TABLE 10.1.1 2009 AIMS A FINAL SCALE SCORE RANGES BY PERFORMANCE LEVEL	114
TABLE 10.1.2. 2009 AIMS A STANDARD ERROR OF MEASURE AT CUT SCORES	115

Part 1: Executive Summary

This document provides information regarding processes and procedures implemented in the 2009 Spring Arizona's Instrument to Measure Standards Alternate (AIMS A) assessments for the development of tests, analysis of data, scoring, and scaling. This document also describes the results of the 2009 Spring AIMS A assessments. The technical information in this report is intended for those who evaluate tests, interpret scores, or use test results in making educational decisions.

This document also provides information relevant to the *Standards for Educational and Psychological Testing* (American Education Research Association, American Psychological Association, National Council on Measurement in Education, 1999). Each part of this technical report addresses different standards. The standards addressed by each part are listed at the beginning of each part. Part 1 of the Technical Report addresses standards 2.7, 3.2, 3.3, 6.3, 6.4, 6.15, and 13.6.

Arizona includes all students with disabilities in state-wide assessments with or without accommodations, however, a small percentage of students are unable to participate in these assessments even with accommodations. Arizona's Instrument to Measure Standards Alternate (AIMS A) is an alternate assessment based on alternate achievement standards that was specifically developed to assess students with significant cognitive disabilities (SCD) as prescribed by NCLB and IDEA. AIMS A measures student ability on grade-level alternate academic standards; these standards are based on the Arizona Academic Standards, however, the breadth, depth, and complexity has been reduced as delineated in federal laws covering this population (NCLB, 2001 and IDEA, 2004).

Students who are eligible for this assessment are students with significant cognitive disabilities (SCD). Arizona has an established eligibility criterion, that Individualized Education Program (IEP) teams have been trained to utilize (<http://www.ade.state.az.us/ess/SpecialProjects/aims-a/>), to identify students with significant cognitive disabilities. (A copy of the eligibility form can be found in Appendix A.) Students who are tested with AIMS A are students who function at developmental and instructional levels significantly below those students who are assessed with the general standardized state assessment, AIMS. These students function like students with various levels of mental retardation, and their skills and abilities are commensurate to their level of cognitive functioning. Students with significant cognitive disabilities require intensive instruction, as it is extremely difficult for these students to acquire, maintain, generalize, and apply academic skills across environments even with extensive/intensive, pervasive, frequent, and individualized instruction in multiple settings. The curricular outcomes for students with significant cognitive disabilities are based on the goals and objectives in the student's IEP and instruction is aligned to the enrolled grade level Arizona Alternate Academic Standards (www.ade.az.gov/standards).

Children with SCD are a unique population of students with extremely diverse abilities as well as limitations. Kleinert, Browder, and Towles-Reeves, (2005) characterized students with SCDs as students who have:

- varied levels of symbolic communication
- issues attending to salient features of stimuli
- difficulty with memory
- limited motor response repertoire
- difficulty generalizing learned information or skills

- difficulty with meta-cognition
- difficulty with skill synthesis
- sensory deficits and
- special health care needs.

IDEA 2004 mandates that students in special education participate in the regular state assessments. If students in special education need accommodations, accommodations are provided as long as they still produce valid scores for individuals. Using non-standard accommodations, like a calculator or reading the reading passages, would invalidate the assessment and would not produce valid scores that in turn cannot be aggregated with other scores that are valid. However, alternate assessments based on alternate achievement standards are designed specifically for students with SCDs and accommodations are not as much of a concern since these students require specialized instruction (Flowers, C. & Browder, D., 2004). Substantial modifications and adaptations are made to the curriculum so that students with SCDs can access the information and demonstrate what they know (Lehr, C., & Thurlow, M., 2003). Instructional adaptation strategies, like accommodations, should be implemented during daily instruction. Only those adaptations and instructional strategies used consistently during instructional activities should be made available to the students with SCDs being assessed with AIMS A. When administering AIMS A, test administrators are trained to utilize best practice strategies, adaptations, and assistive technology to ensure students have access and are able to demonstrate what they know. Designing adaptations specifically to meet a student's individual needs promotes participation and progress in the general curriculum (Kleinert, H. and Kearns Farmer, J. 2001).

AIMS A items on the multiple choice, performance tasks, and raters items represent the essential fundamentals taught to students with significant cognitive disabilities. The Kentucky Statewide Alternate Assessment Project (1999) suggests that states create alternate assessments that mirror the elements of daily classroom instruction. Arizona's teachers receive regular training on implementing the use of instructional adaptations as long as they allow the student to demonstrate their knowledge or responds to AIMS A items presented during the assessment administration. Teachers are trained not to influence the students' response. While this is not an exhaustive list of adaptations, teachers are encouraged to support students' access by utilizing any of the following (Kleinert, H. and Kearns Farmer, J. 2001; Denham, A, 2006):

- Using visual/verbal cueing;
- Working independently;
- Receiving hand-over-hand assistance;
- Re-reading questions/passages;
- Using a calculator, number lines, or some specific manipulative.
- Make it auditory using a communication device.
- Provide objects connected to content material and
- Use symbols, pictures, or tactile objects that represent concepts.

AIMS A test administration procedures support the inclusion of assistive technology, prompting, and scaffolding to help students with SCD demonstrate what they know. The state regional trainings conducted by ADE staff provided to district representatives emphasizes these strategies to support student achievement and success.

Assistive technology (AT) as defined by IDEA is “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability.” AT has become a necessary component in ensuring academic success for some students with disabilities. Effective use of AT in daily instruction allows students to access the curriculum, facilitates testing accommodations, and helps improve the performance of students who are struggling (Satterfield, B. and Satterfield, P., 2009). AIMS A allows for the use of AT as an adaptation to support student access to the online assessment and to demonstrate their knowledge.

AIMS A 2009 assesses mathematics and reading in Grades 3 – 8 and High School, and science in Grades 4, 8, and 10. AIMS A consists of three item types for each of the content areas. They are online Multiple Choice items, Performance Tasks, and Rater Items. The Performance Tasks are standardized constructed response items which are scored on standardized data sheets. A 0-2 point scoring rubric has been established to assign specific score points to specific student responses. This 0-2 point scoring rubric is modified to a 0,2,4 point rubric to allow for equal weighting of Performance Tasks with Multiple Choice items which are translated to a 0,4 point score. The Rater Items are constructed response items specific to the student’s environment which are scored using a similar 1-4 point rubric. This rubric is translated to a 0, 1, 2, 4 scoring rubric to allow for equal weighting of Performance Tasks with Multiple Choice items which are translated to a 0, 4 point score. Based on the input of Arizona educators and the Arizona’s Instrument to Measurement Standards Alternate, a design was derived, developed, administered, and scored. The present Technical Report documents all aspects of the testing cycle in the subsequent chapters. The structure of the present Technical Report mirrors the testing cycle.

Part 2: Involvement of Arizona Educators at all Levels

Part 2 of the Technical Report addresses the involvement of Arizona educators in test development. This part of the Technical Report addresses standard 3.5 of the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 1999).

Several committees met throughout the year in preparation for the 2009 AIMS A Mathematics, Reading, and Science assessments. These committees included special education teachers, regular education teachers, curriculum specialists, and speech pathologists. In addition to teachers and specialists, school psychologists and administrators also participated in various committees. The committee participants were selected from across the state and were an integral part of the AIMS A test development processes and AIMS A results interpretation. In addition to these committees, internal review teams consisting of various Arizona Department of Education specialists and administrators were conducted as well to support quality assurance. The test development committee and internal review team meetings included:

- Item Modification Review, conducted in September 2008, in which the internal team reviewed each item that was administered during the 2008 spring semester. The team members made notations related to the overall appearance of the items; size and clarity of font and graphics; punctuation; grammar; and clarity of items and content.
- Blueprint Development, conducted September 2008, the internal team reviewed the current academic standards and made recommendations on the relative importance of each of the concepts, and recommendations as to the most important concepts for assessment.
- Item Writing, conducted in September 2008, in which educators wrote Multiple Choice items, Performance Tasks, and Rater Items aligned to the alternate content standards for possible use in the Spring of 2009 as field test items;
- Internal Team Review of Performance Tasks and Rater Items, conducted in September 2008, in which team members reviewed the items written and reviewed by committee members to ensure content was appropriate to the standards being assessed and that the items would not favor a particular gender or ethnic group;
- Passage Review, conducted in October 2008, in which educators reviewed passages for bias and sensitivity to ensure that topics were appropriate and would not favor or offend a particular gender or ethnic group, and was sufficiently rich to be able to write items based on the content.
- Content and Bias Review, conducted in October 2008, in which educators reviewed Multiple Choice items, Performance Tasks, and Rater Items from all content areas for content, bias, and sensitivity. Items that survived these committees were eligible for inclusion on the Spring 2009 AIMS A assessment.
- External Consultant Final Document Review, conducted in December 2008, special education and general education teachers were hired as external consultants to review all final test documents that were assembled and placed on the development site at ADE prior to Spring administration of AIMS A. After they logged on to the AIMS A training system they were instructed to critique the screens utilizing checklist for the online system. Consultants had a two week block of time to review the assigned grades in mathematics, reading, and science. The printed copies of all test items (multiple choice, rater items, and performance tasks) matched the test items that would be reviewed online. The consultants were informed that they may use the

hard copies of the actual test to document suggested changes, but they must also document all of their comments on the provided review form; and

- Internal Data Analysis Review team, conducted June, 2009, this committee reviewed the data after administration and, based on the performance of the items on the multiple choice tests, selected the 10 or 12 items that would be considered operational items.
- Standard Setting, conducted May 2009, in which educators examined the item data generated during the Spring 2009 test. The purpose of this standard setting committee meeting was to establish suggested cut scores that are based on what students in each performance level (Falls Far Below, Approaches, Meets, and Exceeds) should know and be able to perform when being assessed with AIMS A. In addition to obtaining suggested cut scores for various proficiency levels in science, mathematics, and reading, participants reviewed and provided edits to the established performance level descriptors that identify what students being assessed with the AIMS A typically know and are able to perform.(A copy of Dr. Elliott's Standards Setting report can be found in Appendix G.)

Part 3: Test Design

Part 3 of the technical report provides information regarding test design. The following AERA/APA/NCME standards are addressed: 1.2, 1.6, 3.1, 3.2, 3.3, 3.11, 6.4, 6.15, 13.3, and 13.5.

3.1 Content Standards

Part 3 of the Technical Report provides information regarding test design. The following AERA/APA/NCME standards are addressed: 1.2, 1.6, 3.1, 3.2, 3.3, 3.11, 6.4, 6.15, 13.3, and 13.5.

AIMS A assessment is designed to measure performance on the Arizona Alternate Content Standards adopted in May 2006 for Mathematics and Reading in Grades K-8 and HS and Grades 4, 8, and 10 for Science. Special education teachers and content specialist were invited to review and clarify the Alternate Academic Standards in September, 2008 prior to convening the Item Development committees. These standards are organized by strand, concept, and performance objective. Performance Objectives are specific tasks and skills that the student is expected to know and are able to perform. Only the strand and concept level are described below, and scores are only reported at the strand level.

Figure 3.1.1
Arizona Alternate Reading Concepts and Strands

Reading Grade 3	Reading Grade 4 – 10
Strand 1: Reading Process Concept 1: Print Concepts Concept 3: Phonics Concept 4: Vocabulary Concept 5: Fluency Concept 6: Comprehension Strategies Strand 2: Comprehending Literary Text Concept 1: Elements of Literature Strand 3: Comprehending Informational Text Concept 1: Expository Text Concept 2: Functional Text	Strand 1: Reading Process Concept 4: Vocabulary Concept 5: Fluency Concept 6: Comprehension Strategies Strand 2: Comprehending Literary Text Concept 1: Elements of Literature Strand 3: Comprehending Informational Text Concept 1: Expository Text Concept 2: Functional Text

Figure 3.1.2
Arizona Alternate Mathematics Concepts and Strands

Mathematics Grade 3	Mathematics Grade 4, 5	Mathematics Grades 6, 7
Strand 1: Number Sense and Operations Concept 1: Number Sense Concept 2: Numerical Operations Concept 3: Estimation Strand 2: Data Analysis, Probability and Discrete Math Concept 1: Data Analysis (Statistics) Strand 3: Patterns, Algebra and Functions Concept 1: Patterns Concept 3: Algebraic Representations Strand 4: Geometry and Measurement Concept 1: Geometric Properties Concept 4: Measurement	Strand 1: Number Sense and Operations Concept 1: Number Sense Concept 2: Numerical Operations Concept 3: Estimation Strand 2: Data Analysis, Probability and Discrete Math Concept 1: Data Analysis (Statistics) Concept 2: Probability Strand 3: Patterns, Algebra and Functions Concept 1: Patterns Concept 3: Algebraic Representations Strand 4: Geometry and Measurement Concept 1: Geometric Properties Concept 4: Measurement Strand 5: Structure and Logic Concept 2: Logic and Reasoning	Strand 1: Number Sense and Operations Concept 1: Number Sense Concept 2: Numerical Operations Concept 3: Estimation Strand 2: Data Analysis, Probability and Discrete Math Concept 1: Data Analysis (Statistics) Concept 2: Probability Concept 4: Vertex-Edge Graphs Strand 3: Patterns, Algebra and Functions Concept 1: Patterns Concept 3: Algebraic Representations Strand 4: Geometry and Measurement Concept 1: Geometric Properties Concept 3: Coordinate Geometry Concept 4: Measurement Strand 5: Structure and Logic Concept 2: Logic and Reasoning

(table continued)

Mathematics Grade 8	Mathematics Grade 10
Strand 1: Number Sense and Operations Concept 1: Number Sense Concept 2: Numerical Operations Concept 3: Estimation Strand 2: Data Analysis, Probability and Discrete Math Concept 1: Data Analysis (Statistics) Concept 2: Probability Concept 4: Vertex-Edge Graphs Strand 3: Patterns, Algebra and Functions Concept 1: Patterns Concept 3: Algebraic Representations Strand 4: Geometry and Measurement Concept 1: Geometric Properties Concept 3: Coordinate Geometry Concept 4: Measurement Strand 5: Structure and Logic Concept 2: Logic and Reasoning	Strand 1: Number Sense and Operations Concept 1: Number Sense Concept 2: Numerical Operations Concept 3: Estimation Strand 2: Data Analysis, Probability and Discrete Math Concept 1: Data Analysis (Statistics) Concept 2: Probability Strand 3: Patterns, Algebra and Functions Concept 1: Patterns Concept 2: Functions and Relationships Concept 3: Algebraic Representations Strand 4: Geometry and Measurement Concept 1: Geometric Properties Concept 2: Transformation of Shapes Concept 3: Coordinate Geometry Concept 4: Measurement Strand 5: Structure and Logic Concept 1: Algorithms and Algorithmic Thinking Concept 2: Logic and Reasoning

Figure 3.1.3
Arizona Alternate Science Concepts and Strands – Grades 4, 8, High School

Grade 4 Science	Grade 8 Science
Strand 1: Inquiry Process Concept 1: Observations, Questions, and Hypotheses Concept 2: Scientific Testing (Investigating and Modeling) Concept 3: Analysis and Conclusions Concept 4: Communication Strand 2: History and Nature of Science Concept 1: History of Science as a Human Endeavor Strand 3: Science in Personal and Social Perspectives Concept 1: Changes in Environments Concept 2: Science and Technology in Society Strand 4: Life Science Concept 1: Characteristics of Organisms Concept 3: Organisms and Environments Concept 4: Diversity, Adaptation, and Behavior Strand 5: Physical Science Concept 3: Energy and Magnetism Strand 6: Earth and Space Science Concept 2: Earth's Processes and Systems Concept 3: Changes in the Earth and Sky	Strand 1: Inquiry Process Concept 1: Observations, Questions, and Hypotheses Concept 2: Scientific Testing (Investigating and Modeling) Concept 3: Analysis and Conclusions Concept 4: Communication Strand 2: History and Nature of Science Concept 1: History of Science as a Human Endeavor Strand 3: Science in Personal and Social Perspectives Concept 1: Changes in Environments Concept 2: Science and Technology in Society Strand 4: Life Science Concept 2: Reproduction and Heredity Concept 4: Diversity, Adaptation, and Behavior Strand 5: Physical Science Concept 1: Properties and Changes of Properties in Matter Concept 2: Motion and Forces

Grade 10 Science

Strand 1: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses

Concept 2: Scientific Testing (Investigating and Modeling)

Concept 3: Analysis, Conclusions, and Refinements

Concept 4: Communication

Strand 2: History and Nature of Science

Concept 1: History of Science as a Human Endeavor

Strand 3: Science in Personal and Social Perspectives

Concept 1: Changes in Environments

Concept 2: Science and Technology in Society

Concept 3: Human Population Characteristics

Strand 4: Life Science

Concept 1: The Cell

Concept 2: Molecular Basis of Heredity

Concept 3: Interdependence of Organisms

Concept 4: Biological Evolution

Concept 5: Matter, Energy, and Organization in Living Systems (Including Human Systems)

Strand 5: Physical Science

Concept 1: Structure and Properties of Matter

Concept 2: Motions and Forces

Concept 3: Conservation of Energy and Increase in Disorder

Concept 4: Chemical Reactions

Concept 5: Interactions of Energy and Matter

Strand 6: Earth and Space Science

Concept 1: Geochemical Cycles

Concept 2: Energy in the Earth System (Both Internal and External)

Concept 3: Origin and Evolution of the Earth System

Concept 4: Origin and Evolution of the Universe

3.2 Test Blueprints

A test blueprint designates the percentage of items that should measure each strand and concept. All AIMS A assessments were designed in accordance with the following blueprints.

Table 3.2.1
AIMS A Blueprint for Reading

AIMS A Reading Blueprint (beginning Spring 2009)

Grade 3	POs	%
Strand 1- Reading Process	9	40
Strand 2- Comprehending Literary Text	3	30
Strand 3- Comprehending Informational Text	7	30
Total	19	100%

Grade 4	POs	%
Strand 1- Reading Process	5	15
Strand 2- Comprehending Literary Text	4	45
Strand 3- Comprehending Informational Text	7	40
Total	16	100%

Grade 5	POs	%
Strand 1- Reading Process	5	30
Strand 2- Comprehending Literary Text	4	30
Strand 3- Comprehending Informational Text	7	40
Total	16	100%

Grade 6	POs	%
Strand 1- Reading Process	8	30
Strand 2- Comprehending Literary Text	4	25
Strand 3- Comprehending Informational Text	9	45
Total	21	100%

Grade 7	POs	%
Strand 1- Reading Process	8	40
Strand 2- Comprehending Literary Text	4	30
Strand 3- Comprehending Informational Text	8	30
Total	20	100%

Grade 8	POs	%
Strand 1- Reading Process	8	35
Strand 2- Comprehending Literary Text	4	25
Strand 3- Comprehending Informational Text	9	40
Total	21	100%

Grade HS	POs	%
Strand 1- Reading Process	9	30
Strand 2- Comprehending Literary Text	3	30
Strand 3- Comprehending Informational Text	6	40
Total	18	100%

Table 3.2.2
AIMS A Blueprint for Mathematics

AIMS A Math Blueprint (beginning Spring 2009)

Grade 3	POs	%
Strand 1- Number Sense and Operations	12	41
Strand 2- Data Analysis, Probability, and Discrete Mathematics	2	18
Strand 3- Patterns, Algebra, and Functions	3	18
Strand 4 & 5- Geometry, Measurement, Structure & Logic	5	23
Total	22	100%

Grade 4	POs	%
Strand 1- Number Sense and Operations	12	45
Strand 2- Data Analysis, Probability, and Discrete Mathematics	2	18
Strand 3- Patterns, Algebra, and Functions	3	9
Strand 4 & 5- Geometry, Measurement, Structure & Logic	6	27
Total	23	100%

Grade 5	POs	%
Strand 1- Number Sense and Operations	10	36
Strand 2- Data Analysis, Probability, and Discrete Mathematics	5	23
Strand 3- Patterns, Algebra, and Functions	3	27
Strand 4 & 5- Geometry, Measurement, Structure & Logic	7	14
Total	25	100%

Grade 6	POs	%
Strand 1- Number Sense and Operations	11	23
Strand 2- Data Analysis, Probability, and Discrete Mathematics	8	31
Strand 3- Patterns, Algebra, and Functions	4	23
Strand 4 & 5- Geometry, Measurement, Structure & Logic	8	23
Total	31	100%

Grade 7	POs	%
Strand 1- Number Sense and Operations	7	18
Strand 2- Data Analysis, Probability, and Discrete Mathematics	10	32
Strand 3- Patterns, Algebra, and Functions	4	23
Strand 4 & 5- Geometry, Measurement, Structure & Logic	9	27
Total	30	100%

Grade 8	POs	%
Strand 1- Number Sense and Operations	4	18
Strand 2- Data Analysis, Probability, and Discrete Mathematics	9	41
Strand 3- Patterns, Algebra, and Functions	4	18
Strand 4 & 5- Geometry, Measurement, Structure & Logic	11	23
Total	28	100%

Grade HS	POs	%
Strand 1- Number Sense and Operations	6	18
Strand 2- Data Analysis, Probability, and Discrete Mathematics	7	23
Strand 3- Patterns, Algebra, and Functions	6	36
Strand 4 & 5- Geometry, Measurement, Structure & Logic	11	23
Total	30	100%

Table 3.2.3
AIMS A Blueprint for Science Grades 4, 8, 10

AIMS A Science Blueprint (beginning Spring 2009)

<u>Grade 4</u>	<u>PO</u>	<u>%</u>
Strand 1- Inquiry Process	11	20
Strand 2& 3-History, Nature, Personal and Social	4	25
Strand 4, 5 &6 – Science Content	8	55
Total	23	100%

<u>Grade 8</u>	<u>PO</u>	<u>%</u>
Strand 1- Inquiry Process	14	30
Strand 2& 3-History, Nature, Personal and Social	5	30
Strand 4, 5 &6 – Science Content	7	40
Total	26	100%

<u>HS</u>	<u>PO</u>	<u>%</u>
Strand 1- Inquiry Process	14	25
Strand 2& 3-History, Nature, Personal and Social	7	30
Strand 4, 5 &6 – Science Content	19	45
Total	40	100%

3.3 Description of AIMS A 2009 Tests

The test blueprints were used with the processes described in Part 4 to develop all AIMS A tests administered in 2009.

3.3.1 Reading (Criterion-referenced only)

The AIMS A CRT Reading tests consisted of 10 multiple-choice items, 5 performance tasks, and 5 rater items developed by Arizona teachers. All items were scored on a basis of 4 raw score points per item. The raw scores ranged from 0-80 and scale scores were designed to range from 1000 to 1500. All items on the Reading tests reported to a criterion-referenced score. All Reading tests included 5 embedded field test items.

3.3.2 Mathematics (Criterion-referenced only)

The AIMS A CRT Mathematics tests consisted of 12 multiple-choice items, 5 performance tasks, and 5 rater items developed by Arizona teachers. All items were scored on a basis of 4 raw score points per item. The raw scores ranged from 0-88 and scale scores were designed to range from 1000 to 1500. All items on the Mathematics tests reported to a criterion-referenced score. All Mathematics tests included 5 embedded field test items.

3.3.3 Science (Criterion-referenced only)

The AIMS A CRT Science consisted of 10 multiple-choice items, 5 performance tasks, and 5 rater items developed by Arizona teachers. All items were scored on a basis of 4 raw score points per item. The raw scores ranged from 0-80 and scale scores were designed to range from 1000 to 1500. All items on the Science tests reported to a criterion-referenced score. All Science tests included 5 embedded field test items.

Table 3.3.1
Test Structure AIMS A Reading

Test items and item types address all strands. Strands not represented on the 2009 AIMS A assessments will be represented on future assessments.

	Number of Items	Multiple Choice	Performance Tasks	Rater Items
Grade 3				
Strand 1- Reading Process	8	3	2	3
Strand 2- Comprehending Literary Text	6	3	3	0
Strand 3- Comprehending Informational Text	6	4	0	2
Total	20	10	5	5
Grade 4				
Strand 1- Reading Process	3	1	0	2
Strand 2- Comprehending Literary Text	9	9	0	0
Strand 3- Comprehending Informational Text	8	0	5	3
Total	20	10	5	5
Grade 5				
Strand 1- Reading Process	6	2	1	3
Strand 2- Comprehending Literary Text	6	2	4	0
Strand 3- Comprehending Informational Text	8	6	0	2
Total	20	10	5	5
Grade 6				
Strand 1- Reading Process	6	3	0	3
Strand 2- Comprehending Literary Text	5	5	0	0
Strand 3- Comprehending Informational Text	9	2	5	2
Total	20	10	5	5
Grade 7				
Strand 1- Reading Process	8	3	1	4
Strand 2- Comprehending Literary Text	6	2	4	0
Strand 3- Comprehending Informational Text	6	5	0	1
Total	20	10	5	5
Grade 8				
Strand 1- Reading Process	7	3	1	3
Strand 2- Comprehending Literary Text	5	1	4	0
Strand 3- Comprehending Informational Text	8	6	0	2
Total	20	10	5	5
High School				
Strand 1- Reading Process	6	2	1	3
Strand 2- Comprehending Literary Text	6	2	4	0
Strand 3- Comprehending Informational Text	8	6	0	2
Total	20	10	5	5

Table 3.3.2
Test Structure AIMS A Mathematics

Test items and item types address all strands. Strands not represented on the 2009 AIMS A assessments will be represented on future assessments.

	Number of Items	Multiple Choice	Performance Tasks	Rater Items
Grade 3				
Strand 1- Number Sense and Operations	9	3	5	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	4	3	0	1
Strand 3- Patterns, Algebra, and Functions	4	3	0	1
Strand 4 & 5- Geometry, Measurement, Structure & Logic	5	3	0	2
Total	22	12	5	5
Grade 4				
Strand 1- Number Sense and Operations	10	3	5	2
Strand 2- Data Analysis, Probability, and Discrete Mathematics	4	3	0	1
Strand 3- Patterns, Algebra, and Functions	2	2	0	0
Strand 4 & 5- Geometry, Measurement, Structure & Logic	6	4	0	2
Total	22	12	5	5
Grade 5				
Strand 1- Number Sense and Operations	8	2	4	2
Strand 2- Data Analysis, Probability, and Discrete Mathematics	5	2	1	2
Strand 3- Patterns, Algebra, and Functions	6	5	0	1
Strand 4 & 5- Geometry, Measurement, Structure & Logic	3	3	0	0
Total	22	12	5	5
Grade 6				
Strand 1- Number Sense and Operations	5	3	0	2
Strand 2- Data Analysis, Probability, and Discrete Mathematics	7	0	5	2
Strand 3- Patterns, Algebra, and Functions	5	4	0	1
Strand 4 & 5- Geometry, Measurement, Structure & Logic	5	5	0	0
Total	22	12	5	5
Grade 7				
Strand 1- Number Sense and Operations	4	2	0	2
Strand 2- Data Analysis, Probability, and Discrete Mathematics	7	0	5	2
Strand 3- Patterns, Algebra, and Functions	5	5	0	0
Strand 4 & 5- Geometry, Measurement, Structure & Logic	6	5	0	1
Total	22	12	5	5
Grade 8				
Strand 1- Number Sense and Operations	4	2	0	2
Strand 2- Data Analysis, Probability, and Discrete Mathematics	9	3	5	1
Strand 3- Patterns, Algebra, and Functions	4	4	0	0
Strand 4 & 5- Geometry, Measurement, Structure & Logic	5	3	0	2
Total	22	12	5	5
High School				
Strand 1- Number Sense and Operations	4	4	0	0
Strand 2- Data Analysis, Probability, and Discrete Mathematics	5	2	0	3
Strand 3- Patterns, Algebra, and Functions	8	3	5	0
Strand 4 & 5- Geometry, Measurement, Structure & Logic	5	3	0	2
Total	22	12	5	5

Table 3.3.3
Test Structure AIMS A Science

Test items and item types address all strands. Strands not represented on the 2009 AIMS A assessments will be represented on future assessments.

	Number of Items	Multiple Choice	Performance Tasks	Rater Items
Grade 4				
Strand 1- Inquiry Process	4	2	1	1
Strand 2 & 3-History, Nature, Personal and Social	5	2	2	1
Strand 4, 5 & 6 – Science Content	11	6	2	3
Total	20	10	5	5
Grade 8				
Strand 1- Inquiry Process	6	4	1	1
Strand 2 & 3-History, Nature, Personal and Social	6	2	2	2
Strand 4, 5 & 6 – Science Content	8	4	2	2
Total	20	10	5	5
High School				
Strand 1- Inquiry Process	5	3	1	1
Strand 2 & 3-History, Nature, Personal and Social	6	2	2	2
Strand 4, 5 & 6 – Science Content	9	5	2	2
Total	20	10	5	5

Table 3.3.4
Raw Score and Scale Score ranges of AIMS A 2009 CRT Assessment

AIMS A 2009
Scale Scores and Performance Levels

Gr. Performance Level	Mathematics		Reading		Science	
	Scale Score 2009	Raw Score 2009	Scale Score 2009	Raw Score 2009	Scale Score 2009	Raw Score 2009
3rd Falls Far Below Approaches Meets Exceeds	1000-1221	0-20	1000-1210	0-20		
	1222-1249	21-40	1211-1249	21-40		
	1250-1294	41-72	1250-1301	41-64		
	1295-1500	73-88	1302-1500	65-80		
4th Falls Far Below Approaches Meets Exceeds	1000-1221	0-20	1000-1186	0-16		
	1222-1249	21-40	1187-1249	17-44		
	1250-1301	41-72	1250-1331	45-70		
	1302-1500	73-88	1332-1500	71-80		
5th Falls Far Below Approaches Meets Exceeds	1000-1222	0-20	1000-1162	0-12		
	1223-1249	21-40	1163-1249	13-43		
	1250-1302	41-72	1250-1330	44-68		
	1303-1500	73-88	1331-1500	69-80		
6th Falls Far Below Approaches Meets Exceeds	1000-1186	0-16	1000-1164	0-12		
	1187-1249	17-44	1165-1249	13-40		
	1250-1313	45-72	1250-1336	41-66		
	1314-1500	73-88	1337-1500	67-80		
7th Falls Far Below Approaches Meets Exceeds	1000-1181	0-12	1000-1181	0-15		
	1182-1249	13-40	1182-1249	16-39		
	1250-1315	41-72	1250-1339	40-67		
	1316-1500	73-88	1340-1500	68-80		
8th Falls Far Below Approaches Meets Exceeds	1000-1200	0-16	1000-1195	0-16		
	1201-1249	17-40	1196-1249	17-40		
	1250-1300	41-68	1250-1330	41-70		
	1301-1500	69-88	1331-1500	71-80		
HS Falls Far Below Approaches Meets Exceeds	1000-1198	0-16	1000-1186	0-12		
	1199-1249	17-40	1187-1249	13-40		
	1250-1328	41-76	1250-1344	41-72		
	1329-1500	77-88	1345-1500	73-80		
	1000-1196	0-12	1000-1196	0-12		
	1197-1249	13-42	1197-1249	13-42		
	1250-1308	43-70	1250-1308	43-70		
	1309-1500	71-80	1309-1500	71-80		

Part 4: Test Development

Part 4 of the technical report provides a summary of the test development activities that occurred in preparation for the Spring 2009 AIMS A.

A comprehensive, multi-segment development process guides the development of assessment materials. The following section outlines this process in general terms and addresses the following AERA/APA/NCME standards: 1.6, 3.1, 3.5, 3.6, 3.7, 3.9, 3.11, 3.16, 6.4, 6.15, 7.3, 7.4, 7.7, 13.3, and 13.5.

4.1 AIMS A Test Development and Editing Process

4.1.1 Blueprint Development

The development of 2009 AIMS A assessment blueprint was derived from the 2008 blueprint and input received from the field and the Technical Advisory Committee (TAC) about the length and structure of the assessment. Improvements were made to the design and reviewed by educators, content specialists, and professionals from both LEAs and ADE.

4.1.2 Item Writing and Editing

The development of 2009 AIMS A assessments involved many educators, content specialists, and professionals from across Arizona and ADE collaborating in an effort to ensure that all newly developed items closely match the Arizona Alternate Content Standards and the item specifications. The Arizona teachers and education professionals selected to serve on item writing committees all possessed content and assessment expertise, many of whom had special education expertise. These committee members were selected for their ability to be creative while adhering to the test blueprint, detailed item specifications, and content limits. The participants received a considerable amount of professional development prior to writing items. (See Appendix D) Items from the previous administration were reviewed and clarified. The appearance of the items were modified to match the new format and new test items were developed by Arizona teachers using a template to capture all requirements and supporting information such as strand, concept, performance objective, and content reference documentation. New Performance Tasks and Rater Items were constructed and reviewed by committees of special educators and content specialists separately in December of 2008. These new items were constructed in response to suggestions from the last peer review of state assessment systems, the Technical Advisory Committee, and response from the field requesting these changes. After the item writing workshops were concluded, test items were edited and revised by in-house content specialists, assessment specialists, and research scientists for content appropriateness and standards match.

4.1.3 Item Specifications and Review Procedures

Prior to item writing, ADE reviewed the item specifications. The Item Specifications are living documents and need to be constantly reviewed. The purpose of the review and revision was to provide further clarity for how AIMS A will measure students' understanding of the alternate content standards. This is based on feedback from previous item writing workshops and best practices utilized in the development of AIMS items. ADE staff reviewed the definition of what is being tested by each Performance Objective (PO) and

where needed, clarified the PO statements, the content limits, and the stimulus and response attribute descriptions. Taken together, these revisions further help to inform instruction by explaining in detail what each PO means at each grade level and by describing how each PO is to be tested.

The resulting documents were used during item writing. Refinements and inputs were implemented. During item writing, it became clear that the item specifications would continue to require clarification and refinement in order to assure varied PO coverage within the test blueprint each year. More and varied illustrative samples for each PO need to be created each year and adapted from prior assessment items that truly reflect the item specification components and clearly test the PO. These item specifications will continue to be refined constantly where needed.

4.1.4 Test Construction Process

Test construction for the 2009 test administration began with an internal review of the items developed at the item writing workshops. Items matching the content standards were chosen to match blueprint specifications. Since the TAC had suggested that fewer items be administered so that reliabilities would not be impacted by student frustration levels. A maximum of 20/22 items were chosen to be administered for 2009. Each grade and content area was administered the same number of items. Each test form contained 10-12 Multiple Choice items, 5 Performance Tasks, and 5 Rater Items. This may be adjusted after final analysis of the results and a review of the reliabilities of each assessment. Additionally 5 multiple choice items were selected to provide refreshment for future years. After the assessments were constructed they went to a quality and content review.

4.1.5 Quality Reviews

ADE personnel implement a series of quality review checks at various stages of production to assure all AIMS A materials were as error free as possible. ADE first reviews each component at a relatively early stage of screen production. Items are compared to the way they were presented to the content/bias review committee to be sure no unauthorized changes have been introduced. A smooth AIMS A test administration requires that all test materials, including online test, Data Sheets, Performance Task Materials, and directions to test administrators are in alignment. A side benefit of this review was the possible revision of any unclear items. All final forms and documents were reviewed and approved by ADE content specialists. A final quality review was conducted of the actual online test by a group of special educators and content experts prior to any administration to students.

4.2 Documents and Materials Development

Beginning Fall 2008, Test Administration Manuals, Special Education Directors Manuals, and materials to support special adaptations unique to students with significant cognitive disabilities were developed. During Spring 2009, prior to the summer reporting, AIMS A reports were designed and Parent Test Interpretation Guide developed for summer dissemination.

Table 4.1.1
Number of Field Test Items Selected

Content Area	Number of Grades	Number of Forms	Number of Items Selected
Reading	5 (gr3 through 8 & HS)	7	35
Math	5 (gr3 through 8 & HS)	7	35
Science	3 (grades 4, 8, HS)	3	15
TOTAL			85

Table 4.1.2
CRT Item Selection

Grade	Content	Multiple Choice	Performance Tasks	Rater Items
3	Mathematics	12	5	5
4	Mathematics	12	5	5
5	Mathematics	12	5	5
6	Mathematics	12	5	5
7	Mathematics	12	5	5
8	Mathematics	12	5	5
HS	Mathematics	12	5	5
3	Reading	10	5	5
4	Reading	10	5	5
5	Reading	10	5	5
6	Reading	10	5	5
7	Reading	10	5	5
8	Reading	10	5	5
HS	Reading	10	5	5
4	Science	10	5	5
8	Science	10	5	5
HS	Science	10	5	5

4.3 Standard Setting

Standard Setting was conducted July 2009, in which educators examined the item data and performance results generated during the Spring 2009 test. The purpose of this standard setting committee meeting was to establish suggested cut scores that are based on what students in each performance level (Falls Far Below, Approaches, Meets, and Exceeds) should know and be able to perform while being assessed on AIMS A. In addition to obtaining suggested cut scores for various proficiency levels in science, mathematics, and reading, participants reviewed and provided edits to the established Performance Level Descriptors that identify what students being assessed with the AIMS A typically know and are able to perform. A copy of Dr. Elliott's Standards Setting report has been included as Appendix G

Part 5: Test Administration

Part 5 of the Technical Report describes administration procedures, including accommodations, security, and written procedures available to test administrators and school personnel. The following AERA/APA/NCME standards are addressed: 1.13, 3.3, 3.19, 3.20, 3.21, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 6.11, 6.15, 9.1, 10.1, and 10.2.

5.1 Adaptations

5.1.1 Overview of Adaptations

Some students taking the general assessment (AIMS) are allowed accommodations. Accommodations are specific practices and procedures that provide students with equitable access during instruction and assessment. Students with a Significant Cognitive Disability (SCD) require much more intensive instructional support which is provided through instructional adaptations. Significant adaptations and best practice strategies are necessary to develop an instructional environment to meet the unique abilities of students with a SCD. Instructional adaptation strategies, like accommodations, should be implemented during daily instruction. Only those adaptations and instructional strategies used consistently during instructional activities should be made available to the students with a SCD being assessed on AIMS A. The table below, Table 5.1.1, illustrates the adaptations (accommodations) actually provided to students during the 2009 administration

Table 5.1.1
2009 AIMS A Adaptations Provided

Any instructional adaptations or strategies can be used to support the student with a SCD as long as the student indicates the response choice. The following are adaptations actually provided to students on the 2009 AIMS A assessments; however, this is not an exhaustive list of adaptations that could be utilized.

Adaptation	Number of Students Using Adaptation								
	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10	Grade 11	Grade 12
Adaptive calculators	50	82	86	118	119	155	174	52	71
Alphabet line	356	338	283	270	239	261	171	26	63
Graph paper	37	66	66	48	54	63	80	12	25
Highlight or mark key phrases, words, or letters	224	258	234	243	266	296	247	56	89
Line drawings	135	143	103	116	98	115	124	25	62
Magnifier	24	23	16	19	19	23	21	7	15
Manipulatives	561	539	488	477	423	454	357	80	184
Number line	436	438	363	358	326	355	268	58	109
Other	117	124	84	131	108	115	93	26	64
Picture/Object system	279	288	228	259	243	246	225	52	127
Read passages or any test item/describe graphics	503	513	437	454	445	466	390	94	173
Sign language	86	107	97	96	62	79	56	11	32
Switch	68	79	53	72	61	60	48	5	26
Symbolic/Picture system	270	280	209	226	217	233	196	46	112
Use of objects	337	321	263	278	236	238	222	46	119
Total	3483	3599	3010	3165	2916	3159	2672	596	1271

5.2 Test Security

All AIMS A tests were administered under secure testing conditions. Figure 5.2.1 includes the security agreement signed by personnel involved with testing administration.

5.3 Test Administration

In order to ensure standardized testing administration for all students, a Special Education Director's Manual was made available to all special education directors for the Spring 2009 administrations. The manual included the following topics:

- Schedule of Important Dates
- Special Education Director's Responsibilities
- Scheduling Test Administration
- Students to be Tested
- Student Identification Information
- Test Materials
- Procedures During Test Administration
- Procedures Following Test Administration
- Test Security

A separate document called the Test Administration Directions was made available to all test administrators for the Spring 2009 assessments. It included the following:

- Test Administrator Responsibilities
- Arrangements Prior to Test Administration
- Test Materials and Testing Schedule
- Test Administration Guidelines
- Student Identification Information
- Detailed Scripts for Administration of Each Part of Each Test
- Procedures Following Test Administration

For specific information related to test administration, refer to the Special Education Director's Manual and/or the Test Administration Directions. These documents can be found online at <http://www.ade.az.gov/ess/SpecialProjects/aims-a/>.

Pre-test workshops were presented to special education directors across the state. All districts' special education directors were given the opportunity to attend a pre-test workshop. These workshops can be found under the title AIMS A 2009 Fall Regional Training at the link above. All districts will be required to attend one of these workshops for the 2010 AIMS A.

Figure 5.2.1
2009 AIMS A Test security agreement

Arizona's Instrument to Measure Standards
AIMS A Test Security Agreement 2009

I acknowledge that AIMS A is a secure test, and I agree to the following conditions of use to ensure the security of the test:

1. I will take necessary precautions to safeguard test materials.
 - a. Limit access to persons with a responsible, professional interest in the test's security.
 - b. Names of all persons having access to the materials will be kept on file by the special education director.
 - c. All persons having access to the AIMS A test materials (other than students to whom the test is administered) will sign the test security agreement.
 - i. Building administrators will maintain signed agreements of building staff.
 - ii. Special Education Directors will maintain signed agreements of building administrators.
2. I will keep all test materials secure, limiting access to Test Administrators.
 - a. Test materials will be kept secure until they are actually distributed to students.
 - b. In no case will students be permitted to remove test materials from the room where testing takes place except under supervision of staff.
3. I will not examine the AIMS A to determine the content beyond the requirements to administer the test.
 - a. No content of the test will be disclosed or allowed to be disclosed.
 - b. No test item will be discussed at any time.
4. After completing the test administration, I will store all testing materials, including student data sheets, in a secure area.
5. I will not use any test materials for instruction before or after test administration.
6. I understand the district superintendent or charter operator will develop, distribute, and enforce disciplinary procedures for the violation of test security by district or agency staff.

Individuals that will be administering the AIMS A for 2009 must also:

- participate in training activities prior to administering the AIMS A;
- review *AIMS A Test Administration Directions* for 2009 prior to test date;
- follow *AIMS A Test Administration Directions*; and
- secure all AIMS A test materials upon completion of testing, including all student data sheets.

By signing my name to this document, I am assuring my district/charter and the Arizona Department of Education that I will abide by the above conditions and that anyone I supervise who will have access to the 2009 AIMS A test will also sign a Test Security Agreement.

Signed By: _____
Printed Name: _____
Title: _____
School: _____

Please return signed copy to your Special Education Director.

Part 6: Data for Operational Analysis

Part 6 of the Technical Report describes the data that were used for calibrating and scaling of the 2009 Spring AIMS A. This part also presents classical test statistics and item analysis statistics for each content area and grade level. Addressed in this part of the technical report are the following AERA/APA/NCME standards: 1.5, 1.13, 2.4, 2.8, 3.18, 6.5, and 7.1.

6.1 Data

AIMS A has one test window spanning six weeks. The 2009 assessments were administered between February 15th and March 31st. Live calibration with census data was used for operational analysis of Reading, Mathematics, and Science tests. In order to ensure valid calibration results, several data cleaning steps occurred upon receipt of raw data from the ADE IT Department which hosts the online test and publishes the results. These steps allowed for calibration to be conducted on valid student responses at the targeted grade level. Records for students taking each content area test were included.

The cleaning process employed after the data were received from IT was applied to the calibration data sets for each content area and grade level:

- Multiple files were received from IT with scored multiple choice results, performance tasks scores, and rater item scores, multiple choice items were also sent with distractors identified for analysis purposes. These files and records were merged and sorted into administered sequence as a first step.
- Records of non-responsive students and partially non-responsive students, those answering at least one item, were identified.
- Totally non responsive students, those students who did not respond to any items, were coded blank.
- Students who did respond to at least one item of any item type, had their non response coded as omit.
- Records of total non responders were removed from the calibration analysis, but not removed from the final scale and reports.
- No other records were excluded.

More details on calibration are included in Part 7 Calibration and Scaling.

6.2 Descriptive Statistics by Test

Table 6.2.1 presents descriptive statistics by test (content area and grade level) which are computed with the population data in Reading, Mathematics, Science. In the table it shows the number of students (N), the maximum obtained raw score (Max RS), the raw score mean (RS M), the raw score standard deviation (RS SD), and Cronbach's alpha as a measure of internal consistency by item type. It should be noted though that the accuracy of the reliability coefficient is questionable due to the large number of non-responders in the sample and the low number of test items in the rater and performance tasks subtests..

Table 6.2.1
2009 AIMS A Classical Test Analysis Statistics

Test	N	Max Score MC	RS M MC	RS SD MC	Internal Consistency MC	Max Score PT	RS M PT	RS SD PT	Internal Consistency PT	Max Score RI	RS M RI	RS SD RI	Internal Consistency RI
Math													
03	877	48	29.92	14.28	.86	20	10.90	6.60	.87	20	10.66	6.14	.84
04	898	48	29.88	15.64	.89	20	9.93	6.57	.87	20	9.84	6.45	.84
05	808	48	29.52	14.16	.85	20	8.09	6.06	.82	20	9.67	6.32	.84
06	795	48	27.60	13.88	.84	20	12.30	6.49	.87	20	8.36	6.15	.83
07	801	48	27.88	13.80	.84	20	12.44	6.42	.87	20	9.64	6.32	.85
08	863	48	26.00	13.84	.83	20	12.73	6.64	.90	20	9.15	6.07	.82
HS	1368	48	25.52	13.48	.81	20	12.82	6.87	.91	20	9.59	6.65	.88
Reading													
03	877	40	26.48	11.8	.82	20	11.31	6.61	.88	20	9.74	6.11	.83
04	898	40	26.64	13.24	.89	20	12.23	6.38	.87	20	9.64	6.34	.85
05	808	40	25.48	12.28	.84	20	12.99	6.80	.91	20	9.37	6.50	.87
06	795	40	25.20	13.0	.87	20	11.41	6.43	.87	20	9.05	6.22	.85
07	801	40	26.36	12.84	.87	20	12.51	6.60	.90	20	9.80	6.49	.87
08	863	40	26.96	12.16	.86	20	13.16	6.59	.90	20	10.40	6.34	.86
HS	1368	40	28.64	12.0	.87	20	13.97	6.90	.93	20	9.98	6.88	.89
Science													
04	897	40	27.08	13.12	.89	20	12.00	7.06	.90	20	11.58	6.46	.86
08	860	40	26.20	12.76	.87	20	15.31	6.48	.93	20	14.62	6.25	.88
HS	822	40	27.96	12.24	.87	20	13.60	6.43	.88	20	10.69	6.42	.87

Note: The statistics presented in this table are based on a sample near census for this administration.

6.3 Classical Item Analysis

Classical item analysis was conducted for all grades and content areas. Tables 6.3.1-6.3.17 presents item statistics for the tests. Note that operational items are reported in sequence without embedded field test items. The tables show the number of students (N), the item difficulty (P-Value), point biserial correlation (r_{pb}) and biserial correlation (r_{bi}) for dichotomous items, percentage of students who omitted a multiple choice item (% Omit), and the percentage of students responding to and point biserial for the key and each distractor. The point biserial correlation (r_{pb}) reported is the point biserial correlation of the item and sum of other items. The biserial correlation (r_{bi}) reported is the biserial correlation of the item and sum of other items.

Table 6.3.1
2009 AIMS A Classical Item Analysis
Mathematics Grade 3

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u>	<u>Distractor 1</u>		<u>Distractor 2</u>	
						%	%	rpb	%	rpb
1	877	0.70	0.50	0.66	3	70	9	-0.25	18	-0.35
2	877	0.65	0.45	0.58	4	65	11	-0.24	20	-0.27
3	877	0.62	0.46	0.59	3	62	11	-0.24	24	-0.32
4	877	0.81	0.38	0.55	2	81	7	-0.31	10	-0.22
5	877	0.57	0.43	0.55	3	57	16	-0.18	25	-0.35
6	877	0.82	0.50	0.73	3	82	5	-0.32	10	-0.28
7	877	0.67	0.58	0.75	4	67	12	-0.37	16	-0.29
8	877	0.60	0.33	0.42	4	60	18	-0.28	19	-0.12
9	877	0.89	0.37	0.61	3	89	3	-0.15	5	-0.21
10	877	0.62	0.48	0.61	5	62	21	-0.25	12	-0.30
11	877	0.52	0.34	0.43	6	52	15	-0.20	27	-0.16
12	877	0.57	0.46	0.58	5	57	16	-0.22	23	-0.28

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 6.8% of the sample did not respond to any test item

Performance Tasks

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%
13	877	78.7	0.70	12.0	-0.38	9.3	-0.55	6.8
14	877	53.9	0.66	27.3	-0.13	18.8	-0.70	6.8
15	877	35.1	0.63	33.7	0.07	31.2	-0.72	6.8
16	877	34.9	0.71	25.6	0.10	39.5	-0.78	6.8
17	877	26.9	0.65	27.3	0.18	45.8	-0.73	6.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 1</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%	rpb	%
18	877	47.2	0.72	13.8	0.02	18.0	-0.22	20.9	-0.70	6.8
19	877	40.0	0.66	19.2	0.05	20.8	-0.26	20.0	-0.60	6.8
20	877	80.3	0.66	6.1	-0.21	7.2	-0.39	6.4	-0.45	6.8
21	877	49.6	0.73	13.6	-0.02	15.3	-0.25	21.5	-0.65	6.8
22	877	11.8	0.45	15.1	0.26	31.3	0.10	41.9	-0.58	6.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.2
2009 AIMS A Classical Item Analysis
Mathematics Grade 4

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	Key %	Distractor 1 %	rpb	Distractor 2 %	rpb
1	819	0.70	0.58	0.76	3	70	15	-0.37	12	-0.32
2	819	0.81	0.43	0.62	3	81	9	-0.23	7	-0.29
3	819	0.79	0.56	0.79	3	79	11	-0.37	7	-0.29
4	819	0.50	0.36	0.45	3	50	28	-0.27	19	-0.13
5	819	0.70	0.43	0.56	3	70	15	-0.22	12	-0.32
6	819	0.68	0.44	0.58	4	68	22	-0.31	6	-0.22
7	819	0.63	0.58	0.75	4	63	16	-0.31	17	-0.33
8	819	0.66	0.55	0.71	5	66	13	-0.30	17	-0.29
9	819	0.81	0.58	0.83	3	81	8	-0.35	8	-0.34
10	819	0.63	0.55	0.71	5	63	11	-0.29	21	-0.30
11	819	0.65	0.51	0.65	5	65	14	-0.27	16	-0.28
12	819	0.64	0.46	0.59	4	64	15	-0.24	17	-0.27

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 8.8% of the sample did not respond to any test item

Performance Tasks

Item	N	Score 4 %	rpb	Score 2 %	rpb	Score 0 %	rpb	No Response %
13	819	75.1	0.70	15.6	-0.40	9.3	-0.54	8.8
14	819	56.5	0.72	23.4	-0.20	20.0	-0.68	8.8
15	819	34.1	0.68	32.5	0.06	33.5	-0.74	8.8
16	819	25.2	0.65	27.2	0.26	47.6	-0.79	8.8
17	819	18.8	0.60	26.1	0.31	55.1	-0.75	8.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	Score 4 %	rpb	Score 2 %	rpb	Score 1 %	rpb	Score 0 %	rpb	No Response %
18	819	67.5	0.74	9.6	-0.19	11.7	-0.41	11.1	-0.51	8.8
19	819	27.0	0.56	17.6	0.22	21.0	-0.06	34.4	-0.65	8.8
20	819	49.9	0.60	19.5	-0.02	14.2	-0.27	16.4	-0.54	8.8
21	819	34.7	0.67	17.6	0.09	18.9	-0.15	28.8	-0.66	8.8
22	819	29.7	0.65	16.0	0.17	17.0	-0.09	37.4	-0.68	8.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.3
2009 AIMS A Classical Item Analysis
Mathematics Grade 5

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> % rpb	<u>Distractor 2</u> % rpb
1	808	0.83	0.60	0.89	2	83	4 -0.19	5 -0.20
2	808	0.71	0.57	0.76	3	71	11 -0.20	9 -0.19
3	808	0.58	0.53	0.67	3	58	15 -0.09	18 -0.26
4	808	0.55	0.39	0.49	3	55	22 -0.07	14 -0.13
5	808	0.49	0.46	0.58	5	49	18 -0.15	22 -0.05
6	808	0.67	0.62	0.80	4	67	9 -0.25	14 -0.19
7	808	0.67	0.57	0.74	3	67	14 -0.21	10 -0.16
8	808	0.66	0.53	0.69	3	66	15 -0.19	10 -0.15
9	808	0.50	0.44	0.55	5	50	17 -0.11	21 -0.08
10	808	0.43	0.40	0.50	6	43	17 -0.10	28 -0.01
11	808	0.60	0.58	0.74	4	60	14 -0.22	16 -0.14
12	808	0.68	0.67	0.88	4	68	9 -0.23	13 -0.25

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 6.2% of the sample did not respond to any test item

Performance Tasks

Item	N	<u>Score 4</u> % rpb	<u>Score 2</u> % rpb	<u>Score 0</u> % rpb	<u>No Response</u> %
13	808	42.1 0.68	31.0 -0.08	26.9 -0.68	6.2
14	808	37.2 0.59	33.4 0.05	29.4 -0.68	6.2
15	808	25.9 0.60	27.4 0.20	46.7 -0.71	6.2
16	808	14.0 0.48	25.1 0.42	60.9 -0.72	6.2
17	808	11.9 0.48	24.3 0.43	63.9 -0.71	6.2

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> % rpb	<u>Score 2</u> % rpb	<u>Score 1</u> % rpb	<u>Score 0</u> % rpb	<u>No Response</u> %
18	808	53.2 0.70	14.5 -0.04	14.1 -0.25	18.2 -0.64	6.2
19	808	33.9 0.65	17.4 0.12	19.9 -0.17	28.8 -0.64	6.2
20	808	44.5 0.68	19.1 -0.01	19.7 -0.29	16.8 -0.57	6.2
21	808	15.0 0.53	17.4 0.32	22.3 0.06	45.3 -0.67	6.2
22	808	35.1 0.63	18.2 0.14	21.4 -0.22	25.3 -0.61	6.2

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.4
2009 AIMS A Classical Item Analysis
Mathematics Grade 6

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	<u>rpb</u>	<u>Distractor 2</u> %	<u>rpb</u>
1	795	0.41	0.29	0.37	5	41	17	-0.08	31	0.07
2	795	0.64	0.54	0.69	5	64	10	-0.11	15	-0.17
3	795	0.62	0.46	0.59	5	62	16	-0.03	11	-0.19
4	795	0.46	0.42	0.52	5	46	18	-0.03	25	-0.10
5	795	0.56	0.56	0.70	5	56	19	-0.12	14	-0.20
6	795	0.66	0.58	0.75	5	66	8	-0.15	14	-0.17
7	795	0.51	0.55	0.69	5	51	19	-0.09	19	-0.18
8	795	0.51	0.41	0.51	5	51	20	0.05	18	-0.18
9	795	0.65	0.64	0.82	5	65	12	-0.15	13	-0.26
10	795	0.46	0.44	0.55	5	46	19	-0.06	23	-0.09
11	795	0.69	0.57	0.75	5	69	9	-0.12	11	-0.19
12	795	0.74	0.54	0.73	5	74	8	-0.11	7	-0.14

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5.9% of the sample did not respond to any test item

Performance Tasks

Item	N	<u>Score 4</u> %	<u>rpb</u>	<u>Score 2</u> %	<u>rpb</u>	<u>Score 0</u> %	<u>rpb</u>	<u>No Response</u> %
13	795	56.0	0.69	29.1	-0.18	14.8	-0.73	5.9
14	795	46.4	0.62	34.6	-0.11	19.0	-0.66	5.9
15	795	42.9	0.61	34.1	-0.21	23.0	-0.48	5.9
16	795	52.1	0.70	30.5	-0.14	17.4	-0.74	5.9
17	795	49.7	0.70	31.0	-0.14	19.3	-0.73	5.9

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> %	<u>rpb</u>	<u>Score 2</u> %	<u>rpb</u>	<u>Score 1</u> %	<u>rpb</u>	<u>Score 0</u> %	<u>rpb</u>	<u>No Response</u> %
18	795	38.4	0.60	19.1	0.09	18.3	-0.21	24.2	-0.58	5.9
19	795	28.3	0.62	17.6	0.21	20.5	-0.13	33.6	-0.66	5.9
20	795	43.0	0.69	15.1	0.02	21.7	-0.32	20.2	-0.55	5.9
21	795	16.4	0.56	20.6	0.33	22.6	-0.01	40.4	-0.68	5.9
22	795	26.5	0.61	14.4	0.23	21.5	-0.09	37.6	-0.65	5.9

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.5
2009 AIMS A Classical Item Analysis
Mathematics Grade 7

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	<u>Distractor 1</u> rpb	<u>Distractor 2</u> %	<u>Distractor 2</u> rpb
1	801	0.55	0.40	0.51	4	55	25	-0.01	11	-0.24
2	801	0.50	0.47	0.59	5	50	22	-0.12	17	-0.15
3	801	0.54	0.43	0.54	4	54	22	-0.04	15	-0.20
4	801	0.41	0.39	0.49	6	41	12	-0.08	36	-0.04
5	801	0.54	0.57	0.71	6	54	19	-0.17	15	-0.17
6	801	0.54	0.38	0.48	5	54	16	0.01	20	-0.15
7	801	0.50	0.50	0.63	5	50	19	-0.09	21	-0.19
8	801	0.68	0.64	0.83	4	68	10	-0.26	11	-0.21
9	801	0.80	0.61	0.87	4	80	5	-0.14	6	-0.26
10	801	0.79	0.53	0.75	4	79	6	-0.10	6	-0.18
11	801	0.57	0.56	0.71	4	57	13	-0.18	20	-0.19
12	801	0.54	0.54	0.68	5	54	14	-0.23	21	-0.11

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this 5.4% of the sample did not respond to any test item administration.

Performance Tasks

Item	N	<u>Score 4</u> %	<u>Score 4</u> rpb	<u>Score 2</u> %	<u>Score 2</u> rpb	<u>Score 0</u> %	<u>Score 0</u> rpb	<u>No Response</u> %
13	801	59.0	0.69	29.4	-0.28	11.6	-0.67	5.4
14	801	43.8	0.61	36.3	-0.08	19.9	-0.66	5.4
15	801	43.9	0.62	35.8	-0.06	20.3	-0.70	5.4
16	801	43.3	0.62	36.3	-0.06	20.4	-0.69	5.4
17	801	56.1	0.73	27.3	-0.21	16.6	-0.71	5.4

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> %	<u>Score 4</u> rpb	<u>Score 2</u> %	<u>Score 2</u> rpb	<u>Score 1</u> %	<u>Score 1</u> rpb	<u>Score 0</u> %	<u>Score 0</u> rpb	<u>No Response</u> %
18	801	39.4	0.62	20.6	0.10	19.3	-0.24	20.7	-0.61	5.4
19	801	31.3	0.62	18.2	0.13	24.0	-0.19	26.5	-0.59	5.4
20	801	54.9	0.68	16.4	-0.05	15.3	-0.35	13.5	-0.57	5.4
21	801	25.5	0.61	21.5	0.23	22.7	-0.13	30.3	-0.67	5.4
22	801	31.0	0.66	16.9	0.17	21.8	-0.20	30.3	-0.64	5.4

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.6
2009 AIMS A Classical Item Analysis
Mathematics Grade 8

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	863	0.51	0.44	0.55	3	51	19	-0.18	20	-0.06
2	863	0.61	0.52	0.66	2	61	17	-0.16	12	-0.21
3	863	0.51	0.39	0.49	3	51	12	-0.22	26	0.00
4	863	0.55	0.54	0.68	3	55	13	-0.26	22	-0.13
5	863	0.68	0.56	0.73	3	68	9	-0.20	12	-0.19
6	863	0.56	0.53	0.66	2	56	11	-0.26	24	-0.15
7	863	0.71	0.63	0.84	2	71	9	-0.26	10	-0.22
8	863	0.49	0.46	0.58	3	49	26	-0.13	15	-0.13
9	863	0.49	0.39	0.49	4	49	18	-0.15	22	-0.04
10	863	0.42	0.44	0.55	3	42	25	-0.12	22	-0.07
11	863	0.52	0.49	0.62	4	52	15	-0.19	22	-0.13
12	863	0.45	0.41	0.52	5	45	17	-0.13	26	-0.06

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 7.4% of the sample did not respond to any test item

Performance Tasks

Item	N	<u>Score 4</u> %	rpb	<u>Score 2</u> %	rpb	<u>Score 0</u> %	rpb	<u>No Response</u> %
13	863	58.7	0.67	29.7	-0.24	11.6	-0.68	7.4
14	863	45.6	0.62	35.4	-0.10	19.0	-0.66	7.4
15	863	53.3	0.71	31.2	-0.23	15.5	-0.69	7.4
16	863	46.1	0.65	35.4	-0.11	18.5	-0.70	7.4
17	863	61.2	0.69	26.4	-0.22	12.4	-0.73	7.4

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> %	rpb	<u>Score 2</u> %	rpb	<u>Score 1</u> %	rpb	<u>Score 0</u> %	rpb	<u>No Response</u> %
18	863	43.9	0.66	18.3	0.03	16.3	-0.21	21.5	-0.63	7.4
19	863	40.9	0.71	16.1	0.04	21.3	-0.28	21.7	-0.61	7.4
20	863	60.3	0.64	13.3	-0.04	12.3	-0.36	14.1	-0.53	7.4
21	863	14.6	0.53	18.8	0.25	24.3	0.06	42.3	-0.63	7.4
22	863	20.8	0.56	16.5	0.23	26.3	-0.04	36.4	-0.61	7.4

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.7
2009 AIMS A Classical Item Analysis
Mathematics High School

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	1368	0.63	0.57	0.73	3	63	13	-0.23	16	-0.25
2	1368	0.55	0.51	0.64	4	55	25	-0.16	12	-0.24
3	1368	0.48	0.39	0.48	4	48	17	-0.02	26	-0.19
4	1368	0.48	0.36	0.45	2	48	17	-0.26	28	-0.04
5	1368	0.62	0.56	0.72	3	62	14	-0.20	16	-0.29
6	1368	0.50	0.47	0.59	4	50	14	-0.10	28	-0.23
7	1368	0.49	0.44	0.55	4	49	20	-0.04	22	-0.25
8	1368	0.45	0.32	0.40	4	45	23	-0.01	24	-0.15
9	1368	0.51	0.37	0.46	2	51	19	-0.13	23	-0.15
10	1368	0.53	0.49	0.62	3	53	15	-0.24	24	-0.14
11	1368	0.52	0.48	0.61	4	52	19	-0.18	19	-0.16
12	1368	0.63	0.49	0.63	2	63	9	-0.25	21	-0.21

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-12 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5% of the sample did not respond to any test item

Performance Tasks

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 0</u> rpb	<u>No</u> <u>Response</u> %
13	1368	56.2	0.72	29.1	-0.26	14.7	-0.68	5.0
14	1368	46.6	0.75	33.2	-0.14	20.2	-0.76	5.0
15	1368	44.5	0.73	29.6	-0.03	25.9	-0.79	5.0
16	1368	64.1	0.68	21.9	-0.22	13.9	-0.69	5.0
17	1368	57.7	0.72	23.0	-0.18	19.3	-0.72	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 13-17 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 1</u> rpb	%	<u>Score 0</u> rpb	<u>No</u> <u>Response</u> %
18	1368	33.7	0.70	19.4	0.14	17.8	-0.13	29.1	-0.73	5.0
19	1368	62.7	0.78	8.6	-0.14	10.9	-0.34	17.7	-0.61	5.0
20	1368	54.9	0.72	14.8	-0.05	13.8	-0.35	16.6	-0.58	5.0
21	1368	19.4	0.62	19.1	0.27	21.0	0.02	40.5	-0.74	5.0
22	1368	22.2	0.65	14.6	0.23	21.4	0.04	41.8	-0.75	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 18-22 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.8
2009 AIMS A Classical Item Analysis
Reading Grade 3
Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	877	0.74	0.63	0.85	2	74	8	-0.23	9	-0.23
2	877	0.81	0.67	0.97	3	81	4	-0.23	6	-0.20
3	877	0.53	0.44	0.55	4	53	17	-0.13	20	-0.06
4	877	0.66	0.50	0.64	3	66	14	-0.12	11	-0.17
5	877	0.59	0.51	0.65	4	59	11	-0.17	19	-0.13
6	877	0.49	0.39	0.49	3	49	13	-0.08	27	-0.08
7	877	0.57	0.44	0.55	4	57	21	-0.07	11	-0.12
8	877	0.62	0.53	0.68	3	62	13	-0.14	15	-0.18
9	877	0.51	0.45	0.56	4	51	16	-0.13	22	-0.07
10	877	0.74	0.60	0.81	3	74	9	-0.23	8	-0.16

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 6.7% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
11	877	56.4	0.69	25.3	-0.18	18.3	-0.68	6.7
12	877	41.6	0.65	31.8	0.02	26.7	-0.75	6.7
13	877	41.0	0.64	39.1	-0.08	19.9	-0.69	6.7
14	877	29.3	0.58	41.7	0.11	29.0	-0.69	6.7
15	877	51.2	0.67	29.7	-0.10	19.1	-0.73	6.7

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 1</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
16	877	69.9	0.68	11.0	-0.25	10.6	-0.35	8.4	-0.46	6.7
17	877	19.7	0.53	18.0	0.26	21.8	0.04	40.6	-0.66	6.7
18	877	41.0	0.69	16.6	0.04	16.0	-0.15	26.4	-0.67	6.7
19	877	25.6	0.64	20.7	0.16	29.7	-0.20	24.1	-0.59	6.7
20	877	36.3	0.66	19.9	0.07	23.6	-0.29	20.2	-0.55	6.7

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.9
2009 AIMS A Classical Item Analysis
Reading Grade 4

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	898	0.73	0.70	0.94	2	73	7	-0.21	9	-0.26
2	898	0.58	0.54	0.68	4	58	17	-0.11	13	-0.15
3	898	0.65	0.60	0.77	3	65	11	-0.10	12	-0.22
4	898	0.64	0.61	0.78	4	64	13	-0.20	11	-0.12
5	898	0.75	0.69	0.94	4	75	6	-0.15	7	-0.23
6	898	0.63	0.60	0.76	4	63	12	-0.15	13	-0.17
7	898	0.72	0.70	0.94	3	72	8	-0.23	8	-0.21
8	898	0.66	0.66	0.86	3	66	11	-0.18	12	-0.23
9	898	0.74	0.71	0.96	3	74	9	-0.22	6	-0.23
10	898	0.55	0.51	0.64	4	55	13	-0.17	21	-0.05

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 8.1% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
11	898	35.2	0.59	44.4	-0.09	20.5	-0.59	8.1
12	898	41.0	0.67	37.7	-0.13	21.3	-0.65	8.1
13	898	51.3	0.64	32.1	-0.19	16.6	-0.63	8.1
14	898	70.7	0.67	19.9	-0.32	9.5	-0.59	8.1
15	898	52.7	0.65	30.2	-0.14	17.1	-0.69	8.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 1</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
16	898	41.3	0.65	19.6	0.03	20.2	-0.25	18.8	-0.59	8.1
17	898	22.5	0.55	17.3	0.22	23.5	-0.04	36.6	-0.62	8.1
18	898	48.7	0.70	15.4	-0.01	21.7	-0.40	14.2	-0.52	8.1
19	898	37.1	0.68	19.2	0.07	25.8	-0.31	17.9	-0.57	8.1
20	898	38.1	0.63	21.1	0.04	22.3	-0.25	18.5	-0.57	8.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.10
2009 AIMS A Classical Item Analysis
Reading Grade 5

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	<u>Distractor 1</u> rpb	<u>Distractor 2</u> %	<u>Distractor 2</u> rpb
1	808	0.67	0.53	0.69	2	67	11	-0.19	14	-0.24
2	808	0.76	0.59	0.81	2	76	9	-0.26	7	-0.19
3	808	0.64	0.54	0.70	3	64	16	-0.19	11	-0.21
4	808	0.64	0.56	0.72	4	64	10	-0.18	17	-0.21
5	808	0.50	0.42	0.53	3	50	14	-0.12	26	-0.12
6	808	0.63	0.54	0.69	3	63	10	-0.20	19	-0.21
7	808	0.58	0.53	0.66	4	58	17	-0.17	15	-0.17
8	808	0.61	0.56	0.71	3	61	15	-0.22	15	-0.17
9	808	0.66	0.55	0.71	4	66	11	-0.19	14	-0.18
10	808	0.68	0.57	0.74	3	68	10	-0.15	13	-0.25

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5.8% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
11	808	51.2	0.69	35.3	-0.22	13.4	-0.70	5.8
12	808	56.1	0.69	28.0	-0.20	15.9	-0.69	5.8
13	808	47.0	0.67	31.9	-0.06	21.0	-0.75	5.8
14	808	56.5	0.71	28.3	-0.20	15.2	-0.73	5.8
15	808	60.3	0.76	23.5	-0.21	16.2	-0.76	5.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 1</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
16	808	43.2	0.70	19.1	0.00	19.3	-0.28	18.4	-0.61	5.8
17	808	28.1	0.64	21.6	0.18	20.0	-0.13	30.4	-0.67	5.8
18	808	28.1	0.63	20.5	0.18	17.3	-0.09	34.0	-0.69	5.8
19	808	30.7	0.66	19.6	0.14	21.9	-0.16	27.7	-0.65	5.8
20	808	43.4	0.69	20.4	-0.02	20.1	-0.29	16.2	-0.58	5.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.11
2009 AIMS A Classical Item Analysis
Reading Grade 6

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	795	0.69	0.58	0.76	2	69	11	-0.19	10	-0.22
2	795	0.64	0.64	0.83	3	64	13	-0.23	12	-0.21
3	795	0.63	0.59	0.76	2	63	11	-0.20	16	-0.21
4	795	0.68	0.62	0.81	4	68	10	-0.23	10	-0.16
5	795	0.63	0.61	0.79	4	63	12	-0.19	13	-0.18
6	795	0.62	0.58	0.74	4	62	14	-0.20	12	-0.16
7	795	0.58	0.59	0.75	3	58	10	-0.15	21	-0.23
8	795	0.59	0.45	0.57	3	59	14	-0.07	16	-0.16
9	795	0.60	0.55	0.70	2	60	14	-0.22	15	-0.14
10	795	0.62	0.59	0.75	4	62	12	-0.20	14	-0.16

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 8.1% of the sample did not respond to any test item.

Performance Tasks

Item	N	<u>Score 4</u> %	rpb	<u>Score 2</u> %	rpb	<u>Score 0</u> %	rpb	<u>No Response</u> %
11	795	32.7	0.56	42.3	0.08	25.0	-0.70	8.1
12	795	46.4	0.64	36.9	-0.14	16.7	-0.68	8.1
13	795	45.8	0.66	34.5	-0.07	19.7	-0.74	8.1
14	795	53.8	0.61	32.4	-0.14	13.8	-0.68	8.1
15	795	36.7	0.55	43.5	0.03	19.8	-0.70	8.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> %	rpb	<u>Score 2</u> %	rpb	<u>Score 1</u> %	rpb	<u>Score 0</u> %	rpb	<u>No Response</u> %
16	795	21.8	0.56	22.6	0.22	26.5	-0.10	29.1	-0.61	8.1
17	795	37.1	0.67	23.7	0.08	20.5	-0.28	18.7	-0.63	8.1
18	795	23.3	0.60	16.6	0.20	22.0	-0.05	38.2	-0.63	8.1
19	795	41.2	0.68	19.8	0.02	20.1	-0.29	18.9	-0.58	8.1
20	795	42.8	0.64	23.0	0.02	19.0	-0.31	15.2	-0.57	8.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.12
2009 AIMS A Classical Item Analysis
Reading Grade 7

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	Key %	Distractor 1 %	rpb	Distractor 2 %	rpb
1	801	0.71	0.58	0.77	3	71	8	-0.14	11	-0.25
2	801	0.55	0.58	0.73	4	55	21	-0.19	14	-0.20
3	801	0.57	0.58	0.74	5	57	15	-0.16	17	-0.21
4	801	0.69	0.58	0.76	5	69	9	-0.08	11	-0.29
5	801	0.57	0.59	0.74	4	57	21	-0.22	13	-0.18
6	801	0.75	0.65	0.89	3	75	8	-0.22	8	-0.28
7	801	0.66	0.58	0.74	6	66	8	-0.14	14	-0.20
8	801	0.68	0.61	0.79	5	68	8	-0.15	13	-0.24
9	801	0.64	0.57	0.73	4	64	10	-0.20	15	-0.17
10	801	0.77	0.65	0.90	5	77	5	-0.15	7	-0.26

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 6% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	Score 4 rpb	%	Score 2 rpb	%	Score 0 rpb	No Response %
11	801	50.7	0.67	34.5	-0.21	14.7	-0.67	6.0
12	801	42.2	0.66	39.2	-0.11	18.6	-0.70	6.0
13	801	51.0	0.69	30.3	-0.15	18.7	-0.71	6.0
14	801	55.2	0.69	32.4	-0.25	12.4	-0.69	6.0
15	801	49.0	0.71	32.7	-0.16	18.3	-0.72	6.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	Score 4 rpb	%	Score 2 rpb	%	Score 1 rpb	%	Score 0 rpb	No Response %
16	801	23.6	0.61	21.9	0.22	24.7	-0.13	29.7	-0.64	6.0
17	801	23.6	0.61	21.9	0.22	24.7	-0.13	29.7	-0.64	6.0
18	801	35.7	0.68	22.6	0.08	22.8	-0.29	18.9	-0.61	6.0
19	801	41.7	0.69	19.0	0.00	19.4	-0.25	19.9	-0.61	6.0
20	801	40.0	0.66	19.0	0.05	20.7	-0.25	20.3	-0.60	6.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.13
2009 AIMS A Classical Item Analysis
Reading Grade 8

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	863	0.71	0.63	0.83	3	71	11	-0.24	10	-0.18
2	863	0.83	0.68	1.00	3	83	4	-0.22	4	-0.18
3	863	0.64	0.60	0.77	5	64	11	-0.23	14	-0.13
4	863	0.54	0.42	0.53	4	54	23	-0.08	14	-0.11
5	863	0.80	0.66	0.95	4	80	5	-0.18	5	-0.20
6	863	0.78	0.68	0.95	4	78	6	-0.20	7	-0.23
7	863	0.65	0.55	0.71	3	65	13	-0.21	13	-0.13
8	863	0.52	0.46	0.58	6	52	17	-0.06	19	-0.13
9	863	0.60	0.49	0.62	5	60	19	-0.10	10	-0.14
10	863	0.67	0.59	0.77	5	67	12	-0.20	10	-0.15

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5.9% of the sample did not respond to any test item.

Performance Tasks

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%
11	863	50.7	0.67	34.5	-0.21	14.7	-0.67	5.9
12	863	42.2	0.66	39.2	-0.11	18.6	-0.70	5.9
13	863	51.0	0.69	30.3	-0.15	18.7	-0.71	5.9
14	863	55.2	0.69	32.4	-0.25	12.4	-0.69	5.9
15	863	49.0	0.71	32.7	-0.16	18.3	-0.72	5.9

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 1</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%	rpb	%
16	863	53.1	0.68	31.4	-0.19	15.5	-0.69	53.1	0.68	5.9
17	863	62.6	0.70	27.6	-0.30	9.9	-0.68	62.6	0.70	5.9
18	863	51.1	0.68	33.7	-0.15	15.1	-0.75	51.1	0.68	5.9
19	863	42.6	0.65	35.7	-0.03	21.7	-0.76	42.6	0.65	5.9
20	863	64.4	0.71	23.3	-0.27	12.3	-0.69	64.4	0.71	5.9

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.14
2009 Spring AIMS A Classical Item Analysis
Reading High School

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	1368	0.84	0.64	0.96	2	84	4	-0.26	4	-0.21
2	1368	0.76	0.62	0.84	2	76	8	-0.25	9	-0.23
3	1368	0.68	0.48	0.63	2	68	16	-0.14	9	-0.22
4	1368	0.73	0.62	0.83	3	73	8	-0.20	11	-0.28
5	1368	0.71	0.63	0.83	3	71	11	-0.25	10	-0.22
6	1368	0.79	0.69	0.97	3	79	6	-0.23	8	-0.31
7	1368	0.67	0.57	0.75	3	67	11	-0.23	15	-0.20
8	1368	0.54	0.50	0.62	3	54	16	-0.14	22	-0.20
9	1368	0.76	0.59	0.81	2	76	9	-0.27	7	-0.16
10	1368	0.68	0.53	0.70	3	68	15	-0.19	9	-0.19

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 4.8% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
11	1368	59.9	0.73	24.9	-0.23	15.2	-0.73	4.8
12	1368	63.2	0.75	25.2	-0.32	11.7	-0.69	4.8
13	1368	58.6	0.76	23.8	-0.18	17.7	-0.78	4.8
14	1368	60.2	0.78	22.6	-0.20	17.2	-0.79	4.8
15	1368	65.8	0.77	21.6	-0.31	12.6	-0.71	4.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	<u>Score 4</u> rpb	%	<u>Score 2</u> rpb	%	<u>Score 1</u> rpb	%	<u>Score 0</u> rpb	<u>No Response</u> %
16	1368	29.8	0.66	19.8	0.12	21.8	-0.14	28.6	-0.64	4.8
17	1368	34.2	0.66	22.9	0.11	19.3	-0.21	23.5	-0.66	4.8
18	1368	41.2	0.73	17.5	0.04	19.3	-0.27	21.9	-0.65	4.8
19	1368	47.4	0.76	15.7	-0.03	16.3	-0.28	20.6	-0.66	4.8
20	1368	39.4	0.73	16.5	0.08	18.7	-0.23	25.4	-0.69	4.8

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.15
2009 AIMS A Classical Item Analysis
Science Grade 4

Multiple Choice

Item	N	P-Value	<i>rpb</i>	<i>rbi</i>	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	<i>rpb</i>	<u>Distractor 2</u> %	<i>rpb</i>
1	897	0.68	0.66	0.86	3	68	11	-0.25	11	-0.21
2	897	0.61	0.59	0.75	3	61	13	-0.19	15	-0.18
3	897	0.64	0.61	0.78	4	64	10	-0.12	14	-0.23
4	897	0.71	0.61	0.80	4	71	8	-0.15	10	-0.17
5	897	0.65	0.63	0.81	4	65	17	-0.16	7	-0.23
6	897	0.61	0.51	0.65	5	61	13	-0.07	15	-0.15
7	897	0.68	0.66	0.85	4	68	11	-0.21	10	-0.18
8	897	0.66	0.67	0.87	5	66	10	-0.18	11	-0.22
9	897	0.81	0.68	0.97	4	81	4	-0.16	5	-0.24
10	897	0.72	0.66	0.87	4	72	8	-0.20	9	-0.19

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 7.1% of the sample did not respond to any test item.

Performance Tasks

Item	N	<u>Score 4</u> %	<i>rpb</i>	<u>Score 2</u> %	<i>rpb</i>	<u>Score 0</u> %	<i>rpb</i>	<u>No Response</u> %
11	897	49.9	0.72	27.9	-0.11	22.2	-0.76	7.1
12	897	43.5	0.72	30.0	-0.05	26.5	-0.76	7.1
13	897	51.5	0.70	27.6	-0.12	20.9	-0.73	7.1
14	897	72.3	0.72	15.7	-0.30	12.0	-0.66	7.1
15	897	41.2	0.67	28.0	0.06	30.9	-0.76	7.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u> %	<i>rpb</i>	<u>Score 2</u> %	<i>rpb</i>	<u>Score 1</u> %	<i>rpb</i>	<u>Score 0</u> %	<i>rpb</i>	<u>No Response</u> %
16	897	54.6	0.69	18.0	-0.08	15.4	-0.36	12.0	-0.56	7.1
17	897	71.3	0.69	12.0	-0.21	8.9	-0.39	7.8	-0.51	7.1
18	897	62.3	0.77	11.2	-0.13	12.5	-0.35	14.0	-0.62	7.1
19	897	37.2	0.66	16.6	0.07	20.2	-0.17	26.1	-0.64	7.1
20	897	26.9	0.54	21.5	0.18	22.1	-0.09	29.5	-0.61	7.1

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.16
2009 AIMS A Classical Item Analysis
Science Grade 8

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	<u>Key</u> %	<u>Distractor 1</u> %	rpb	<u>Distractor 2</u> %	rpb
1	860	0.62	0.54	0.68	4	62	17	-0.22	12	-0.17
2	860	0.73	0.62	0.83	3	73	13	-0.29	5	-0.21
3	860	0.73	0.64	0.86	3	73	8	-0.25	10	-0.27
4	860	0.64	0.59	0.76	5	64	10	-0.12	16	-0.28
5	860	0.52	0.61	0.76	4	52	19	-0.19	19	-0.26
6	860	0.61	0.62	0.79	4	61	18	-0.28	12	-0.20
7	860	0.61	0.43	0.54	4	61	10	-0.19	20	-0.09
8	860	0.70	0.63	0.83	4	70	8	-0.20	4	-0.29
9	860	0.66	0.56	0.72	5	66	12	-0.19	13	-0.19
10	860	0.72	0.62	0.83	4	72	8	-0.23	11	-0.23

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5% of the sample did not respond to any test item.

Performance Tasks

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%
11	860	81.0	0.79	12.0	-0.40	7.0	-0.70	5.0
12	860	78.5	0.79	13.3	-0.38	8.2	-0.71	5.0
13	860	61.3	0.70	22.6	-0.14	16.0	-0.77	5.0
14	860	70.1	0.75	18.0	-0.23	11.9	-0.78	5.0
15	860	68.9	0.73	20.0	-0.25	11.1	-0.75	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	<u>Score 4</u>		<u>Score 2</u>		<u>Score 1</u>		<u>Score 0</u>		<u>No Response</u>
		%	rpb	%	rpb	%	rpb	%	rpb	%
16	860	64.4	0.74	14.7	-0.15	13.1	-0.42	7.8	-0.59	5.0
17	860	78.2	0.69	10.4	-0.20	6.4	-0.42	5.0	-0.55	5.0
18	860	63.0	0.73	12.7	-0.09	10.4	-0.34	13.8	-0.63	5.0
19	860	84.1	0.74	6.5	-0.24	3.9	-0.39	5.5	-0.60	5.0
20	860	52.5	0.63	16.9	0.02	14.3	-0.21	16.3	-0.68	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Table 6.3.17
2009 AIMS A Classical Item Analysis
Science High School

Multiple Choice

Item	N	P-Value	rpb	rbi	%Omit	Key %	Distractor 1 %	rpb	Distractor 2 %	rpb
1	822	0.82	0.66	0.96	2	82	4	-0.18	7	-0.34
2	822	0.55	0.42	0.53	3	55	21	-0.11	15	-0.15
3	822	0.68	0.58	0.76	2	68	15	-0.13	10	-0.38
4	822	0.83	0.68	1.01	2	83	5	-0.25	5	-0.32
5	822	0.68	0.63	0.82	3	68	10	-0.21	15	-0.30
6	822	0.61	0.60	0.77	3	61	18	-0.22	13	-0.26
7	822	0.75	0.60	0.81	2	75	7	-0.19	10	-0.30
8	822	0.71	0.69	0.92	3	71	9	-0.30	12	-0.28
9	822	0.70	0.49	0.65	2	70	9	-0.21	14	-0.17
10	822	0.66	0.56	0.73	3	66	9	-0.16	18	-0.27

Note: The item number does not necessarily represent test order due to embedded field test items. Items 1-10 are multiple choice. The statistics presented in this table are based on a sample which was near census for this administration. 5% of the sample did not respond to any test item.

Performance Tasks

Item	N	%	Score 4 rpb	%	Score 2 rpb	%	Score 0 rpb	No Response %
11	822	69.1	0.74	18.2	-0.29	12.7	-0.70	5.0
12	822	80.7	0.69	11.8	-0.38	7.6	-0.57	5.0
13	822	54.0	0.68	23.0	-0.05	22.9	-0.76	5.0
14	822	44.8	0.59	34.3	0.03	20.9	-0.76	5.0
15	822	50.3	0.65	30.3	-0.05	19.3	-0.76	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 11-15 are performance tasks. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Rater Items

Item	N	%	Score 4 rpb	%	Score 2 rpb	%	Score 1 rpb	%	Score 0 rpb	No Response %
16	822	60.7	0.76	13.4	-0.15	11.8	-0.33	14.1	-0.61	5.0
17	822	31.5	0.67	18.7	0.14	17.2	-0.09	32.7	-0.71	5.0
18	822	71.1	0.69	10.2	-0.16	10.0	-0.39	8.7	-0.51	5.0
19	822	24.5	0.63	24.3	0.20	22.2	-0.12	29.1	-0.68	5.0
20	822	28.6	0.64	21.6	0.19	22.8	-0.15	27.0	-0.68	5.0

Note: The item number does not necessarily represent test order due to embedded field test items. Items 16-20 are rater items. The statistics presented in this table are based on a sample which was near census for this administration. Non-responses were excluded from analysis.

Part 7: Calibration, Scaling, and Scoring

Part 7 of the Technical Report describes the scaling procedures and results for the 2009 AIMS A assessments. All grade levels and content areas were scaled with calibration samples that typically consisted of the entire student population. Part 7 of this report addresses the following AERA/APA/NCME standards: 1.13, 2.1, 2.2, 2.14, 4.1, 4.2, 4.3, 6.4, 6.5, and 13.6.

7.1 Calibration Methods

Item Response Theory (IRT) models were used in the item calibration for all Reading, Mathematics, and Science AIMS A tests. All tests were calibrated separately by grade and content area. All calibration activities were conducted by 2 ADE staff members as an added quality control check.

7.1.1 Calibration Models

The AIMS A Mathematics, Reading, and Science criterion-reference assessments are comprised of multiple-choice items, performance tasks and rater items. All items contributing to the AIMS A CRT scores were calibrated using the Rasch model to create the CRT scale. The Rasch model (Rasch, 1960; Wright, 1977) can be conceptualized as a one-parameter IRT model in which item difficulty and student ability are estimated on the same scale. The Rasch model defines a multiple-choice item in terms of one parameter: item difficulty. In the Rasch model, the probability that a student with an ability estimate (θ) responds correctly to item i is

$$P_i(\theta) = \frac{\exp[(\theta - b_i)]}{1 + \exp[(\theta - b_i)]},$$

where b_i is the item difficulty.

7.1.2 Calibration Software

Parameter estimation for items on the criterion-referenced tests using the Rasch model was implemented using Winsteps 3.68.0 (Linacre, 2009). Winsteps uses joint maximum likelihood estimation (JMLE) as described by Wright and Masters (1982). Additionally, Lertap 5.7.2 (Larry Nelson, Curtin University of Technology 2009) was utilized to provide classical item and test analysis, and SPSS V17 was used to provide correlations, frequencies and demographic distributions. Excel 2007 to produce final scale scores.

7.2 Calibration Results

7.2.1 IRT Item Statistics

Item statistics resulting from calibration of the AIMS A CRT tests in Reading, Mathematics, and Science are presented in tables 7.2.1.1 through 7.2.1.17. All items for all Reading, Mathematics, and Science tests converged during calibration using typical procedures for Winsteps software. Standard error of estimates for the Rasch difficulty measures indicated that the parameters were well estimated. Model to item data fit was monitored using weighted mean-square (MNSQ) and unweighted MNSQ statistics, which indicate the degree of accuracy and predictability with which the data fits the model (Linacre, 2002). In Winsteps and

Rasch literature, weighted mean-square is also referred to as infit MNSQ and unweighted mean-square is referred to as outfit MNSQ. The weighted mean-square statistic is sensitive to unexpected responses at or near the item's calibrated level, whereas unweighted mean-square statistics is sensitive to unexpected responses away from the item's calibrated level. Typically, values less than 0.6 and greater than 1.4 for weighted MNSQ indicate misfit, and values greater than 1.4 for unweighted MNSQ indicate misfit (Wright & Linacre, 1994). Thirteen items were flagged as having misfit as indicated by weighted MNSQ and 82 items were flagged as having misfit as indicated by unweighted MNSQ. Items on 20 of the 20 CRT tests, with between two and six items flagged per test, had misfit as indicated by unweighted MNSQ.

The items that were flagged for both weighted and unweighted MNSQ include::

- | | |
|---|---|
| 1. Math Grade 3 Item 2 unweighted mean-square 1.41, | 51. Reading Grade 5 Item 10 unweighted mean-square 1.86, |
| 2. Math Grade 3 Item 3 unweighted mean-square 1.48, | 52. Reading Grade 6 Item 3 unweighted mean-square 1.46, |
| 3. Math Grade 3 Item 4 unweighted mean-square 1.73, | 53. Reading Grade 6 Item 8 weighted mean-square 1.44, |
| 4. Math Grade 3 Item 11 weighted mean-square 1.47, | 54. Reading Grade 6 Item 8 unweighted mean-square 2.03, |
| 5. Math Grade 3 Item 11 unweighted mean-square 2.4, | 55. Reading Grade 6 Item 9 unweighted mean-square 1.43, |
| 6. Math Grade 4 Item 2 unweighted mean-square 1.87, | 56. Reading Grade 7 Item 1 unweighted mean-square 1.86, |
| 7. Math Grade 4 Item 3 unweighted mean-square 2.27, | 57. Reading Grade 7 Item 3 unweighted mean-square 1.44, |
| 8. Math Grade 4 Item 4 unweighted mean-square 2.72, | 58. Reading Grade 7 Item 4 unweighted mean-square 1.76, |
| 9. Math Grade 4 Item 12 unweighted mean-square 1.55, | 59. Reading Grade 7 Item 5 unweighted mean-square 1.54, |
| 10. Math Grade 5 Item 3 weighted mean-square 1.48, | 60. Reading Grade 7 Item 6 unweighted mean-square 1.69, |
| 11. Math Grade 5 Item 3 unweighted mean-square 1.43, | 61. Reading Grade 7 Item 7 unweighted mean-square 1.54, |
| 12. Math Grade 5 Item 8 unweighted mean-square 1.54, | 62. Reading Grade 7 Item 10 unweighted mean-square 1.42, |
| 13. Math Grade 5 Item 9 unweighted mean-square 1.7, | 63. Reading Grade 8 Item 3 unweighted mean-square 1.83, |
| 14. Math Grade 5 Item 10 unweighted mean-square 1.76, | 64. Reading Grade 8 Item 4 unweighted mean-square 1.89, |
| 15. Math Grade 5 Item 11 unweighted mean-square 1.47, | 65. Reading Grade 8 Item 9 unweighted mean-square 1.57, |
| 16. Math Grade 6 Item 1 weighted mean-square 1.51, | 66. Reading Grade 8 Item 10 weighted mean-square 1.55, |
| 17. Math Grade 6 Item 1 unweighted mean-square 2.13, | 67. Reading Grade 8 Item 10 unweighted mean-square 3.37, |
| 18. Math Grade 6 Item 2 unweighted mean-square 1.43, | 68. Reading Grade HS Item 1 unweighted mean-square 1.47, |
| 19. Math Grade 6 Item 4 unweighted mean-square 1.55, | 69. Reading Grade HS Item 3 unweighted mean-square 1.74, |
| 20. Math Grade 6 Item 9 unweighted mean-square 1.45, | 70. Reading Grade HS Item 6 weighted mean-square 1.42, |
| 21. Math Grade 6 Item 12 unweighted mean-square 1.52, | 71. Reading Grade HS Item 6 unweighted mean-square 2.38, |
| 22. Math Grade 6 Item 15 unweighted mean-square 1.48, | 72. Reading Grade HS Item 8 weighted mean-square 1.61, |
| 23. Math Grade 7 Item 1 unweighted mean-square 2, | 73. Reading Grade HS Item 8 unweighted mean-square 2.85, |
| 24. Math Grade 7 Item 2 unweighted mean-square 1.57, | 74. Reading Grade HS Item 9 unweighted mean-square 2.26, |
| 25. Math Grade 7 Item 3 unweighted mean-square 1.67, | 75. Reading Grade HS Item 10 weighted mean-square 1.5, |
| 26. Math Grade 7 Item 12 unweighted mean-square 2.06, | 76. Reading Grade HS Item 10 unweighted mean-square 2.03, |
| 27. Math Grade 8 Item 1 unweighted mean-square 2.08, | 77. Science Grade 4 Item 3 unweighted mean-square 1.65, |
| 28. Math Grade 8 Item 7 unweighted mean-square 2.07, | 78. Science Grade 4 Item 8 unweighted mean-square 1.53, |
| 29. Math Grade HS Item 3 unweighted mean-square 1.78, | 79. Science Grade 4 Item 10 weighted mean-square 1.44, |
| 30. Math Grade HS Item 4 unweighted mean-square 2.15, | 80. Science Grade 4 Item 10 unweighted mean-square 1.78, |
| 31. Math Grade HS Item 7 unweighted mean-square 1.69, | 81. Science Grade 8 Item 1 unweighted mean-square 1.56, |
| 32. Math Grade HS Item 8 weighted mean-square 1.43, | 82. Science Grade 8 Item 3 unweighted mean-square 1.69, |
| 33. Math Grade HS Item 8 unweighted mean-square 2.18, | 83. Science Grade 8 Item 5 unweighted mean-square 1.51, |
| 34. Math Grade HS Item 9 unweighted mean-square 2.18, | 84. Science Grade 8 Item 6 unweighted mean-square 1.67, |
| 35. Reading Grade 3 Item 3 unweighted mean-square 1.46, | 85. Science Grade 8 Item 8 unweighted mean-square 1.41, |
| 36. Reading Grade 3 Item 4 unweighted mean-square 1.76, | 86. Science Grade 8 Item 9 weighted mean-square 1.64, |
| 37. Reading Grade 3 Item 6 unweighted mean-square 1.93, | 87. Science Grade 8 Item 9 unweighted mean-square 2.14, |
| 38. Reading Grade 3 Item 7 unweighted mean-square 1.64, | 88. Science Grade 8 Item 10 unweighted mean-square 2.57, |
| 39. Reading Grade 3 Item 8 unweighted mean-square 1.47, | 89. Science Grade HS Item 1 unweighted mean-square 1.42, |
| 40. Reading Grade 3 Item 9 unweighted mean-square 1.43, | 90. Science Grade HS Item 3 unweighted mean-square 1.49, |
| 41. Reading Grade 4 Item 2 unweighted mean-square 2.8, | 91. Science Grade HS Item 6 weighted mean-square 1.69, |
| 42. Reading Grade 4 Item 3 unweighted mean-square 1.52, | 92. Science Grade HS Item 6 unweighted mean-square 2.82, |
| 43. Reading Grade 4 Item 5 unweighted mean-square 1.58, | 93. Science Grade HS Item 7 unweighted mean-square 1.57, |
| 44. Reading Grade 4 Item 9 unweighted mean-square 2.36, | 94. Science Grade HS Item 9 weighted mean-square 1.44, |
| 45. Reading Grade 4 Item 10 unweighted mean-square 1.8, | 95. Science Grade HS Item 9 unweighted mean-square 2.22. |
| 46. Reading Grade 5 Item 2 unweighted mean-square 1.46, | |
| 47. Reading Grade 5 Item 3 unweighted mean-square 1.55, | |
| 48. Reading Grade 5 Item 6 unweighted mean-square 1.54, | |
| 49. Reading Grade 5 Item 8 unweighted mean-square 1.87, | |
| 50. Reading Grade 5 Item 10 weighted mean-square 1.49, | |

Table 7.2.1.1
2009 AIMS A IRT Item Statistics
Mathematics Grade 3

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.07	0.02	1.11	1.15
2	0.03	0.02	1.2	1.41
3	0.07	0.02	1.26	1.48
4	-0.32	0.02	1.29	1.73
5	0.17	0.02	1.24	1.36
6	-0.34	0.02	0.98	0.84
7	0.11	0.02	1.43	1.68
8	0.08	0.02	1.13	1.22
9	-0.01	0.02	0.93	0.85
10	-0.55	0.03	1.17	1.06
11	0.25	0.02	1.47	2.4
12	0.16	0.02	1.14	1.21
13	-0.63	0.03	0.8	0.53
14	-0.10	0.02	0.78	0.76
15	0.24	0.02	0.76	0.73
16	0.33	0.02	0.72	0.66
17	0.48	0.02	0.77	0.69
18	-0.00	0.02	0.85	0.85
19	0.08	0.02	0.81	0.83
20	-0.73	0.03	0.92	0.68
21	-0.03	0.02	0.82	0.75
22	0.77	0.03	0.85	0.79

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.2
2009 AIMS A IRT Item Statistics
Mathematics Grade 4

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.30	0.02	1	0.79
2	0.25	0.02	1.5	1.87
3	-0.11	0.02	1.35	2.27
4	-0.07	0.02	1.35	2.72
5	0.01	0.02	1.03	1.15
6	-0.36	0.02	0.89	0.64
7	0.00	0.02	1.22	1.33
8	-0.37	0.02	1.22	1.28
9	-0.03	0.02	1.02	0.91
10	0.01	0.02	1.08	1.25
11	-0.12	0.02	0.99	0.9
12	-0.01	0.02	1.17	1.55
13	-0.61	0.03	0.78	0.53
14	-0.17	0.02	0.8	0.77
15	0.25	0.02	0.72	0.71
16	0.51	0.02	0.76	0.7
17	0.68	0.02	0.81	0.76
18	-0.43	0.02	0.76	0.68
19	0.39	0.02	1.03	1.05
20	-0.12	0.02	1.04	1.2
21	0.37	0.02	0.76	0.71
22	0.22	0.02	0.87	0.83

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.3
2009 AIMS A IRT Item Statistics
Mathematics Grade 5

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.68	0.03	1.07	0.63
2	-0.08	0.02	1.13	1.14
3	-0.02	0.02	1.48	2.02
4	-0.25	0.02	0.97	0.75
5	-0.24	0.02	1.15	1.27
6	-0.10	0.02	1.06	0.97
7	-0.26	0.02	0.87	0.64
8	-0.23	0.02	1.24	1.54
9	0.05	0.02	1.25	1.7
10	0.19	0.02	1.34	1.76
11	0.08	0.02	1.32	1.47
12	-0.33	0.02	1.05	1.15
13	-0.04	0.02	0.72	0.69
14	0.72	0.03	0.91	0.78
15	0.03	0.02	0.84	0.86
16	0.34	0.02	0.8	0.73
17	0.65	0.02	1.01	0.94
18	-0.27	0.02	0.83	0.78
19	0.08	0.02	0.9	0.85
20	-0.16	0.02	0.74	0.73
21	0.52	0.03	0.81	0.75
22	0.04	0.02	0.91	0.9

Note: Items identified in bold are flagged as out of spec for that category

Table 7.2.1.4
2009 AIMS A IRT Item Statistics
Mathematics Grade 6

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.27	0.02	1.51	2.13
2	-0.07	0.02	1.25	1.43
3	0.03	0.02	1.04	0.94
4	0.10	0.02	1.34	1.55
5	-0.12	0.02	0.91	0.87
6	-0.10	0.02	1.04	1.13
7	0.19	0.02	1.18	1.34
8	-0.33	0.02	1.14	1.33
9	0.19	0.02	1.24	1.45
10	0.10	0.02	1.05	0.97
11	-0.15	0.02	0.97	0.84
12	-0.20	0.02	1.08	1.52
13	-0.31	0.03	0.73	0.66
14	-0.14	0.02	0.82	0.81
15	-0.05	0.02	1.14	1.48
16	-0.23	0.02	0.71	0.63
17	-0.17	0.02	0.7	0.63
18	0.029	0.02	1	1
19	0.24	0.02	0.89	0.86
20	-0.04	0.02	0.78	0.73
21	0.47	0.02	0.74	0.69
22	0.31	0.02	0.9	0.83

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.5
2009 AIMS A IRT Item Statistics
Mathematics Grade 7

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.10	0.02	1.32	2
2	0.11	0.02	1.27	1.57
3	0.12	0.02	1.4	1.67
4	-0.15	0.02	0.96	0.84
5	0.05	0.02	1.02	1.09
6	0.11	0.02	1.08	1.24
7	0.17	0.02	1.21	1.36
8	-0.45	0.03	1.04	0.79
9	0.32	0.02	1.25	1.7
10	0.11	0.02	1.04	1.1
11	0.18	0.02	1.12	1.32
12	-0.41	0.03	1.25	2.06
13	-0.38	0.03	0.77	0.7
14	-0.06	0.02	0.95	0.94
15	-0.06	0.02	0.82	0.79
16	-0.04	0.02	0.83	0.83
17	-0.26	0.03	0.76	0.7
18	0.02	0.02	0.88	0.88
19	0.20	0.02	0.82	0.77
20	-0.25	0.02	0.83	0.81
21	0.30	0.02	0.77	0.74
22	0.24	0.02	0.81	0.77

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.6
2009 AIMS A IRT Item Statistics
Mathematics Grade 8

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.11	0.02	1.17	2.08
2	-0.05	0.02	1.12	1.32
3	-0.20	0.02	0.93	0.79
4	0.02	0.02	1.1	1.5
5	-0.25	0.02	0.95	0.75
6	0.15	0.02	1.14	1.27
7	0.10	0.02	1.37	2.07
8	0.04	0.02	1.04	1.08
9	0.25	0.02	1.23	1.38
10	0.10	0.02	1.16	1.23
11	0.14	0.02	1.28	1.53
12	0.20	0.02	1.29	1.39
13	-0.36	0.02	0.82	0.8
14	-0.10	0.02	0.88	0.87
15	-0.24	0.02	0.76	0.71
16	-0.11	0.02	0.77	0.74
17	-0.39	0.02	0.75	0.66
18	-0.04	0.02	0.84	0.81
19	0.00	0.02	0.77	0.72
20	-0.32	0.02	0.99	0.97
21	0.41	0.02	0.91	0.97
22	0.55	0.02	0.78	0.72

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.7
2009 AIMS A IRT Item Statistics
Mathematics High School

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.09	0.01	1.01	0.89
2	0.04	0.01	1.15	1.26
3	0.14	0.01	1.31	1.78
4	0.14	0.01	1.39	2.15
5	-0.08	0.01	1.02	0.97
6	0.12	0.01	1.17	1.35
7	0.13	0.01	1.14	1.69
8	0.20	0.01	1.43	2.18
9	0.10	0.01	1.34	2.18
10	0.06	0.01	1.17	1.22
11	0.08	0.01	1.19	1.36
12	-0.10	0.01	1.16	1.27
13	-0.30	0.02	0.77	0.75
14	-0.12	0.02	0.68	0.64
15	-0.04	0.02	0.75	0.71
16	-0.42	0.02	0.82	0.72
17	-0.26	0.02	0.77	0.67
18	0.12	0.01	0.67	0.62
19	-0.33	0.02	0.8	0.7
20	0.40	0.02	0.77	0.71
21	0.42	0.02	0.73	0.67
22	-0.24	0.02	0.79	0.75

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.8
2009 AIMS A IRT Item Statistics
Reading Grade 3

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.29	0.02	1.14	1.05
2	-0.49	0.03	0.95	0.78
3	0.15	0.02	1.29	1.46
4	-0.08	0.02	1.25	1.76
5	0.04	0.02	1.06	1.15
6	0.20	0.02	1.36	1.93
7	0.07	0.02	1.35	1.64
8	-0.01	0.02	1.26	1.47
9	0.18	0.02	1.27	1.43
10	-0.27	0.02	1.09	0.87
11	-0.20	0.02	0.87	0.79
12	0.08	0.02	0.84	0.79
13	0.01	0.02	0.76	0.76
14	0.24	0.02	0.79	0.76
15	-0.12	0.02	0.76	0.7
16	0.30	0.02	0.74	0.74
17	0.10	0.02	0.83	0.82
18	-0.52	0.03	0.83	0.7
19	0.53	0.02	1	0.98
20	0.08	0.02	0.92	0.88

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.9
2009 AIMS A IRT Item Statistics
Reading Grade 4

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.22	0.02	0.95	0.68
2	-0.02	0.02	1.26	2.28
3	-0.00	0.02	1.13	1.52
4	-0.28	0.02	1.02	1.24
5	0.01	0.02	1.19	1.58
6	-0.19	0.02	0.98	0.89
7	-0.03	0.02	1.04	1.08
8	-0.24	0.02	1	0.75
9	0.20	0.02	1.39	2.36
10	0.12	0.02	1.27	1.8
11	-0.09	0.02	0.83	0.77
12	0.18	0.02	0.92	0.92
13	0.12	0.02	0.87	0.85
14	-0.07	0.02	0.97	0.93
15	-0.51	0.03	1	0.96
16	-0.03	0.02	0.83	0.8
17	0.18	0.02	0.77	0.75
18	0.15	0.02	0.93	0.91
19	0.60	0.02	1.09	1.09
20	0.10	0.02	0.89	0.87

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.10
2009 AIMS A IRT Item Statistics
Reading Grade 5

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.01	0.02	1.23	1.26
2	0.09	0.02	1.28	1.46
3	0.02	0.02	1.14	1.55
4	-0.05	0.02	1.19	1.22
5	-0.10	0.02	1.11	1.16
6	-0.07	0.02	1.16	1.54
7	-0.29	0.02	1.1	1
8	-0.02	0.02	1.22	1.87
9	-0.02	0.02	1.15	1.14
10	0.22	0.02	1.49	1.86
11	-0.19	0.02	0.85	0.83
12	-0.01	0.02	0.83	0.86
13	-0.20	0.03	0.77	0.72
14	-0.24	0.03	0.79	0.67
15	-0.16	0.02	0.68	0.7
16	0.30	0.02	0.83	0.81
17	0.00	0.02	0.8	0.8
18	0.02	0.02	0.86	0.85
19	0.35	0.02	0.88	0.84
20	0.38	0.02	0.96	0.94

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.11
2009 AIMS A IRT Item Statistics
Reading Grade 6

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.20	0.02	1.11	1.17
2	-0.08	0.02	0.99	0.85
3	-0.07	0.02	1.14	1.46
4	-0.16	0.02	1.02	1.3
5	-0.07	0.02	1.09	1.22
6	-0.05	0.02	1.19	1.16
7	0.03	0.02	1.11	1.25
8	0.00	0.02	1.44	2.03
9	-0.00	0.02	1.15	1.43
10	-0.05	0.02	1.11	1.28
11	0.16	0.02	0.88	0.86
12	-0.11	0.03	0.84	0.82
13	-0.07	0.03	0.88	0.84
14	-0.26	0.03	0.92	0.96
15	0.04	0.02	0.88	0.9
16	0.00	0.02	0.92	0.9
17	-0.05	0.02	0.84	0.83
18	0.41	0.03	0.95	0.97
19	0.05	0.02	0.88	0.84
20	0.48	0.03	0.93	0.89

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.12
2009 AIMS A IRT Item Statistics
Reading Grade 7

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.16	0.02	1.31	1.86
2	0.19	0.02	1.19	1.27
3	0.14	0.02	1.22	1.44
4	-0.10	0.02	1.21	1.76
5	-0.08	0.02	1.15	1.54
6	0.01	0.02	1.23	1.69
7	0.15	0.02	1.21	1.54
8	-0.31	0.03	1.07	1.1
9	-0.27	0.03	1.17	1.07
10	-0.04	0.02	1.2	1.42
11	0.03	0.03	0.73	0.76
12	-0.07	0.03	0.92	0.91
13	-0.23	0.03	0.8	0.79
14	-0.06	0.03	0.8	0.79
15	-0.13	0.03	0.81	0.81
16	0.08	0.02	0.87	0.82
17	0.12	0.02	0.9	0.87
18	0.49	0.03	0.9	0.9
19	0.08	0.02	0.92	0.89
20	0.17	0.02	0.86	0.85

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.13
2009 AIMS A IRT Item Statistics
Reading Grade 8

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.45	0.03	1.03	0.59
2	-0.27	0.03	1.02	0.68
3	0.06	0.02	1.22	1.83
4	0.32	0.02	1.28	1.89
5	0.17	0.02	1.4	1.57
6	0.01	0.02	1.14	1.27
7	-0.35	0.03	1.1	1.16
8	-0.06	0.02	1.06	0.99
9	0.07	0.02	1.16	1.09
10	0.28	0.02	1.55	3.37
11	-0.31	0.03	0.78	0.73
12	-0.05	0.02	0.75	0.7
13	0.14	0.02	0.76	0.75
14	-0.30	0.03	0.87	0.82
15	-0.07	0.02	0.81	0.81
16	-0.21	0.02	0.88	0.89
17	0.27	0.02	0.83	0.82
18	0.49	0.02	0.94	0.93
19	0.09	0.02	0.85	0.8
20	0.16	0.02	0.93	0.92

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.14
2009 AIMS A IRT Item Statistics
Reading High School

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	-0.48	0.02	1.12	1.47
2	-0.11	0.02	1.18	1.1
3	-0.04	0.02	1.1	1.74
4	-0.28	0.02	0.96	0.77
5	-0.20	0.02	1.24	1.36
6	0.01	0.02	1.42	2.38
7	-0.18	0.02	1.09	1.29
8	0.02	0.02	1.61	2.85
9	0.04	0.02	1.33	2.26
10	0.32	0.01	1.5	2.03
11	-0.22	0.02	0.74	0.7
12	-0.06	0.02	0.75	0.72
13	-0.09	0.02	0.73	0.62
14	-0.25	0.02	0.79	0.66
15	-0.11	0.02	0.76	0.73
16	0.14	0.02	0.82	0.79
17	0.33	0.02	0.79	0.77
18	0.52	0.02	0.94	0.94
19	0.37	0.02	0.84	0.85
20	0.26	0.02	0.75	0.72

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.15
2009 AIMS A IRT Item Statistics
Science Grade 4

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.05	0.02	1.23	1.37
2	-0.10	0.02	1.23	1.8
3	-0.02	0.02	1.11	1.65
4	-0.43	0.03	1.1	0.83
5	0.03	0.02	1.13	1.78
6	0.00	0.02	1.04	1.22
7	-0.03	0.02	1.06	1.09
8	0.11	0.02	1.21	1.53
9	-0.13	0.02	1.16	1.01
10	0.12	0.02	1.44	1.78
11	0.05	0.02	0.86	0.84
12	-0.39	0.03	0.77	0.59
13	0.31	0.02	0.92	0.86
14	0.09	0.02	0.83	0.73
15	0.23	0.02	0.77	0.72
16	-0.10	0.02	0.93	1.03
17	-0.20	0.02	0.8	0.67
18	-0.46	0.03	0.93	0.95
19	0.33	0.02	0.79	0.74
20	0.53	0.02	1.04	1.02

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.16
2009 AIMS A IRT Item Statistics
Science Grade 8

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.04	0.02	1.11	1.56
2	0.05	0.02	0.99	1.01
3	0.11	0.02	1.01	1.69
4	0.26	0.02	1.1	1.39
5	0.50	0.02	1	1.51
6	0.22	0.02	1.33	1.67
7	0.06	0.02	1.11	0.9
8	0.32	0.02	1.1	1.41
9	0.32	0.02	1.64	2.14
10	0.30	0.02	1.27	2.57
11	-0.39	0.03	0.79	0.64
12	0.05	0.02	0.75	0.65
13	-0.15	0.03	0.75	0.64
14	-0.48	0.03	0.74	0.54
15	-0.14	0.03	0.74	0.66
16	-0.03	0.02	0.88	0.84
17	0.17	0.02	0.94	0.95
18	-0.12	0.03	0.78	0.8
19	-0.48	0.03	0.94	1
20	-0.64	0.04	0.85	0.64

Note: Items identified in bold are flagged as out of spec for that category.

Table 7.2.1.17
2009 AIMS A IRT Item Statistics
Science High School

Item	Rasch Difficulty	SE	MNSQ Infit	MSNQ Outfit
1	0.02	0.02	1.21	1.42
2	-0.42	0.03	0.95	0.7
3	0.03	0.02	1.1	1.49
4	-0.37	0.03	1.04	0.7
5	0.08	0.02	1.25	1.75
6	0.29	0.02	1.69	2.82
7	0.17	0.02	1.17	1.57
8	-0.04	0.02	0.97	0.78
9	-0.02	0.02	1.44	2.22
10	-0.16	0.02	1.27	1.6
11	0.17	0.02	0.89	0.94
12	-0.30	0.03	0.88	0.72
13	0.07	0.02	0.8	0.78
14	-0.65	0.04	1	0.72
15	0.07	0.02	0.79	0.71
16	0.51	0.02	0.85	0.83
17	-0.15	0.03	0.78	0.71
18	-0.41	0.03	0.87	0.74
19	0.51	0.02	0.79	0.77
20	0.59	0.02	0.76	0.73

Note: Items identified in bold are flagged as out of spec for that category.

7.3 Scaling Methods

A scale of measurement was determined for each of the AIMS A CRT Reading, Mathematics, and Science. A scale of measurement was determined for each test using Spring 2009 operational test results and Meets cut score from the subsequent standard setting. The desired AIMS A scales for Grades 3-8 and high school ranged from 1000 to 1500. AIMS A scales are not on a vertical scale as are the general education AIMS scales. Each grade has its own unique scale within the 1000-1500 range. The scale scores for different grades cannot be compared.

7.4 Scoring and Standard Error of Measurement

Item response theory makes available number-correct scoring. Number-correct scoring was used to derive scales scores for the AIMS A CRT tests. With number-correct scoring, a student's number-correct score (or raw score) is converted to a scale score through the use of transformation constants. These constants were calculated for each test and each grade. A direct linear transformation was then applied in Excel to transform the logit value generated in the score file provided by Winsteps to the necessary scale score. The formula utilized for calculating the M1 and M2 values was as follows:

$$M1 = \text{Desired SD} / \text{Logit SD}$$

$$M2 = \text{Desired Mean} / (\text{Logit Mean} * M1)$$

The desired mean for all tests was set to 1250 with a standard deviation of 25. With that information the all transformation constants were calculated.

Typically, a test score is obtained from a single observation of behavior and represents an estimate of the trait being measured. As an estimate, an observed test score contains some measurement error and does not perfectly reflect an individual's true score. The degree of measurement error in a test score can be estimated using a statistic called the standard error of measurement (SEM).

A student's exact true score cannot be known. The true score is defined as the average test score that would result if the test could be administered repeatedly without the effects of practice or fatigue. The standard error of measurement is an estimate of the standard deviation of an individual's observed scores from these repeated administrations. For practical purposes, this statistic can be used to obtain a range within which a student's true score is likely to fall. Using item response theory, the standard error of measurement can be calculated for every possible scale score.

Tables 7.4.1 through 7.4.17 present raw score to scale score conversion tables and IRT conditional standard errors of measurement for all AIMS A CRT tests.

7.5 Table 7.4.1
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 3

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	316	45	1255	9
1	1102	62	46	1256	9
2	1136	40	47	1257	9
3	1154	31	48	1258	9
4	1165	26	49	1259	9
5	1173	22	50	1261	9
6	1179	20	51	1262	9
7	1184	19	52	1263	9
8	1189	17	53	1264	9
9	1193	16	54	1265	9
10	1196	15	55	1267	9
11	1199	15	56	1268	10
12	1202	14	57	1269	10
13	1205	14	58	1271	10
14	1207	13	59	1272	10
15	1210	13	60	1273	10
16	1212	12	61	1275	10
17	1214	12	62	1276	10
18	1216	12	63	1278	10
19	1218	12	64	1279	10
20	1220	11	65	1281	11
21	1222	11	66	1282	11
22	1223	11	67	1284	11
23	1225	11	68	1285	11
24	1227	11	69	1287	11
25	1228	11	70	1289	12
26	1230	10	71	1291	12
27	1231	10	72	1293	12
28	1233	10	73	1295	13
29	1234	10	74	1298	13
30	1236	10	75	1300	14
31	1237	10	76	1303	14
32	1238	10	77	1306	15
33	1240	10	78	1309	15
34	1241	10	79	1312	16
35	1242	10	80	1316	17
36	1244	10	81	1320	18
37	1245	9	82	1325	20
38	1246	9	83	1331	21
39	1247	9	84	1338	24
40	1249	9	85	1348	27
41	1250	9	86	1360	33
42	1251	9	87	1382	47
43	1252	9	88	1500	222
44	1253	9			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1222, 1250, 1295.

Table 7.4.2
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 4

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	341	45	1255	10
1	1103	64	46	1257	10
2	1136	42	47	1258	10
3	1153	32	48	1259	10
4	1164	27	49	1261	10
5	1173	24	50	1262	10
6	1179	21	51	1263	10
7	1184	20	52	1265	10
8	1189	18	53	1266	10
9	1193	17	54	1267	10
10	1197	16	55	1269	11
11	1200	15	56	1270	11
12	1203	15	57	1272	11
13	1205	14	58	1273	11
14	1208	14	59	1275	11
15	1210	13	60	1276	11
16	1212	13	61	1278	11
17	1214	13	62	1280	11
18	1216	12	63	1281	12
19	1218	12	64	1283	12
20	1220	12	65	1285	12
21	1222	12	66	1287	12
22	1224	11	67	1289	12
23	1225	11	68	1291	13
24	1227	11	69	1293	13
25	1228	11	70	1295	13
26	1230	11	71	1297	14
27	1231	11	72	1300	14
28	1233	11	73	1302	14
29	1234	11	74	1305	15
30	1236	10	75	1308	15
31	1237	10	76	1311	16
32	1239	10	77	1314	16
33	1240	10	78	1318	17
34	1241	10	79	1321	18
35	1242	10	80	1326	19
36	1244	10	81	1331	20
37	1245	10	82	1336	22
38	1246	10	83	1343	23
39	1248	10	84	1350	26
40	1249	10	85	1360	30
41	1250	10	86	1375	37
42	1252	10	87	1399	53
43	1253	10	88	1500	245
44	1254	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1222, 1250, 1302

Table 7.4.3
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 5

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	335	45	1256	10
1	1111	63	46	1257	10
2	1143	40	47	1258	10
3	1159	30	48	1259	10
4	1169	25	49	1261	10
5	1176	22	50	1262	10
6	1182	20	51	1263	10
7	1187	18	52	1265	10
8	1191	17	53	1266	10
9	1195	16	54	1268	10
10	1198	15	55	1269	10
11	1201	15	56	1270	11
12	1204	14	57	1272	11
13	1207	14	58	1273	11
14	1209	13	59	1275	11
15	1211	13	60	1277	11
16	1213	13	61	1278	11
17	1215	12	62	1280	11
18	1217	12	63	1281	11
19	1219	12	64	1283	12
20	1221	11	65	1285	12
21	1223	11	66	1287	12
22	1224	11	67	1289	12
23	1226	11	68	1291	13
24	1227	11	69	1293	13
25	1229	11	70	1295	13
26	1230	11	71	1298	13
27	1232	10	72	1300	14
28	1233	10	73	1303	14
29	1235	10	74	1305	15
30	1236	10	75	1308	15
31	1237	10	76	1311	16
32	1239	10	77	1315	16
33	1240	10	78	1318	17
34	1241	10	79	1322	18
35	1243	10	80	1327	19
36	1244	10	81	1332	20
37	1245	10	82	1337	21
38	1247	10	83	1344	23
39	1248	10	84	1352	26
40	1249	10	85	1362	30
41	1250	10	86	1376	36
42	1252	10	87	1401	52
43	1253	10	88	1500	238
44	1254	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1223, 1250, 1303.

Table 7.4.4
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 6

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	326	45	1250	10
1	1011	61	46	1251	10
2	1062	41	47	1253	10
3	1089	32	48	1255	10
4	1107	27	49	1257	10
5	1120	24	50	1259	10
6	1131	21	51	1261	10
7	1139	20	52	1263	10
8	1147	18	53	1265	10
9	1153	17	54	1267	10
10	1159	16	55	1269	10
11	1164	15	56	1271	10
12	1169	15	57	1273	10
13	1173	14	58	1275	10
14	1177	14	59	1277	10
15	1181	13	60	1279	10
16	1184	13	61	1282	10
17	1187	12	62	1284	11
18	1191	12	63	1286	11
19	1193	12	64	1289	11
20	1196	12	65	1291	11
21	1199	11	66	1294	11
22	1202	11	67	1296	11
23	1204	11	68	1299	12
24	1207	11	69	1302	12
25	1209	11	70	1305	12
26	1211	11	71	1308	12
27	1214	10	72	1311	13
28	1216	10	73	1314	13
29	1218	10	74	1318	13
30	1220	10	75	1322	14
31	1222	10	76	1326	14
32	1224	10	77	1330	15
33	1226	10	78	1335	16
34	1228	10	79	1341	16
35	1230	10	80	1346	17
36	1232	10	81	1353	18
37	1234	10	82	1361	20
38	1236	10	83	1370	22
39	1238	10	84	1381	24
40	1240	10	85	1395	28
41	1242	10	86	1415	35
42	1244	10	87	1450	50
43	1246	10	88	1500	236
44	1248	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1187, 1250, 1314.

Table 7.4.5
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 7

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	330	45	1258	10
1	1023	63	46	1259	10
2	1073	42	47	1261	10
3	1100	33	48	1263	10
4	1117	28	49	1265	10
5	1130	25	50	1267	10
6	1140	22	51	1268	10
7	1149	20	52	1270	10
8	1156	19	53	1272	10
9	1162	18	54	1274	10
10	1168	17	55	1276	10
11	1173	16	56	1277	10
12	1178	15	57	1279	10
13	1182	15	58	1281	10
14	1186	14	59	1283	10
15	1189	14	60	1285	10
16	1193	13	61	1287	10
17	1196	13	62	1289	10
18	1199	13	63	1291	11
19	1202	12	64	1293	11
20	1205	12	65	1296	11
21	1208	12	66	1298	11
22	1211	12	67	1300	11
23	1213	12	68	1303	11
24	1216	11	69	1305	12
25	1218	11	70	1308	12
26	1220	11	71	1310	12
27	1223	11	72	1313	12
28	1225	11	73	1316	13
29	1227	11	74	1320	13
30	1229	11	75	1323	14
31	1231	10	76	1327	14
32	1233	10	77	1331	15
33	1235	10	78	1335	15
34	1237	10	79	1340	16
35	1239	10	80	1345	17
36	1241	10	81	1351	18
37	1243	10	82	1358	20
38	1245	10	83	1366	22
39	1247	10	84	1376	24
40	1249	10	85	1389	28
41	1250	10	86	1407	35
42	1252	10	87	1440	50
43	1254	10	88	1500	236
44	1256	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1182, 1250, 1316.

Table 7.4.6
2009 AIMS A Raw Score to Scale Score Table
Mathematics Grade 8

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	328	45	1257	9
1	1035	62	46	1258	9
2	1082	42	47	1260	9
3	1107	33	48	1262	9
4	1124	28	49	1263	9
5	1137	25	50	1265	10
6	1147	22	51	1267	10
7	1155	21	52	1268	10
8	1162	19	53	1270	10
9	1169	18	54	1272	10
10	1174	17	55	1273	10
11	1179	16	56	1275	10
12	1183	15	57	1277	10
13	1187	15	58	1279	10
14	1191	14	59	1280	10
15	1195	14	60	1282	10
16	1198	13	61	1284	10
17	1201	13	62	1286	10
18	1204	13	63	1288	10
19	1207	12	64	1290	11
20	1209	12	65	1292	11
21	1212	12	66	1294	11
22	1214	11	67	1296	11
23	1217	11	68	1299	11
24	1219	11	69	1301	12
25	1221	11	70	1304	12
26	1223	11	71	1306	12
27	1225	11	72	1309	12
28	1227	10	73	1312	13
29	1229	10	74	1315	13
30	1231	10	75	1318	14
31	1233	10	76	1322	14
32	1235	10	77	1326	15
33	1237	10	78	1330	16
34	1238	10	79	1334	16
35	1240	10	80	1340	17
36	1242	10	81	1345	18
37	1244	10	82	1352	20
38	1245	10	83	1360	22
39	1247	10	84	1369	24
40	1249	10	85	1382	28
41	1250	10	86	1399	35
42	1252	9	87	1430	50
43	1254	9	88	1500	235
44	1255	9			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1201, 1250, 1301.

Table 7.4.7
2009 AIMS A Raw Score to Scale Score Table
Mathematics High School

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	490	45	1257	14
1	1027	92	46	1259	14
2	1076	61	47	1260	14
3	1102	48	48	1262	14
4	1119	41	49	1264	14
5	1132	36	50	1266	14
6	1143	33	51	1267	14
7	1151	30	52	1269	14
8	1159	28	53	1271	14
9	1165	26	54	1272	14
10	1171	25	55	1274	14
11	1176	23	56	1276	14
12	1180	22	57	1278	14
13	1184	21	58	1280	15
14	1188	21	59	1282	15
15	1192	20	60	1284	15
16	1195	19	61	1286	15
17	1199	19	62	1288	15
18	1202	18	63	1290	15
19	1205	18	64	1292	16
20	1207	17	65	1294	16
21	1210	17	66	1296	16
22	1213	17	67	1298	16
23	1215	16	68	1301	17
24	1217	16	69	1303	17
25	1220	16	70	1306	17
26	1222	16	71	1309	18
27	1224	16	72	1312	18
28	1226	15	73	1315	19
29	1228	15	74	1318	19
30	1230	15	75	1321	20
31	1232	15	76	1325	21
32	1234	15	77	1329	22
33	1236	15	78	1333	23
34	1238	14	79	1338	24
35	1240	14	80	1343	25
36	1241	14	81	1349	27
37	1243	14	82	1356	29
38	1245	14	83	1364	32
39	1247	14	84	1374	35
40	1248	14	85	1386	41
41	1250	14	86	1405	51
42	1252	14	87	1437	73
43	1254	14	88	1500	352
44	1255	14			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1199, 1250, 1329.

Table 7.4.8
2009 AIMS A Raw Score to Scale Score Table
Reading Grade 3

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	423	41	1250	13
1	1050	82	42	1252	13
2	1095	54	43	1253	13
3	1118	42	44	1255	13
4	1133	35	45	1257	13
5	1145	31	46	1259	13
6	1153	27	47	1261	13
7	1160	25	48	1263	13
8	1166	23	49	1265	14
9	1172	22	50	1266	14
10	1176	21	51	1268	14
11	1181	20	52	1270	14
12	1185	19	53	1272	14
13	1188	18	54	1274	14
14	1192	18	55	1277	14
15	1195	17	56	1279	14
16	1198	17	57	1281	15
17	1200	16	58	1283	15
18	1203	16	59	1285	15
19	1206	16	60	1288	15
20	1208	15	61	1290	16
21	1211	15	62	1293	16
22	1213	15	63	1296	16
23	1215	15	64	1299	17
24	1217	14	65	1302	17
25	1220	14	66	1305	18
26	1222	14	67	1308	18
27	1224	14	68	1312	19
28	1226	14	69	1316	20
29	1228	14	70	1320	21
30	1230	14	71	1325	22
31	1232	14	72	1330	23
32	1233	13	73	1336	25
33	1235	13	74	1343	26
34	1237	13	75	1351	29
35	1239	13	76	1361	32
36	1241	13	77	1373	37
37	1243	13	78	1390	45
38	1245	13	79	1420	65
39	1246	13	80	1500	300
40	1248	13			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1211, 1250, 1302.

Table 7.4.9
2009 AIMS A Raw Score to Scale Score Table
Reading Grade 4

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	477	41	1242	15
1	1005	94	42	1244	15
2	1058	63	43	1246	15
3	1087	49	44	1248	15
4	1106	42	45	1250	15
5	1120	36	46	1253	15
6	1131	33	47	1255	15
7	1140	30	48	1257	15
8	1147	28	49	1259	15
9	1154	26	50	1261	16
10	1159	24	51	1263	16
11	1164	23	52	1266	16
12	1169	22	53	1268	16
13	1173	21	54	1271	16
14	1177	20	55	1273	17
15	1181	20	56	1276	17
16	1184	19	57	1278	17
17	1187	18	58	1281	17
18	1191	18	59	1284	18
19	1193	18	60	1287	18
20	1196	17	61	1290	18
21	1199	17	62	1293	19
22	1201	17	63	1296	19
23	1204	16	64	1300	20
24	1206	16	65	1304	20
25	1209	16	66	1307	21
26	1211	16	67	1312	22
27	1213	16	68	1316	23
28	1216	15	69	1321	23
29	1218	15	70	1326	25
30	1220	15	71	1332	26
31	1222	15	72	1339	27
32	1224	15	73	1346	29
33	1226	15	74	1354	31
34	1228	15	75	1364	34
35	1230	15	76	1375	37
36	1232	15	77	1390	43
37	1234	15	78	1410	52
38	1236	15	79	1445	74
39	1238	15	80	1500	340
40	1240	15			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1187, 1250, 1332.

Table 7.4.10
2009 AIMS A Raw Score to Scale Score Table
Reading Grade 5

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	570	41	1243	17
1	1000	109	42	1246	17
2	1034	73	43	1248	17
3	1066	57	44	1250	18
4	1087	48	45	1253	18
5	1102	42	46	1255	18
6	1114	38	47	1257	18
7	1124	35	48	1260	18
8	1133	32	49	1262	18
9	1141	30	50	1265	18
10	1147	29	51	1267	18
11	1153	27	52	1270	19
12	1158	26	53	1273	19
13	1163	25	54	1275	19
14	1168	24	55	1278	19
15	1172	23	56	1281	20
16	1176	23	57	1284	20
17	1180	22	58	1287	20
18	1183	21	59	1290	21
19	1187	21	60	1293	21
20	1190	21	61	1297	21
21	1193	20	62	1300	22
22	1196	20	63	1304	22
23	1199	19	64	1308	23
24	1202	19	65	1312	24
25	1205	19	66	1316	24
26	1207	19	67	1321	25
27	1210	18	68	1326	26
28	1213	18	69	1331	27
29	1215	18	70	1337	28
30	1218	18	71	1344	30
31	1220	18	72	1351	31
32	1222	18	73	1359	34
33	1225	18	74	1368	36
34	1227	18	75	1379	39
35	1230	17	76	1392	44
36	1232	17	77	1409	51
37	1234	17	78	1432	62
38	1236	17	79	1473	89
39	1239	17	80	1500	411
40	1241	17			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 424, 468, 556.

Table 7.4.11
2009 AIMS A Raw Score to Scale Score Table
Reading Grade 6

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	331	41	1250	10
1	1000	64	42	1252	10
2	1022	43	43	1255	10
3	1057	34	44	1257	10
4	1081	29	45	1260	10
5	1098	25	46	1262	10
6	1112	23	47	1265	10
7	1123	21	48	1268	10
8	1133	19	49	1270	11
9	1141	18	50	1273	11
10	1148	17	51	1276	11
11	1154	16	52	1279	11
12	1160	15	53	1281	11
13	1165	14	54	1284	11
14	1170	14	55	1288	11
15	1175	13	56	1291	12
16	1179	13	57	1294	12
17	1183	13	58	1298	12
18	1187	12	59	1301	12
19	1191	12	60	1305	13
20	1194	12	61	1309	13
21	1197	12	62	1313	13
22	1200	11	63	1317	13
23	1203	11	64	1322	14
24	1206	11	65	1326	14
25	1209	11	66	1331	15
26	1212	11	67	1337	15
27	1215	11	68	1343	16
28	1218	10	69	1349	16
29	1220	10	70	1356	17
30	1223	10	71	1363	18
31	1225	10	72	1372	19
32	1228	10	73	1381	20
33	1230	10	74	1392	22
34	1233	10	75	1404	24
35	1235	10	76	1419	26
36	1238	10	77	1438	30
37	1240	10	78	1465	37
38	1243	10	79	1500	52
39	1245	10	80	1500	237
40	1247	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1165, 1250, 1337.

Table 7.4.12
2009 A AIMS A Raw Score to Scale Score Table
Reading Grade 7

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	332	41	1252	10
1	1000	65	42	1255	10
2	1031	43	43	1257	10
3	1065	34	44	1260	10
4	1088	29	45	1262	10
5	1104	25	46	1265	10
6	1117	23	47	1267	11
7	1128	21	48	1270	11
8	1137	19	49	1273	11
9	1145	18	50	1275	11
10	1152	17	51	1278	11
11	1158	16	52	1281	11
12	1164	15	53	1283	11
13	1169	15	54	1286	11
14	1173	14	55	1289	11
15	1178	14	56	1292	12
16	1182	13	57	1295	12
17	1186	13	58	1299	12
18	1190	13	59	1302	12
19	1193	12	60	1305	12
20	1197	12	61	1309	13
21	1200	12	62	1313	13
22	1203	12	63	1316	13
23	1206	11	64	1321	14
24	1209	11	65	1325	14
25	1212	11	66	1330	14
26	1215	11	67	1334	15
27	1217	11	68	1340	15
28	1220	11	69	1345	16
29	1223	11	70	1352	17
30	1225	11	71	1358	18
31	1228	11	72	1366	19
32	1230	10	73	1374	20
33	1233	10	74	1384	21
34	1235	10	75	1395	23
35	1238	10	76	1409	26
36	1240	10	77	1426	30
37	1243	10	78	1451	36
38	1245	10	79	1493	52
39	1248	10	80	1500	237
40	1250	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1182, 1250, 1340.

Table 7.4.13
2009 AIMS A Raw Score to Scale Score Table
Reading Grade 8

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	333	41	1250	11
1	1027	66	42	1252	11
2	1077	44	43	1254	11
3	1103	34	44	1256	11
4	1120	29	45	1258	11
5	1133	25	46	1260	11
6	1142	23	47	1262	11
7	1151	21	48	1264	11
8	1158	19	49	1266	11
9	1164	18	50	1268	11
10	1169	17	51	1270	11
11	1174	16	52	1272	11
12	1178	15	53	1274	11
13	1182	15	54	1277	11
14	1186	14	55	1279	11
15	1189	14	56	1281	12
16	1193	14	57	1284	12
17	1196	13	58	1286	12
18	1199	13	59	1289	12
19	1202	13	60	1291	12
20	1204	12	61	1294	13
21	1207	12	62	1297	13
22	1209	12	63	1300	13
23	1212	12	64	1303	13
24	1214	12	65	1306	14
25	1217	12	66	1309	14
26	1219	11	67	1313	15
27	1221	11	68	1317	15
28	1224	11	69	1321	16
29	1226	11	70	1326	17
30	1228	11	71	1331	17
31	1230	11	72	1336	18
32	1232	11	73	1342	20
33	1234	11	74	1350	21
34	1236	11	75	1358	23
35	1238	11	76	1368	26
36	1240	11	77	1381	29
37	1242	11	78	1400	36
38	1244	11	79	1431	51
39	1246	11	80	1500	237
40	1248	11			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1196, 1250, 1331.

Table 7.4.14
2009 AIMS A Raw Score to Scale Score Table
Reading High School

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	434	41	1250	14
1	1054	82	42	1252	14
2	1097	54	43	1253	14
3	1119	42	44	1255	14
4	1133	35	45	1257	14
5	1144	31	46	1259	14
6	1153	28	47	1261	14
7	1160	25	48	1263	14
8	1166	24	49	1265	14
9	1171	22	50	1267	14
10	1176	21	51	1270	15
11	1180	20	52	1272	15
12	1184	19	53	1274	15
13	1187	19	54	1276	15
14	1191	18	55	1279	15
15	1194	17	56	1281	16
16	1197	17	57	1283	16
17	1200	17	58	1286	16
18	1202	16	59	1289	16
19	1205	16	60	1291	17
20	1207	16	61	1294	17
21	1210	15	62	1297	17
22	1212	15	63	1300	18
23	1214	15	64	1303	18
24	1217	15	65	1307	19
25	1219	15	66	1310	19
26	1221	14	67	1314	20
27	1223	14	68	1318	21
28	1225	14	69	1323	21
29	1227	14	70	1327	22
30	1229	14	71	1333	23
31	1231	14	72	1338	25
32	1233	14	73	1345	26
33	1235	14	74	1352	28
34	1237	14	75	1361	30
35	1238	14	76	1371	34
36	1240	14	77	1384	39
37	1242	14	78	1402	47
38	1244	14	79	1433	67
39	1246	14	80	1500	312
40	1248	14			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1187, 1250, 1345.

Table 7.4.15
2009 AIMS A Raw Score to Scale Score Table
Science Grade 4

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	335	41	1243	10
1	1033	66	42	1245	10
2	1082	44	43	1246	10
3	1108	34	44	1248	10
4	1124	28	45	1250	10
5	1136	24	46	1252	10
6	1145	22	47	1253	10
7	1153	20	48	1255	10
8	1159	18	49	1257	10
9	1165	17	50	1259	10
10	1170	16	51	1261	11
11	1174	16	52	1263	11
12	1178	15	53	1265	11
13	1182	14	54	1267	11
14	1185	14	55	1269	11
15	1188	13	56	1271	11
16	1191	13	57	1273	11
17	1194	13	58	1276	12
18	1197	12	59	1278	12
19	1200	12	60	1281	12
20	1202	12	61	1283	12
21	1205	12	62	1286	13
22	1207	11	63	1289	13
23	1209	11	64	1292	13
24	1211	11	65	1295	14
25	1213	11	66	1298	14
26	1215	11	67	1302	15
27	1217	11	68	1305	15
28	1219	11	69	1310	16
29	1221	10	70	1314	16
30	1223	10	71	1319	17
31	1225	10	72	1324	18
32	1227	10	73	1331	19
33	1229	10	74	1338	21
34	1230	10	75	1346	23
35	1232	10	76	1356	25
36	1234	10	77	1369	29
37	1236	10	78	1387	36
38	1238	10	79	1419	51
39	1239	10	80	1500	237
40	1241	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1188, 1250, 1331.

Table 7.4.16
2009 AIMS A Raw Score to Scale Score Table
Science Grade 8

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	334	41	1243	10
1	1050	66	42	1244	10
2	1092	44	43	1246	10
3	1114	35	44	1247	10
4	1129	29	45	1248	10
5	1140	26	46	1250	10
6	1149	23	47	1251	10
7	1156	21	48	1253	10
8	1162	20	49	1254	10
9	1168	19	50	1256	10
10	1173	18	51	1257	10
11	1177	17	52	1259	10
12	1181	16	53	1261	10
13	1185	16	54	1262	10
14	1188	15	55	1264	11
15	1191	15	56	1265	11
16	1194	14	57	1267	11
17	1197	14	58	1269	11
18	1200	13	59	1270	11
19	1203	13	60	1272	11
20	1205	13	61	1274	11
21	1207	13	62	1276	12
22	1210	12	63	1278	12
23	1212	12	64	1280	12
24	1214	12	65	1282	12
25	1216	12	66	1284	13
26	1218	12	67	1287	13
27	1220	11	68	1289	13
28	1222	11	69	1292	14
29	1223	11	70	1295	14
30	1225	11	71	1298	15
31	1227	11	72	1302	16
32	1228	11	73	1306	17
33	1230	11	74	1310	18
34	1232	11	75	1315	20
35	1233	10	76	1322	22
36	1235	10	77	1330	26
37	1236	10	78	1343	32
38	1238	10	79	1364	47
39	1240	10	80	1500	234
40	1241	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1197, 1250, 1315.

Table 7.4.17
2009 AIMS A Raw Score to Scale Score Table
Science High School

Raw Score	Scale Score	SEM	Raw Score	Scale Score	SEM
0	1000	330	41	1247	10
1	1088	63	42	1248	10
2	1122	42	43	1250	11
3	1140	33	44	1251	11
4	1152	28	45	1253	11
5	1161	24	46	1254	11
6	1168	22	47	1255	11
7	1174	20	48	1257	11
8	1179	19	49	1259	11
9	1184	18	50	1260	11
10	1187	17	51	1262	11
11	1191	16	52	1263	11
12	1194	15	53	1265	11
13	1197	15	54	1267	11
14	1200	14	55	1268	12
15	1202	14	56	1270	12
16	1205	13	57	1272	12
17	1207	13	58	1274	12
18	1209	13	59	1276	12
19	1211	12	60	1278	13
20	1213	12	61	1280	13
21	1215	12	62	1282	13
22	1217	12	63	1284	13
23	1219	12	64	1287	14
24	1221	11	65	1290	14
25	1222	11	66	1292	15
26	1224	11	67	1295	15
27	1226	11	68	1298	16
28	1227	11	69	1302	16
29	1229	11	70	1305	17
30	1231	11	71	1309	18
31	1232	11	72	1314	19
32	1234	11	73	1319	20
33	1235	11	74	1325	22
34	1237	11	75	1331	23
35	1238	11	76	1339	26
36	1239	11	77	1349	30
37	1241	10	78	1363	36
38	1242	10	79	1387	51
39	1244	10	80	1500	236
40	1245	10			

Note: SEM is the Standard Error of Measure for the Scale Score. Cut scores for Approaches the Standard, Meets the Standard, and Exceeds the Standard are 1197, 1250, 1309.

Part 8: Test Results

8.1 Data

Part 8 of this Technical Report contains information about the results of the 2009 Spring administration of AIMS A. This section provides information on the scores from the AIMS A assessments. The AERA/APA/NCME standards addressed in Part 8 include: 1.5, 4.3, 4.5, 4.6, 4.7, 6.35, 7.1, 7.10, 13.15, and 13.19.

Results presented below are based on population data contained within the final electronic data files. The results presented in this part of the Technical Report may differ slightly from final testing results presented on the Arizona Department of Education website due to slight differences in the application of exclusion rules. Official final results typically use more detailed school-level information than is used to conduct research analyses. The results in the following tables are presented as evidence of reliability and validity of the AIMS A assessments and should not be used for state accountability purposes.

8.1.1 AIMS A State Test Results

The AIMS A test results for Mathematics, Reading, and Science are each on a scale for grades 3-8 and high school that runs from a lowest obtainable scale score (LOSS) of 1000 to a highest obtainable scale score (HOSS) of 1500. The LOSS and HOSS values for each grade/subject can be found in Table 8.1.1.1.

Test results for each grade level and content area test follow in Tables 8.1.1.2 through 8.1.1.4. For each grade, scale score means and standard deviations, as well as the percentages of students in each performance level, are presented for the state as a whole and disaggregated into various demographic groups.

In addition to the descriptive statistics presented in Tables 8.1.1.2 through 8.1.1.4, scale score frequency distributions are also presented in Tables 8.1.1.5 through 8.1.1.22. Each grade and content area is presented in a separate table. These tables show the scale score, frequency (Freq), cumulative frequency (Cum Freq), percentage (%), and cumulative percentage (Cum %).

Table 8.1.1.1
2009 AIMS A LOSS and HOSS Table

Content	Grade	LOSS	HOSS
Mathematics	3	1000	1500
	4	1000	1500
	5	1000	1500
	6	1000	1500
	7	1000	1500
	8	1000	1500
	9	1000	1500
	HS	1000	1500
Reading	3	1000	1500
	4	1000	1500
	5	1000	1500
	6	1000	1500
	7	1000	1500
	8	1000	1500
	HS	1000	1500
Science	4	1000	1500
	8	1000	1500
	10	1000	1500

Table 8.1.1.2
2009 AIMS A State Test Results
Mathematics Grades 3-8 and High School

	N	Scale Score		% at Performance Level			
		M	SD	FFB	AS	MS	ES
Grade 3							
Total	877	1255.83	84.59	15	16	44	25
Ethnic Background							
White (Not Hispanic)	360	1248.63	92.17	19	15	46	20
Black or African American	57	1274.22	74.59	11	11	44	35
Hispanic or Latino	370	1256.58	82.12	14	19	42	26
American Indian or Alaskan Native	63	1273.47	59.75	6	13	41	40
Asian or Pacific Islander	27	1261.51	73.06	7	19	63	11
SES							
Free Lunch	475	1268.49	74.29	11	16	45	29
Reduced Lunch	60	1256.73	98.27	18	15	35	32
No Lunch Assistance	342	1238.07	92.19	20	17	45	17
Gender							
Male	566	1258.18	87.00	14	15	43	27
Female	311	1251.55	79.97	15	18	46	21
Grade 4							
Total	898	1251.01	93.72	19	16	40	26
Ethnic Background							
White (Not Hispanic)	372	1246.28	95.02	18	16	44	22
Black or African American	72	1261.04	82.26	13	15	39	33
Hispanic or Latino	368	1257.66	92.55	20	15	37	29
American Indian or Alaskan Native	63	1241.17	91.22	21	16	40	24
Asian or Pacific Islander	23	1216.56	121.29	26	17	26	30
SES							
Free Lunch	473	1267.25	75.74	14	17	38	31
Reduced Lunch	58	1255.08	94.28	21	12	38	29
No Lunch Assistance	367	1229.43	109.24	25	14	43	18
Gender							
Male	572	1257.51	91.14	16	14	41	29
Female	326	1239.60	97.18	23	18	38	21
Grade 5							
Total	807	1247.32	78.15	18	18	49	14
Ethnic Background							
White (Not Hispanic)	309	1240.60	83.44	21	18	49	12
Black or African American	53	1263.32	52.09	13	11	60	15
Hispanic or Latino	360	1252.19	76.15	15	19	50	16
American Indian or Alaskan Native	64	1244.40	75.72	22	20	44	14
Asian or Pacific Islander	21	1231.23	87.05	29	19	43	10
SES							
Free Lunch	401	1256.34	70.20	14	16	54	16
Reduced Lunch	62	1267.80	34.70	11	16	53	19
No Lunch Assistance	344	1233.11	89.54	24	22	44	11
Gender							
Male	531	1250.43	78.64	18	18	49	16
Female	276	1241.33	76.99	19	20	50	11

Note: FFB=Falls Far Below; AS=Approaches the Standard; MS=Meets the Standard; ES=Exceeds the Standard. These results are not final results and are presented here for purposes of addressing reliability and validity. They should not be used for accountability purposes. (Table continued.)

	N	Scale Score		% at Performance Level			
		M	SD	FFB	AS	MS	ES
Grade 6							
Total	798	1246.85	87.98	13	25	46	16
Ethnic Background							
White (Not Hispanic)	316	1245.02	92.69	13	27	43	17
Black or African American	60	1251.80	73.02	15	23	47	15
Hispanic or Latino	360	1245.59	89.86	14	24	47	15
American Indian or Alaskan Native	45	1271.97	45.66	4	22	58	16
Asian or Pacific Islander	17	1223.76	85.52	18	41	29	12
SES							
Free Lunch	415	1258.83	82.54	6	11	26	9
Reduced Lunch	56	1253.37	81.51	1	2	4	1
No Lunch Assistance	327	1230.54	93.24	7	12	17	5
Gender							
Male	499	1251.36	86.17	12	26	45	16
Female	299	1239.34	90.56	15	23	46	15
Grade 7							
Total	804	1258.83	89.15	11	21	48	20
Ethnic Background							
White (Not Hispanic)	293	1254.69	94.40	12	23	46	19
Black or African American	57	1251.56	92.17	18	21	44	18
Hispanic or Latino	357	1260.62	86.27	10	21	49	20
American Indian or Alaskan Native	74	1263.52	90.45	13	12	49	24
Asian or Pacific Islander	23	1286.91	35.83	0	13	70	17
SES							
Free Lunch	408	1277.13	76.28	7	17	50	26
Reduced Lunch	59	1244.15	89.69	14	17	53	17
No Lunch Assistance	337	1239.25	98.63	16	25	46	13
Gender							
Male	494	1261.91	89.56	11	22	46	21
Female	310	1253.92	88.41	13	18	51	18
Grade 8							
Total	860	1251.36	85.56	13	22	42	23
Ethnic Background							
White (Not Hispanic)	358	1246.97	88.39	15	22	40	22
Black or African American	83	1256.72	77.94	11	17	51	22
Hispanic or Latino	354	1252.65	86.17	12	22	43	23
American Indian or Alaskan Native	52	1253.94	73.67	15	17	37	31
Asian or Pacific Islander	13	1292.53	76.79	0	31	38	31
SES							
Free Lunch	407	1260.80	80.85	10	19	45	26
Reduced Lunch	59	1250.06	87.33	12	22	42	24
No Lunch Assistance	394	1241.80	89.10	17	24	39	20
Gender							
Male	517	1251.99	84.22	14	21	42	23
Female	343	1250.41	87.65	13	22	42	24
High School							
Total	1368	1254.48	85.09	14	21	53	11
Ethnic Background							
White (Not Hispanic)	617	1258.42	81.88	13	21	53	13
Black or African American	110	1252.70	88.72	17	21	50	12
Hispanic or Latino	497	1249.72	90.07	14	22	53	11
American Indian or Alaskan Native	124	1258.58	78.38	15	19	59	7
Asian or Pacific Islander	20	1235.85	72.54	20	20	60	0
SES							
Free Lunch	618	1258.63	82.30	13	19	57	11
Reduced Lunch	86	1263.37	82.25	13	19	57	12
No Lunch Assistance	664	1249.47	87.79	16	24	49	11
Gender							
Male	770	1260.05	86.06	14	19	55	13
Female	598	1247.32	83.36	15	25	51	9

Note: FFB= Falls Far Below; AS= Approaches the Standard; MS= Meets the Standard; ES= Exceeds the Standard. These results are not final results and are presented here for purposes of addressing reliability and validity. They should not be used for accountability purposes.

Table 8.1.1.3
2009 AIMS A State Test Results
Reading Grades 3-8 and High School

	N	Scale Score		% at Performance Level			
		M	SD	FFB	AS	MS	ES
Grade 3							
Total	877	1252.67	87.64	16	18	44	22
Ethnic Background							
White (Not Hispanic)	360	1245.31	94.70	19	18	39	24
Black or African American	57	1276.36	82.65	9	16	51	25
Hispanic or Latino	370	1252.07	85.71	17	17	47	19
American Indian or Alaskan Native	63	1276.76	59.07	6	17	43	33
Asian or Pacific Islander	27	1252.92	65.39	11	30	52	7
SES							
Free Lunch	475	1265.27	75.59	12	15	48	25
Reduced Lunch	60	1258.15	96.09	22	8	48	22
No Lunch Assistance	342	1234.22	98.10	21	23	37	19
Gender							
Male	566	1254.32	88.18	15	18	43	24
Female	311	1249.68	86.71	18	17	46	19
Grade 4							
Total	898	1257.67	104.19	14	22	44	20
Ethnic Background							
White (Not Hispanic)	372	1252.63	105.74	15	20	46	18
Black or African American	72	1270.83	93.69	10	22	42	26
Hispanic or Latino	368	1264.15	102.01	13	24	41	22
American Indian or Alaskan Native	63	1246.47	107.57	17	22	43	17
Asian or Pacific Islander	23	1224.86	127.99	22	17	48	13
SES							
Free Lunch	473	1275.70	90.07	8	23	45	23
Reduced Lunch	58	1265.82	97.46	14	19	48	19
No Lunch Assistance	367	1233.14	116.76	21	21	41	16
Gender							
Male	572	1263.00	99.22	12	21	45	21
Female	326	1248.31	111.94	17	24	41	18
Grade 5							
Total	807	1263.11	101.80	11	26	41	22
Ethnic Background							
White (Not Hispanic)	309	1255.11	103.79	12	28	39	22
Black or African American	53	1286.28	83.35	6	26	43	25
Hispanic or Latino	360	1270.12	99.36	9	26	43	22
American Indian or Alaskan Native	64	1256.32	104.89	16	20	45	19
Asian or Pacific Islander	21	1222.76	129.17	29	19	38	14
SES							
Free Lunch	401	1276.82	92.40	8	24	44	24
Reduced Lunch	62	1292.22	84.63	5	27	37	31
No Lunch Assistance	344	1241.88	110.89	16	28	39	17
Gender							
Male	531	1266.15	102.59	11	24	43	22
Female	276	1257.26	100.18	11	30	39	21

Note: FFB=Falls Far Below; AS=Approaches the Standard; MS=Meets the Standard; ES=Exceeds the Standard. These results are not final results and are presented here for purposes of addressing reliability and validity. They should not be used for accountability purposes. (Table continued.)

	N	Scale Score		% at Performance Level			
		M	SD	FFB	AS	MS	ES
Grade 6							
Total	798	1260.75	109.20	13	24	42	21
Ethnic Background							
White (Not Hispanic)	316	1264.02	115.50	14	23	39	24
Black or African American	60	1256.50	106.49	12	28	35	25
Hispanic or Latino	360	1255.71	106.46	13	26	43	18
American Indian or Alaskan Native	45	1295.91	76.41	2	18	56	24
Asian or Pacific Islander	17	1229.00	117.39	24	12	59	6
SES							
Free Lunch	415	1271.73	104.86	10	22	45	23
Reduced Lunch	56	1277.089	101.30	7	30	36	27
No Lunch Assistance	327	1244.036	113.92	18	26	39	17
Gender							
Male	499	1266.27	107.47	11	25	41	22
Female	299	1251.55	111.60	16	22	43	19
Grade 7							
Total	804	1276.44	108.68	14	18	43	25
Ethnic Background							
White (Not Hispanic)	293	1274.85	114.02	15	18	40	26
Black or African American	57	1269.71	115.62	18	18	40	25
Hispanic or Latino	357	1278.88	107.06	13	18	42	26
American Indian or Alaskan Native	74	1269.16	102.97	12	12	53	23
Asian or Pacific Islander	23	1298.95	53.85	0	17	65	17
SES							
Free Lunch	408	1294.56	98.62	10	15	45	30
Reduced Lunch	59	1260.44	104.97	15	24	39	22
No Lunch Assistance	337	1257.31	117.18	19	19	41	21
Gender							
Male	494	1276.84	106.11	13	18	45	25
Female	310	1275.81	112.82	15	17	40	27
Grade 8							
Total	860	1270.43	94.70	12	16	52	20
Ethnic Background							
White (Not Hispanic)	358	1269.99	100.28	13	16	49	23
Black or African American	83	1278.81	71.14	10	11	61	18
Hispanic or Latino	354	1269.23	98.15	12	15	53	20
American Indian or Alaskan Native	52	1267.13	71.61	8	21	60	12
Asian or Pacific Islander	13	1275.30	50.09	8	31	54	8
SES							
Free Lunch	407	1280.00	90.61	9	12	56	23
Reduced Lunch	59	1262.05	109.93	14	17	46	24
No Lunch Assistance	394	1261.81	95.70	14	19	50	18
Gender							
Male	517	1269.29	92.84	11	18	52	19
Female	343	1272.16	97.56	12	13	53	22
High School							
Total	1368	1285.40	102.29	10	18	50	23
Ethnic Background							
White (Not Hispanic)	617	1293.93	98.41	7	18	48	26
Black or African American	110	1277.44	102.31	12	18	48	22
Hispanic or Latino	497	1278.31	109.55	12	17	51	21
American Indian or Alaskan Native	124	1283.75	91.81	10	19	53	18
Asian or Pacific Islander	20	1252.60	75.09	10	25	65	0
SES							
Free Lunch	618	1292.04	101.75	9	15	51	24
Reduced Lunch	86	1290.40	91.84	8	16	55	21
No Lunch Assistance	664	1278.58	103.75	10	21	48	21
Gender							
Male	770	1290.30	102.41	9	16	50	25
Female	598	1279.09	101.86	10	20	50	20

Note: FFB=Falls Far Below; AS=Approaches the Standard; MS=Meets the Standard; ES=Exceeds the Standard. These results are not final results and are presented here for purposes of addressing reliability and validity. They should not be used for accountability purposes.

Table 8.1.1.4
2009 AIMS A State Test Results
Science Grades 4, 8, 10

	N	Scale Score		% at Performance Level			
		M	SD	FFB	AS	MS	ES
Grade 4							
Total	897	1265.14	104.99	13	20	43	23
Ethnic Background							
White (Not Hispanic)	372	1266.11	109.82	15	18	42	25
Black or African American	72	1276.51	103.36	8	22	49	21
Hispanic or Latino	368	1266.04	101.27	12	21	45	22
American Indian or Alaskan Native	62	1256.70	87.45	11	31	35	23
Asian or Pacific Islander	23	1222.04	127.25	22	13	48	17
SES							
Free Lunch	472	1282.67	88.23	7	22	44	27
Reduced Lunch	58	1269.05	100.76	10	21	43	26
No Lunch Assistance	367	1241.97	120.21	21	18	42	18
Gender							
Male	572	1273.73	102.19	11	19	44	26
Female	325	1250.00	108.26	17	22	43	18
Grade 8							
Total	860	1287.69	112.19	10	16	46	28
Ethnic Background							
White (Not Hispanic)	358	1287.86	115.619	11	15	46	28
Black or African American	83	1296.95	98.714	8	10	47	35
Hispanic or Latino	354	1285.48	116.79	9	20	44	27
American Indian or Alaskan Native	52	1290.71	87.95	10	10	50	31
Asian or Pacific Islander	13	1271.76	39.70	0	31	54	15
SES							
Free Lunch	407	1298.00	110.50	7	15	46	32
Reduced Lunch	59	1281.71	117.20	12	17	46	25
No Lunch Assistance	394	1277.93	112.51	13	18	45	25
Gender							
Male	517	1287.51	110.74	10	18	46	27
Female	343	1287.96	114.51	10	15	46	30
High School							
Total	821	1270.62	92.51	10	19	46	25
Ethnic Background							
White (Not Hispanic)	335	1282.21	83.25	6	19	46	29
Black or African American	70	1255.60	101.70	16	14	49	21
Hispanic or Latino	338	1264.18	103.24	12	20	43	25
American Indian or Alaskan Native	63	1270.04	52.35	6	21	54	19
Asian or Pacific Islander	15	1229.46	95.39	13	20	67	0
SES							
Free Lunch	398	1276.25	86.74	9	17	48	27
Reduced Lunch	43	1288.25	90.89	7	12	53	28
No Lunch Assistance	380	1262.72	97.93	11	22	43	23
Gender							
Male	473	1273.45	95.48	10	16	47	26
Female	348	1266.77	88.31	9	22	45	24

Note: FFB=Falls Far Below; AS=Approaches the Standard; MS=Meets the Standard; ES=Exceeds the Standard. These results are not final results and are presented here for purposes of addressing reliability and validity. They should not be used for accountability purposes.

Table 8.1.1.5
2009 AIMS A Frequency Distribution
Mathematics Grade 3

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	60	6.8%	6.8%	45	1255	9	1.0%	35.9%
1	1102	2	0.2%	7.1%	46	1256	8	0.9%	36.8%
2	1136	3	0.3%	7.4%	47	1257	12	1.4%	38.2%
3	1154	2	0.2%	7.6%	48	1258	8	0.9%	39.1%
4	1165	7	0.8%	8.4%	49	1259	19	2.2%	41.3%
5	1173	1	0.1%	8.6%	50	1261	14	1.6%	42.9%
6	1179	1	0.1%	8.7%	51	1262	11	1.3%	44.1%
7	1184	0	0.0%	8.7%	52	1263	8	0.9%	45.0%
8	1189	8	0.9%	9.6%	53	1264	3	0.3%	45.4%
9	1193	3	0.3%	9.9%	54	1265	21	2.4%	47.8%
10	1196	1	0.1%	10.0%	55	1267	4	0.5%	48.2%
11	1199	2	0.2%	10.3%	56	1268	16	1.8%	50.1%
12	1202	3	0.3%	10.6%	57	1269	10	1.1%	51.2%
13	1205	3	0.3%	10.9%	58	1271	8	0.9%	52.1%
14	1207	6	0.7%	11.6%	59	1272	11	1.3%	53.4%
15	1210	1	0.1%	11.7%	60	1273	17	1.9%	55.3%
16	1212	8	0.9%	12.7%	61	1275	5	0.6%	55.9%
17	1214	4	0.5%	13.1%	62	1276	13	1.5%	57.4%
18	1216	5	0.6%	13.7%	63	1278	11	1.3%	58.6%
19	1218	2	0.2%	13.9%	64	1279	14	1.6%	60.2%
20	1220	8	0.9%	14.8%	65	1281	11	1.3%	61.5%
21	1222	5	0.6%	15.4%	66	1282	23	2.6%	64.1%
22	1223	8	0.9%	16.3%	67	1284	9	1.0%	65.1%
23	1225	5	0.6%	16.9%	68	1285	24	2.7%	67.8%
24	1227	9	1.0%	17.9%	69	1287	9	1.0%	68.9%
25	1228	5	0.6%	18.5%	70	1289	23	2.6%	71.5%
26	1230	10	1.1%	19.6%	71	1291	17	1.9%	73.4%
27	1231	3	0.3%	20.0%	72	1293	16	1.8%	75.3%
28	1233	7	0.8%	20.8%	73	1295	14	1.6%	76.9%
29	1234	9	1.0%	21.8%	74	1298	11	1.3%	78.1%
30	1236	4	0.5%	22.2%	75	1300	20	2.3%	80.4%
31	1237	1	0.1%	22.3%	76	1303	24	2.7%	83.1%
32	1238	8	0.9%	23.3%	77	1306	14	1.6%	84.7%
33	1240	3	0.3%	23.6%	78	1309	28	3.2%	87.9%
34	1241	8	0.9%	24.5%	79	1312	9	1.0%	88.9%
35	1242	11	1.3%	25.8%	80	1316	19	2.2%	91.1%
36	1244	11	1.3%	27.0%	81	1320	12	1.4%	92.5%
37	1245	5	0.6%	27.6%	82	1325	11	1.3%	93.7%
38	1246	8	0.9%	28.5%	83	1331	6	0.7%	94.4%
39	1247	6	0.7%	29.2%	84	1338	18	2.1%	96.5%
40	1249	16	1.8%	31.0%	85	1348	7	0.8%	97.3%
41	1250	6	0.7%	31.7%	86	1360	6	0.7%	97.9%
42	1251	14	1.6%	33.3%	87	1382	0	0.0%	97.9%
43	1252	6	0.7%	34.0%	88	1500	18	2.1%	100%
44	1253	8	0.9%	34.9%					
					Total		877	100%	

Note: Cut scores in bold.

Table 8.1.1.6
2009 AIMS A Frequency Distribution
Mathematics Grade 4

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	84	9.4%	9.4%	45	1255	7	0.8%	39.5%
1	1103	3	0.3%	9.7%	46	1257	14	1.6%	41.1%
2	1136	5	0.6%	10.2%	47	1258	11	1.2%	42.3%
3	1153	2	0.2%	10.5%	48	1259	7	0.8%	43.1%
4	1164	5	0.6%	11.0%	49	1261	10	1.1%	44.2%
5	1173	2	0.2%	11.2%	50	1262	13	1.4%	45.7%
6	1179	1	0.1%	11.4%	51	1263	4	0.4%	46.1%
7	1184	0	0.0%	11.4%	52	1265	10	1.1%	47.2%
8	1189	8	0.9%	12.2%	53	1266	12	1.3%	48.6%
9	1193	1	0.1%	12.4%	54	1267	10	1.1%	49.7%
10	1197	1	0.1%	12.5%	55	1269	5	0.6%	50.2%
11	1200	2	0.2%	12.7%	56	1270	14	1.6%	51.8%
12	1203	7	0.8%	13.5%	57	1272	9	1.0%	52.8%
13	1205	3	0.3%	13.8%	58	1273	8	0.9%	53.7%
14	1208	2	0.2%	14.0%	59	1275	15	1.7%	55.3%
15	1210	6	0.7%	14.7%	60	1276	14	1.6%	56.9%
16	1212	4	0.4%	15.1%	61	1278	7	0.8%	57.7%
17	1214	4	0.4%	15.6%	62	1280	17	1.9%	59.6%
18	1216	8	0.9%	16.5%	63	1281	11	1.2%	60.8%
19	1218	4	0.4%	16.9%	64	1283	20	2.2%	63.0%
20	1220	16	1.8%	18.7%	65	1285	10	1.1%	64.1%
21	1222	5	0.6%	19.3%	66	1287	12	1.3%	65.5%
22	1224	6	0.7%	19.9%	67	1289	11	1.2%	66.7%
23	1225	2	0.2%	20.2%	68	1291	18	2.0%	68.7%
24	1227	7	0.8%	20.9%	69	1293	5	0.6%	69.3%
25	1228	7	0.8%	21.7%	70	1295	13	1.4%	70.7%
26	1230	8	0.9%	22.6%	71	1297	7	0.8%	71.5%
27	1231	5	0.6%	23.2%	72	1300	24	2.7%	74.2%
28	1233	10	1.1%	24.3%	73	1302	18	2.0%	76.2%
29	1234	4	0.4%	24.7%	74	1305	24	2.7%	78.8%
30	1236	10	1.1%	25.8%	75	1308	8	0.9%	79.7%
31	1237	7	0.8%	26.6%	76	1311	24	2.7%	82.4%
32	1239	8	0.9%	27.5%	77	1314	8	0.9%	83.3%
33	1240	8	0.9%	28.4%	78	1318	16	1.8%	85.1%
34	1241	8	0.9%	29.3%	79	1321	5	0.6%	85.6%
35	1242	6	0.7%	30.0%	80	1326	20	2.2%	87.9%
36	1244	11	1.2%	31.2%	81	1331	11	1.2%	89.1%
37	1245	4	0.4%	31.6%	82	1336	35	3.9%	93.0%
38	1246	6	0.7%	32.3%	83	1343	8	0.9%	93.9%
39	1248	8	0.9%	33.2%	84	1350	29	3.2%	97.1%
40	1249	10	1.1%	34.3%	85	1360	3	0.3%	97.4%
41	1250	9	1.0%	35.3%	86	1375	14	1.6%	99.0%
42	1252	10	1.1%	36.4%	87	1399	0	0.0%	99.0%
43	1253	9	1.0%	37.4%	88	1500	9	1.0%	100.0%
44	1254	12	1.3%	38.8%					
							898	100%	

Note: Cut scores in bold.

Table 8.1.1.7
2009 AIMS A Frequency Distribution
Mathematics Grade 5

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	56	6.9%	6.9%	45	1256	12	1.5%	43.9%
1	1111	1	0.1%	7.1%	46	1257	15	1.9%	45.7%
2	1143	1	0.1%	7.2%	47	1258	7	0.9%	46.6%
3	1159	2	0.2%	7.4%	48	1259	11	1.4%	48.0%
4	1169	12	1.5%	8.9%	49	1261	5	0.6%	48.6%
5	1176	1	0.1%	9.0%	50	1262	15	1.9%	50.4%
6	1182	2	0.2%	9.3%	51	1263	12	1.5%	51.9%
7	1187	0	0.0%	9.3%	52	1265	10	1.2%	53.2%
8	1191	7	0.9%	10.2%	53	1266	8	1.0%	54.2%
9	1195	5	0.6%	10.8%	54	1268	13	1.6%	55.8%
10	1198	1	0.1%	10.9%	55	1269	10	1.2%	57.0%
11	1201	2	0.2%	11.2%	56	1270	16	2.0%	59.0%
12	1204	10	1.2%	12.4%	57	1272	8	1.0%	60.0%
13	1207	5	0.6%	13.0%	58	1273	17	2.1%	62.1%
14	1209	2	0.2%	13.3%	59	1275	13	1.6%	63.7%
15	1211	3	0.4%	13.6%	60	1277	12	1.5%	65.2%
16	1213	6	0.7%	14.4%	61	1278	16	2.0%	67.2%
17	1215	8	1.0%	15.4%	62	1280	15	1.9%	69.0%
18	1217	3	0.4%	15.7%	63	1281	17	2.1%	71.1%
19	1219	3	0.4%	16.1%	64	1283	16	2.0%	73.1%
20	1221	16	2.0%	18.1%	65	1285	7	0.9%	74.0%
21	1223	6	0.7%	18.8%	66	1287	16	2.0%	76.0%
22	1224	6	0.7%	19.6%	67	1289	4	0.5%	76.5%
23	1226	5	0.6%	20.2%	68	1291	15	1.9%	78.3%
24	1227	10	1.2%	21.4%	69	1293	9	1.1%	79.4%
25	1229	9	1.1%	22.6%	70	1295	20	2.5%	81.9%
26	1230	7	0.9%	23.4%	71	1298	8	1.0%	82.9%
27	1232	3	0.4%	23.8%	72	1300	25	3.1%	86.0%
28	1233	7	0.9%	24.7%	73	1303	6	0.7%	86.7%
29	1235	9	1.1%	25.8%	74	1305	19	2.4%	89.1%
30	1236	9	1.1%	26.9%	75	1308	11	1.4%	90.5%
31	1237	2	0.2%	27.1%	76	1311	12	1.5%	91.9%
32	1239	11	1.4%	28.5%	77	1315	6	0.7%	92.7%
33	1240	5	0.6%	29.1%	78	1318	15	1.9%	94.5%
34	1241	8	1.0%	30.1%	79	1322	3	0.4%	94.9%
35	1243	4	0.5%	30.6%	80	1327	13	1.6%	96.5%
36	1244	8	1.0%	31.6%	81	1332	3	0.4%	96.9%
37	1245	8	1.0%	32.6%	82	1337	9	1.1%	98.0%
38	1247	15	1.9%	34.4%	83	1344	1	0.1%	98.1%
39	1248	5	0.6%	35.1%	84	1352	9	1.1%	99.3%
40	1249	12	1.5%	36.6%	85	1362	0	0.0%	99.3%
41	1250	10	1.2%	37.8%	86	1376	2	0.2%	99.5%
42	1252	16	2.0%	39.8%	87	1401	0	0.0%	99.5%
43	1253	8	1.0%	40.8%	88	1500	4	0.5%	100.0%
44	1254	13	1.6%	42.4%					
					Total		807	100%	

Note: Cut scores in bold.

Table 8.1.1.8
2009 AIMS A Frequency Distribution
Mathematics Grade 6

Raw Score	Scale Score	Freq.	%	Cum %	Raw Score	Scale Score	Freq.	%	Cum %
0	1000	48	6.02%	6.02%	45	1250	6	0.75%	39.35%
1	1011	2	0.25%	6.27%	46	1251	16	2.01%	41.35%
2	1062	23	2.88%	9.15%	47	1253	10	1.25%	42.61%
3	1089	1	0.13%	9.27%	48	1255	11	1.38%	43.98%
4	1107	7	0.88%	10.15%	49	1257	13	1.63%	45.61%
5	1120	0	0.00%	10.15%	50	1259	6	0.75%	46.37%
6	1131	1	0.13%	10.28%	51	1261	20	2.51%	48.87%
7	1139	1	0.13%	10.40%	52	1263	7	0.88%	49.75%
8	1147	3	0.38%	10.78%	53	1265	6	0.75%	50.50%
9	1153	1	0.13%	10.90%	54	1267	19	2.38%	52.88%
10	1159	1	0.13%	11.03%	55	1269	12	1.50%	54.39%
11	1164	0	0.00%	11.03%	56	1271	16	2.01%	56.39%
12	1169	4	0.50%	11.53%	57	1273	11	1.38%	57.77%
13	1173	1	0.13%	11.65%	58	1275	17	2.13%	59.90%
14	1177	9	1.13%	12.78%	59	1277	7	0.88%	60.78%
15	1181	1	0.13%	12.91%	60	1279	17	2.13%	62.91%
16	1184	3	0.38%	13.28%	61	1282	14	1.75%	64.66%
17	1187	3	0.38%	13.66%	62	1284	18	2.26%	66.92%
18	1191	3	0.38%	14.04%	63	1286	5	0.63%	67.54%
19	1193	5	0.63%	14.66%	64	1289	14	1.75%	69.30%
20	1196	7	0.88%	15.54%	65	1291	12	1.50%	70.80%
21	1199	4	0.50%	16.04%	66	1294	20	2.51%	73.31%
22	1202	9	1.13%	17.17%	67	1296	9	1.13%	74.44%
23	1204	1	0.13%	17.29%	68	1299	19	2.38%	76.82%
24	1207	4	0.50%	17.79%	69	1302	18	2.26%	79.07%
25	1209	7	0.88%	18.67%	70	1305	16	2.01%	81.08%
26	1211	12	1.50%	20.18%	71	1308	9	1.13%	82.21%
27	1214	5	0.63%	20.80%	72	1311	18	2.26%	84.46%
28	1216	7	0.88%	21.68%	73	1314	8	1.00%	85.46%
29	1218	2	0.25%	21.93%	74	1318	20	2.51%	87.97%
30	1220	11	1.38%	23.31%	75	1322	13	1.63%	89.60%
31	1222	4	0.50%	23.81%	76	1326	21	2.63%	92.23%
32	1224	5	0.63%	24.44%	77	1330	5	0.63%	92.86%
33	1226	5	0.63%	25.06%	78	1335	8	1.00%	93.86%
34	1228	6	0.75%	25.81%	79	1341	5	0.63%	94.49%
35	1230	9	1.13%	26.94%	80	1346	12	1.50%	95.99%
36	1232	6	0.75%	27.69%	81	1353	5	0.63%	96.62%
37	1234	7	0.88%	28.57%	82	1361	9	1.13%	97.74%
38	1236	6	0.75%	29.32%	83	1370	0	0.00%	97.74%
39	1238	12	1.50%	30.83%	84	1381	10	1.25%	99.00%
40	1240	17	2.13%	32.96%	85	1395	0	0.00%	99.00%
41	1242	15	1.88%	34.84%	86	1415	3	0.38%	99.37%
42	1244	11	1.38%	36.22%	87	1450	0	0.00%	99.37%
43	1246	9	1.13%	37.34%	88	1500	5	0.63%	100%
44	1248	10	1.25%	38.60%					
					Total		798	100%	

Note: Cut scores in bold.

Table 8.1.1.9
2009 AIMS A Frequency Distribution
Mathematics Grade 7

Raw Score	Scale Score	Freq.	%	Cum.	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	50	6.22%	6.22%	45	1258	11	1.37%	38.06%
1	1023	4	0.50%	6.72%	46	1259	7	0.87%	38.93%
2	1073	5	0.62%	7.34%	47	1261	10	1.24%	40.17%
3	1100	0	0.00%	7.34%	48	1263	5	0.62%	40.80%
4	1117	8	1.00%	8.33%	49	1265	13	1.62%	42.41%
5	1130	1	0.12%	8.46%	50	1267	10	1.24%	43.66%
6	1140	1	0.12%	8.58%	51	1268	8	1.00%	44.65%
7	1149	1	0.12%	8.71%	52	1270	16	1.99%	46.64%
8	1156	8	1.00%	9.70%	53	1272	8	1.00%	47.64%
9	1162	3	0.37%	10.07%	54	1274	21	2.61%	50.25%
10	1168	2	0.25%	10.32%	55	1276	11	1.37%	51.62%
11	1173	3	0.37%	10.70%	56	1277	14	1.74%	53.36%
12	1178	6	0.75%	11.44%	57	1279	10	1.24%	54.60%
13	1182	2	0.25%	11.69%	58	1281	13	1.62%	56.22%
14	1186	4	0.50%	12.19%	59	1283	5	0.62%	56.84%
15	1189	3	0.37%	12.56%	60	1285	18	2.24%	59.08%
16	1193	7	0.87%	13.43%	61	1287	16	1.99%	61.07%
17	1196	1	0.12%	13.56%	62	1289	16	1.99%	63.06%
18	1199	1	0.12%	13.68%	63	1291	15	1.87%	64.93%
19	1202	0	0.00%	13.68%	64	1293	16	1.99%	66.92%
20	1205	10	1.24%	14.93%	65	1296	13	1.62%	68.53%
21	1208	2	0.25%	15.17%	66	1298	15	1.87%	70.40%
22	1211	4	0.50%	15.67%	67	1300	11	1.37%	71.77%
23	1213	5	0.62%	16.29%	68	1303	18	2.24%	74.00%
24	1216	9	1.12%	17.41%	69	1305	7	0.87%	74.88%
25	1218	6	0.75%	18.16%	70	1308	18	2.24%	77.11%
26	1220	8	1.00%	19.15%	71	1310	10	1.24%	78.36%
27	1223	4	0.50%	19.65%	72	1313	15	1.87%	80.22%
28	1225	3	0.37%	20.02%	73	1316	11	1.37%	81.59%
29	1227	4	0.50%	20.52%	74	1320	20	2.49%	84.08%
30	1229	9	1.12%	21.64%	75	1323	8	1.00%	85.07%
31	1231	7	0.87%	22.51%	76	1327	19	2.36%	87.44%
32	1233	5	0.62%	23.13%	77	1331	8	1.00%	88.43%
33	1235	7	0.87%	24.00%	78	1335	23	2.86%	91.29%
34	1237	10	1.24%	25.25%	79	1340	3	0.37%	91.67%
35	1239	7	0.87%	26.12%	80	1345	16	1.99%	93.66%
36	1241	9	1.12%	27.24%	81	1351	3	0.37%	94.03%
37	1243	11	1.37%	28.61%	82	1358	13	1.62%	95.65%
38	1245	10	1.24%	29.85%	83	1366	2	0.25%	95.90%
39	1247	9	1.12%	30.97%	84	1376	15	1.87%	97.76%
40	1249	9	1.12%	32.09%	85	1389	0	0.00%	97.76%
41	1250	10	1.24%	33.33%	86	1407	8	1.00%	98.76%
42	1252	10	1.24%	34.58%	87	1440	0	0.00%	98.76%
43	1254	4	0.50%	35.07%	88	1500	10	1.24%	100.00%
44	1256	13	1.62%	36.69%					
					Total		804	100%	

Note: Cut scores in bold.

Table 8.1.1.10
2009 AIMS A Frequency Distribution
Mathematics Grade 8

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	63	7.33%	7.33%	45	1257	8	0.93%	41.28%
1	1035	0	0.00%	7.33%	46	1258	11	1.28%	42.56%
2	1082	4	0.47%	7.79%	47	1260	8	0.93%	43.49%
3	1107	0	0.00%	7.79%	48	1262	15	1.74%	45.23%
4	1124	11	1.28%	9.07%	49	1263	10	1.16%	46.40%
5	1137	0	0.00%	9.07%	50	1265	22	2.56%	48.95%
6	1147	0	0.00%	9.07%	51	1267	16	1.86%	50.81%
7	1155	1	0.12%	9.19%	52	1268	13	1.51%	52.33%
8	1162	8	0.93%	10.12%	53	1270	8	0.93%	53.26%
9	1169	3	0.35%	10.47%	54	1272	7	0.81%	54.07%
10	1174	1	0.12%	10.58%	55	1273	12	1.40%	55.47%
11	1179	1	0.12%	10.70%	56	1275	16	1.86%	57.33%
12	1183	6	0.70%	11.40%	57	1277	15	1.74%	59.07%
13	1187	2	0.23%	11.63%	58	1279	14	1.63%	60.70%
14	1191	4	0.47%	12.09%	59	1280	8	0.93%	61.63%
15	1195	1	0.12%	12.21%	60	1282	13	1.51%	63.14%
16	1198	10	1.16%	13.37%	61	1284	19	2.21%	65.35%
17	1201	2	0.23%	13.60%	62	1286	20	2.33%	67.67%
18	1204	2	0.23%	13.84%	63	1288	6	0.70%	68.37%
19	1207	3	0.35%	14.19%	64	1290	10	1.16%	69.53%
20	1209	5	0.58%	14.77%	65	1292	7	0.81%	70.35%
21	1212	7	0.81%	15.58%	66	1294	21	2.44%	72.79%
22	1214	7	0.81%	16.40%	67	1296	13	1.51%	74.30%
23	1217	3	0.35%	16.74%	68	1299	21	2.44%	76.74%
24	1219	13	1.51%	18.26%	69	1301	10	1.16%	77.91%
25	1221	4	0.47%	18.72%	70	1304	22	2.56%	80.47%
26	1223	8	0.93%	19.65%	71	1306	8	0.93%	81.40%
27	1225	5	0.58%	20.23%	72	1309	22	2.56%	83.95%
28	1227	8	0.93%	21.16%	73	1312	6	0.70%	84.65%
29	1229	6	0.70%	21.86%	74	1315	22	2.56%	87.21%
30	1231	8	0.93%	22.79%	75	1318	11	1.28%	88.49%
31	1233	6	0.70%	23.49%	76	1322	13	1.51%	90.00%
32	1235	14	1.63%	25.12%	77	1326	6	0.70%	90.70%
33	1237	10	1.16%	26.28%	78	1330	13	1.51%	92.21%
34	1238	14	1.63%	27.91%	79	1334	4	0.47%	92.67%
35	1240	8	0.93%	28.84%	80	1340	15	1.74%	94.42%
36	1242	8	0.93%	29.77%	81	1345	6	0.70%	95.12%
37	1244	12	1.40%	31.16%	82	1352	11	1.28%	96.40%
38	1245	10	1.16%	32.33%	83	1360	2	0.23%	96.63%
39	1247	13	1.51%	33.84%	84	1369	17	1.98%	98.60%
40	1249	9	1.05%	34.88%	85	1382	2	0.23%	98.84%
41	1250	12	1.40%	36.28%	86	1399	7	0.81%	99.65%
42	1252	13	1.51%	37.79%	87	1430	0	0.00%	99.65%
43	1254	10	1.16%	38.95%	88	1500	3	0.35%	100.00%
44	1255	12	1.40%	40.35%					
							860	100%	

Note: Cut scores in bold.

Table 8.1.1.11
2009 AIMS A Frequency Distribution
Mathematics High School

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	83	6.07%	6.07%	45	1257	21	1.54%	42.40%
1	1027	1	0.07%	6.14%	46	1259	24	1.75%	44.15%
2	1076	6	0.44%	6.58%	47	1260	13	0.95%	45.10%
3	1102	2	0.15%	6.73%	48	1262	26	1.90%	47.00%
4	1119	11	0.80%	7.53%	49	1264	16	1.17%	48.17%
5	1132	3	0.22%	7.75%	50	1266	17	1.24%	49.42%
6	1143	7	0.51%	8.26%	51	1267	13	0.95%	50.37%
7	1151	0	0.00%	8.26%	52	1269	17	1.24%	51.61%
8	1159	14	1.02%	9.28%	53	1271	17	1.24%	52.85%
9	1165	2	0.15%	9.43%	54	1272	17	1.24%	54.09%
10	1171	3	0.22%	9.65%	55	1274	20	1.46%	55.56%
11	1176	8	0.58%	10.23%	56	1276	27	1.97%	57.53%
12	1180	24	1.75%	11.99%	57	1278	12	0.88%	58.41%
13	1184	6	0.44%	12.43%	58	1280	21	1.54%	59.94%
14	1188	6	0.44%	12.87%	59	1282	19	1.39%	61.33%
15	1192	4	0.29%	13.16%	60	1284	28	2.05%	63.38%
16	1195	12	0.88%	14.04%	61	1286	14	1.02%	64.40%
17	1199	7	0.51%	14.55%	62	1288	25	1.83%	66.23%
18	1202	7	0.51%	15.06%	63	1290	15	1.10%	67.32%
19	1205	5	0.37%	15.42%	64	1292	28	2.05%	69.37%
20	1207	15	1.10%	16.52%	65	1294	15	1.10%	70.47%
21	1210	6	0.44%	16.96%	66	1296	28	2.05%	72.51%
22	1213	14	1.02%	17.98%	67	1298	12	0.88%	73.39%
23	1215	10	0.73%	18.71%	68	1301	25	1.83%	75.22%
24	1217	17	1.24%	19.96%	69	1303	19	1.39%	76.61%
25	1220	5	0.37%	20.32%	70	1306	23	1.68%	78.29%
26	1222	19	1.39%	21.71%	71	1309	12	0.88%	79.17%
27	1224	9	0.66%	22.37%	72	1312	48	3.51%	82.68%
28	1226	14	1.02%	23.39%	73	1315	16	1.17%	83.85%
29	1228	12	0.88%	24.27%	74	1318	24	1.75%	85.60%
30	1230	15	1.10%	25.37%	75	1321	6	0.44%	86.04%
31	1232	11	0.80%	26.17%	76	1325	36	2.63%	88.67%
32	1234	20	1.46%	27.63%	77	1329	6	0.44%	89.11%
33	1236	9	0.66%	28.29%	78	1333	24	1.75%	90.86%
34	1238	19	1.39%	29.68%	79	1338	7	0.51%	91.37%
35	1240	14	1.02%	30.70%	80	1343	45	3.29%	94.66%
36	1241	16	1.17%	31.87%	81	1349	6	0.44%	95.10%
37	1243	7	0.51%	32.38%	82	1356	12	0.88%	95.98%
38	1245	7	0.51%	32.89%	83	1364	3	0.22%	96.20%
39	1247	13	0.95%	33.85%	84	1374	33	2.41%	98.61%
40	1248	22	1.61%	35.45%	85	1386	3	0.22%	98.83%
41	1250	19	1.39%	36.84%	86	1405	3	0.22%	99.05%
42	1252	20	1.46%	38.30%	87	1437	0	0.00%	99.05%
43	1254	13	0.95%	39.25%	88	1500	13	0.95%	100.00%
44	1255	22	1.61%	40.86%					
							1368	100.00%	

Note: Cut scores in bold.

Table 8.1.1.12
2009 AIMS A Frequency Distribution
Reading Grade 3

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	62	7.07%	7.07%	41	1250	8	0.91%	34.78%
1	1050	3	0.34%	7.41%	42	1252	14	1.60%	36.37%
2	1095	3	0.34%	7.75%	43	1253	16	1.82%	38.20%
3	1118	2	0.23%	7.98%	44	1255	12	1.37%	39.57%
4	1133	4	0.46%	8.44%	45	1257	11	1.25%	40.82%
5	1145	2	0.23%	8.67%	46	1259	12	1.37%	42.19%
6	1153	0	0.00%	8.67%	47	1261	11	1.25%	43.44%
7	1160	0	0.00%	8.67%	48	1263	12	1.37%	44.81%
8	1166	12	1.37%	10.03%	49	1265	17	1.94%	46.75%
9	1172	2	0.23%	10.26%	50	1266	10	1.14%	47.89%
10	1176	6	0.68%	10.95%	51	1268	18	2.05%	49.94%
11	1181	4	0.46%	11.40%	52	1270	13	1.48%	51.43%
12	1185	8	0.91%	12.31%	53	1272	8	0.91%	52.34%
13	1188	4	0.46%	12.77%	54	1274	21	2.39%	54.73%
14	1192	3	0.34%	13.11%	55	1277	18	2.05%	56.78%
15	1195	2	0.23%	13.34%	56	1279	31	3.53%	60.32%
16	1198	3	0.34%	13.68%	57	1281	15	1.71%	62.03%
17	1200	4	0.46%	14.14%	58	1283	23	2.62%	64.65%
18	1203	6	0.68%	14.82%	59	1285	19	2.17%	66.82%
19	1206	8	0.91%	15.74%	60	1288	36	4.10%	70.92%
20	1208	3	0.34%	16.08%	61	1290	12	1.37%	72.29%
21	1211	8	0.91%	16.99%	62	1293	17	1.94%	74.23%
22	1213	4	0.46%	17.45%	63	1296	11	1.25%	75.48%
23	1215	2	0.23%	17.67%	64	1299	19	2.17%	77.65%
24	1217	10	1.14%	18.81%	65	1302	12	1.37%	79.02%
25	1220	4	0.46%	19.27%	66	1305	27	3.08%	82.10%
26	1222	11	1.25%	20.52%	67	1308	6	0.68%	82.78%
27	1224	5	0.57%	21.09%	68	1312	21	2.39%	85.18%
28	1226	6	0.68%	21.78%	69	1316	14	1.60%	86.77%
29	1228	7	0.80%	22.58%	70	1320	21	2.39%	89.17%
30	1230	15	1.71%	24.29%	71	1325	9	1.03%	90.19%
31	1232	5	0.57%	24.86%	72	1330	20	2.28%	92.47%
32	1233	5	0.57%	25.43%	73	1336	6	0.68%	93.16%
33	1235	12	1.37%	26.80%	74	1343	21	2.39%	95.55%
34	1237	6	0.68%	27.48%	75	1351	3	0.34%	95.90%
35	1239	5	0.57%	28.05%	76	1361	10	1.14%	97.04%
36	1241	13	1.48%	29.53%	77	1373	2	0.23%	97.26%
37	1243	8	0.91%	30.44%	78	1390	13	1.48%	98.75%
38	1245	13	1.48%	31.93%	79	1420	0	0.00%	98.75%
39	1246	5	0.57%	32.50%	80	1500	11	1.25%	100.00%
40	1248	12	1.37%	33.87%					
							877	100.00%	

Note: Cut scores in bold.

Table 8.1.1.13
2009 AIMS A Frequency Distribution
Reading Grade 4

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	80	8.91%	8.91%	41	1242	3	0.33%	32.96%
1	1005	3	0.33%	9.24%	42	1244	8	0.89%	33.85%
2	1058	2	0.22%	9.47%	43	1246	9	1.00%	34.86%
3	1087	1	0.11%	9.58%	44	1248	12	1.34%	36.19%
4	1106	6	0.67%	10.24%	45	1250	5	0.56%	36.75%
5	1120	2	0.22%	10.47%	46	1253	14	1.56%	38.31%
6	1131	2	0.22%	10.69%	47	1255	12	1.34%	39.64%
7	1140	2	0.22%	10.91%	48	1257	18	2.00%	41.65%
8	1147	3	0.33%	11.25%	49	1259	9	1.00%	42.65%
9	1154	0	0.00%	11.25%	50	1261	14	1.56%	44.21%
10	1159	2	0.22%	11.47%	51	1263	13	1.45%	45.66%
11	1164	4	0.45%	11.92%	52	1266	11	1.22%	46.88%
12	1169	3	0.33%	12.25%	53	1268	16	1.78%	48.66%
13	1173	7	0.78%	13.03%	54	1271	10	1.11%	49.78%
14	1177	2	0.22%	13.25%	55	1273	8	0.89%	50.67%
15	1181	2	0.22%	13.47%	56	1276	12	1.34%	52.00%
16	1184	4	0.45%	13.92%	57	1278	17	1.89%	53.90%
17	1187	2	0.22%	14.14%	58	1281	6	0.67%	54.57%
18	1191	5	0.56%	14.70%	59	1284	13	1.45%	56.01%
19	1193	4	0.45%	15.14%	60	1287	24	2.67%	58.69%
20	1196	8	0.89%	16.04%	61	1290	16	1.78%	60.47%
21	1199	3	0.33%	16.37%	62	1293	16	1.78%	62.25%
22	1201	0	0.00%	16.37%	63	1296	15	1.67%	63.92%
23	1204	5	0.56%	16.93%	64	1300	30	3.34%	67.26%
24	1206	7	0.78%	17.71%	65	1304	13	1.45%	68.71%
25	1209	9	1.00%	18.71%	66	1307	19	2.12%	70.82%
26	1211	6	0.67%	19.38%	67	1312	23	2.56%	73.39%
27	1213	6	0.67%	20.04%	68	1316	25	2.78%	76.17%
28	1216	7	0.78%	20.82%	69	1321	17	1.89%	78.06%
29	1218	5	0.56%	21.38%	70	1326	15	1.67%	79.73%
30	1220	9	1.00%	22.38%	71	1332	17	1.89%	81.63%
31	1222	7	0.78%	23.16%	72	1339	35	3.90%	85.52%
32	1224	14	1.56%	24.72%	73	1346	14	1.56%	87.08%
33	1226	10	1.11%	25.84%	74	1354	25	2.78%	89.87%
34	1228	8	0.89%	26.73%	75	1364	14	1.56%	91.43%
35	1230	8	0.89%	27.62%	76	1375	37	4.12%	95.55%
36	1232	12	1.34%	28.95%	77	1390	5	0.56%	96.10%
37	1234	10	1.11%	30.07%	78	1410	17	1.89%	98.00%
38	1236	11	1.22%	31.29%	79	1445	0	0.00%	98.00%
39	1238	6	0.67%	31.96%	80	1500	18	2.00%	100.00%
40	1240	6	0.67%	32.63%					
							898	100.00%	

Note: Cut scores in bold.

Table 8.1.1.14
2009 AIMS A Frequency Distribution
Reading Grade 5

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	54	6.69%	6.69%	41	1243	11	1.36%	33.83%
1	1000	2	0.25%	6.94%	42	1246	9	1.12%	34.94%
2	1034	1	0.12%	7.06%	43	1248	16	1.98%	36.93%
3	1066	0	0.00%	7.06%	44	1250	16	1.98%	38.91%
4	1087	8	0.99%	8.05%	45	1253	11	1.36%	40.27%
5	1102	0	0.00%	8.05%	46	1255	16	1.98%	42.26%
6	1114	2	0.25%	8.30%	47	1257	10	1.24%	43.49%
7	1124	0	0.00%	8.30%	48	1260	12	1.49%	44.98%
8	1133	3	0.37%	8.67%	49	1262	9	1.12%	46.10%
9	1141	2	0.25%	8.92%	50	1265	14	1.73%	47.83%
10	1147	6	0.74%	9.67%	51	1267	11	1.36%	49.19%
11	1153	1	0.12%	9.79%	52	1270	12	1.49%	50.68%
12	1158	10	1.24%	11.03%	53	1273	16	1.98%	52.66%
13	1163	2	0.25%	11.28%	54	1275	12	1.49%	54.15%
14	1168	4	0.50%	11.77%	55	1278	8	0.99%	55.14%
15	1172	1	0.12%	11.90%	56	1281	17	2.11%	57.25%
16	1176	7	0.87%	12.76%	57	1284	10	1.24%	58.49%
17	1180	2	0.25%	13.01%	58	1287	15	1.86%	60.35%
18	1183	3	0.37%	13.38%	59	1290	9	1.12%	61.46%
19	1187	5	0.62%	14.00%	60	1293	11	1.36%	62.83%
20	1190	14	1.73%	15.74%	61	1297	13	1.61%	64.44%
21	1193	3	0.37%	16.11%	62	1300	11	1.36%	65.80%
22	1196	3	0.37%	16.48%	63	1304	13	1.61%	67.41%
23	1199	5	0.62%	17.10%	64	1308	17	2.11%	69.52%
24	1202	6	0.74%	17.84%	65	1312	17	2.11%	71.62%
25	1205	5	0.62%	18.46%	66	1316	21	2.60%	74.23%
26	1207	4	0.50%	18.96%	67	1321	9	1.12%	75.34%
27	1210	5	0.62%	19.58%	68	1326	24	2.97%	78.31%
28	1213	9	1.12%	20.69%	69	1331	11	1.36%	79.68%
29	1215	8	0.99%	21.69%	70	1337	30	3.72%	83.40%
30	1218	6	0.74%	22.43%	71	1344	9	1.12%	84.51%
31	1220	8	0.99%	23.42%	72	1351	20	2.48%	86.99%
32	1222	10	1.24%	24.66%	73	1359	10	1.24%	88.23%
33	1225	6	0.74%	25.40%	74	1368	26	3.22%	91.45%
34	1227	6	0.74%	26.15%	75	1379	4	0.50%	91.95%
35	1230	8	0.99%	27.14%	76	1392	31	3.84%	95.79%
36	1232	7	0.87%	28.00%	77	1409	1	0.12%	95.91%
37	1234	4	0.50%	28.50%	78	1432	10	1.24%	97.15%
38	1236	12	1.49%	29.99%	79	1473	0	0.00%	97.15%
39	1239	8	0.99%	30.98%	80	1500	23	2.85%	100.00%
40	1241	12	1.49%	32.47%					
							807	100.00%	

Note: Cut scores in bold.

Table 8.1.1.15
2009 AIMS A Frequency Distribution
Reading Grade 6

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	72	9.02%	9.02%	41	1250	9	1.13%	38.35%
1	1000	0	0.00%	9.02%	42	1252	14	1.75%	40.10%
2	1022	2	0.25%	9.27%	43	1255	7	0.88%	40.98%
3	1057	1	0.13%	9.40%	44	1257	10	1.25%	42.23%
4	1081	6	0.75%	10.15%	45	1260	10	1.25%	43.48%
5	1098	0	0.00%	10.15%	46	1262	20	2.51%	45.99%
6	1112	1	0.13%	10.28%	47	1265	10	1.25%	47.24%
7	1123	0	0.00%	10.28%	48	1268	8	1.00%	48.25%
8	1133	7	0.88%	11.15%	49	1270	13	1.63%	49.87%
9	1141	1	0.13%	11.28%	50	1273	12	1.50%	51.38%
10	1148	3	0.38%	11.65%	51	1276	7	0.88%	52.26%
11	1154	3	0.38%	12.03%	52	1279	14	1.75%	54.01%
12	1160	8	1.00%	13.03%	53	1281	10	1.25%	55.26%
13	1165	1	0.13%	13.16%	54	1284	9	1.13%	56.39%
14	1170	2	0.25%	13.41%	55	1288	11	1.38%	57.77%
15	1175	5	0.63%	14.04%	56	1291	11	1.38%	59.15%
16	1179	7	0.88%	14.91%	57	1294	7	0.88%	60.03%
17	1183	1	0.13%	15.04%	58	1298	22	2.76%	62.78%
18	1187	4	0.50%	15.54%	59	1301	14	1.75%	64.54%
19	1191	0	0.00%	15.54%	60	1305	21	2.63%	67.17%
20	1194	6	0.75%	16.29%	61	1309	13	1.63%	68.80%
21	1197	3	0.38%	16.67%	62	1313	17	2.13%	70.93%
22	1200	5	0.63%	17.29%	63	1317	9	1.13%	72.06%
23	1203	2	0.25%	17.54%	64	1322	23	2.88%	74.94%
24	1206	9	1.13%	18.67%	65	1326	13	1.63%	76.57%
25	1209	6	0.75%	19.42%	66	1331	21	2.63%	79.20%
26	1212	12	1.50%	20.93%	67	1337	11	1.38%	80.58%
27	1215	9	1.13%	22.06%	68	1343	23	2.88%	83.46%
28	1218	13	1.63%	23.68%	69	1349	7	0.88%	84.34%
29	1220	12	1.50%	25.19%	70	1356	9	1.13%	85.46%
30	1223	10	1.25%	26.44%	71	1363	9	1.13%	86.59%
31	1225	7	0.88%	27.32%	72	1372	28	3.51%	90.10%
32	1228	3	0.38%	27.69%	73	1381	9	1.13%	91.23%
33	1230	8	1.00%	28.70%	74	1392	20	2.51%	93.73%
34	1233	9	1.13%	29.82%	75	1404	4	0.50%	94.24%
35	1235	8	1.00%	30.83%	76	1419	23	2.88%	97.12%
36	1238	11	1.38%	32.21%	77	1438	1	0.13%	97.24%
37	1240	10	1.25%	33.46%	78	1465	10	1.25%	98.50%
38	1243	16	2.01%	35.46%	79	1500	0	0.00%	98.50%
39	1245	4	0.50%	35.96%	80	1500	12	1.50%	100.00%
40	1247	10	1.25%	37.22%					
							798	100.00%	

Note: Cut scores in bold.

Table 8.1.1.16
2009 AIMS A Frequency Distribution
Reading Grade 7

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	50	6.22%	6.22%	41	1252	11	1.37%	33.21%
1	1000	1	0.12%	6.34%	42	1255	7	0.87%	34.08%
2	1031	5	0.62%	6.97%	43	1257	5	0.62%	34.70%
3	1065	1	0.12%	7.09%	44	1260	13	1.62%	36.32%
4	1088	7	0.87%	7.96%	45	1262	8	1.00%	37.31%
5	1104	2	0.25%	8.21%	46	1265	20	2.49%	39.80%
6	1117	3	0.37%	8.58%	47	1267	2	0.25%	40.05%
7	1128	2	0.25%	8.83%	48	1270	11	1.37%	41.42%
8	1137	12	1.49%	10.32%	49	1273	7	0.87%	42.29%
9	1145	3	0.37%	10.70%	50	1275	8	1.00%	43.28%
10	1152	6	0.75%	11.44%	51	1278	14	1.74%	45.02%
11	1158	0	0.00%	11.44%	52	1281	10	1.24%	46.27%
12	1164	12	1.49%	12.94%	53	1283	10	1.24%	47.51%
13	1169	3	0.37%	13.31%	54	1286	14	1.74%	49.25%
14	1173	4	0.50%	13.81%	55	1289	8	1.00%	50.25%
15	1178	1	0.12%	13.93%	56	1292	16	1.99%	52.24%
16	1182	5	0.62%	14.55%	57	1295	7	0.87%	53.11%
17	1186	2	0.25%	14.80%	58	1299	17	2.11%	55.22%
18	1190	4	0.50%	15.30%	59	1302	15	1.87%	57.09%
19	1193	1	0.12%	15.42%	60	1305	26	3.23%	60.32%
20	1197	2	0.25%	15.67%	61	1309	14	1.74%	62.06%
21	1200	1	0.12%	15.80%	62	1313	16	1.99%	64.05%
22	1203	10	1.24%	17.04%	63	1316	12	1.49%	65.55%
23	1206	5	0.62%	17.66%	64	1321	25	3.11%	68.66%
24	1209	9	1.12%	18.78%	65	1325	12	1.49%	70.15%
25	1212	7	0.87%	19.65%	66	1330	20	2.49%	72.64%
26	1215	3	0.37%	20.02%	67	1334	15	1.87%	74.50%
27	1217	8	1.00%	21.02%	68	1340	12	1.49%	76.00%
28	1220	8	1.00%	22.01%	69	1345	14	1.74%	77.74%
29	1223	2	0.25%	22.26%	70	1352	20	2.49%	80.22%
30	1225	8	1.00%	23.26%	71	1358	13	1.62%	81.84%
31	1228	4	0.50%	23.76%	72	1366	30	3.73%	85.57%
32	1230	9	1.12%	24.88%	73	1374	12	1.49%	87.06%
33	1233	3	0.37%	25.25%	74	1384	23	2.86%	89.93%
34	1235	9	1.12%	26.37%	75	1395	4	0.50%	90.42%
35	1238	9	1.12%	27.49%	76	1409	31	3.86%	94.28%
36	1240	11	1.37%	28.86%	77	1426	2	0.25%	94.53%
37	1243	8	1.00%	29.85%	78	1451	18	2.24%	96.77%
38	1245	5	0.62%	30.47%	79	1493	0	0.00%	96.77%
39	1248	8	1.00%	31.47%	80	1500	26	3.23%	100.00%
40	1250	3	0.37%	31.84%					
							804	100.00%	

Note: Cut scores in bold.

Table 8.1.1.17
2009 AIMS A Frequency Distribution
Reading Grade 8

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	52	6.05%	6.05%	41	1250	11	1.28%	28.49%
1	1027	3	0.35%	6.40%	42	1252	6	0.70%	29.19%
2	1077	7	0.81%	7.21%	43	1254	9	1.05%	30.23%
3	1103	2	0.23%	7.44%	44	1256	15	1.74%	31.98%
4	1120	7	0.81%	8.26%	45	1258	13	1.51%	33.49%
5	1133	1	0.12%	8.37%	46	1260	11	1.28%	34.77%
6	1142	3	0.35%	8.72%	47	1262	10	1.16%	35.93%
7	1151	0	0.00%	8.72%	48	1264	10	1.16%	37.09%
8	1158	5	0.58%	9.30%	49	1266	13	1.51%	38.60%
9	1164	1	0.12%	9.42%	50	1268	15	1.74%	40.35%
10	1169	2	0.23%	9.65%	51	1270	12	1.40%	41.74%
11	1174	2	0.23%	9.88%	52	1272	14	1.63%	43.37%
12	1178	4	0.47%	10.35%	53	1274	17	1.98%	45.35%
13	1182	1	0.12%	10.47%	54	1277	12	1.40%	46.74%
14	1186	2	0.23%	10.70%	55	1279	5	0.58%	47.33%
15	1189	1	0.12%	10.81%	56	1281	24	2.79%	50.12%
16	1193	7	0.81%	11.63%	57	1284	5	0.58%	50.70%
17	1196	2	0.23%	11.86%	58	1286	17	1.98%	52.67%
18	1199	6	0.70%	12.56%	59	1289	22	2.56%	55.23%
19	1202	3	0.35%	12.91%	60	1291	17	1.98%	57.21%
20	1204	6	0.70%	13.60%	61	1294	19	2.21%	59.42%
21	1207	0	0.00%	13.60%	62	1297	14	1.63%	61.05%
22	1209	8	0.93%	14.53%	63	1300	11	1.28%	62.33%
23	1212	3	0.35%	14.88%	64	1303	32	3.72%	66.05%
24	1214	8	0.93%	15.81%	65	1306	11	1.28%	67.33%
25	1217	5	0.58%	16.40%	66	1309	26	3.02%	70.35%
26	1219	4	0.47%	16.86%	67	1313	10	1.16%	71.51%
27	1221	3	0.35%	17.21%	68	1317	17	1.98%	73.49%
28	1224	5	0.58%	17.79%	69	1321	17	1.98%	75.47%
29	1226	5	0.58%	18.37%	70	1326	36	4.19%	79.65%
30	1228	7	0.81%	19.19%	71	1331	11	1.28%	80.93%
31	1230	3	0.35%	19.53%	72	1336	37	4.30%	85.23%
32	1232	5	0.58%	20.12%	73	1342	10	1.16%	86.40%
33	1234	6	0.70%	20.81%	74	1350	27	3.14%	89.53%
34	1236	4	0.47%	21.28%	75	1358	7	0.81%	90.35%
35	1238	6	0.70%	21.98%	76	1368	38	4.42%	94.77%
36	1240	5	0.58%	22.56%	77	1381	6	0.70%	95.47%
37	1242	8	0.93%	23.49%	78	1400	18	2.09%	97.56%
38	1244	9	1.05%	24.53%	79	1431	0	0.00%	97.56%
39	1246	14	1.63%	26.16%	80	1500	21	2.44%	100.00%
40	1248	9	1.05%	27.21%					
							860	100.00%	

Note: Cut scores in bold.

Table 8.1.1.18
2009 AIMS A Frequency Distribution
Reading High School

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	74	5.41%	5.41%	41	1250	13	0.95%	28.29%
1	1054	5	0.37%	5.77%	42	1252	16	1.17%	29.46%
2	1097	3	0.22%	5.99%	43	1253	16	1.17%	30.63%
3	1119	1	0.07%	6.07%	44	1255	9	0.66%	31.29%
4	1133	18	1.32%	7.38%	45	1257	15	1.10%	32.38%
5	1144	1	0.07%	7.46%	46	1259	16	1.17%	33.55%
6	1153	1	0.07%	7.53%	47	1261	11	0.80%	34.36%
7	1160	0	0.00%	7.53%	48	1263	11	0.80%	35.16%
8	1166	11	0.80%	8.33%	49	1265	17	1.24%	36.40%
9	1171	1	0.07%	8.41%	50	1267	21	1.54%	37.94%
10	1176	5	0.37%	8.77%	51	1270	20	1.46%	39.40%
11	1180	1	0.07%	8.85%	52	1272	16	1.17%	40.57%
12	1184	9	0.66%	9.50%	53	1274	20	1.46%	42.03%
13	1187	4	0.29%	9.80%	54	1276	15	1.10%	43.13%
14	1191	6	0.44%	10.23%	55	1279	16	1.17%	44.30%
15	1194	1	0.07%	10.31%	56	1281	19	1.39%	45.69%
16	1197	13	0.95%	11.26%	57	1283	17	1.24%	46.93%
17	1200	1	0.07%	11.33%	58	1286	20	1.46%	48.39%
18	1202	4	0.29%	11.62%	59	1289	16	1.17%	49.56%
19	1205	3	0.22%	11.84%	60	1291	24	1.75%	51.32%
20	1207	19	1.39%	13.23%	61	1294	22	1.61%	52.92%
21	1210	4	0.29%	13.52%	62	1297	26	1.90%	54.82%
22	1212	8	0.58%	14.11%	63	1300	24	1.75%	56.58%
23	1214	3	0.22%	14.33%	64	1303	33	2.41%	58.99%
24	1217	13	0.95%	15.28%	65	1307	26	1.90%	60.89%
25	1219	8	0.58%	15.86%	66	1310	36	2.63%	63.52%
26	1221	9	0.66%	16.52%	67	1314	17	1.24%	64.77%
27	1223	7	0.51%	17.03%	68	1318	40	2.92%	67.69%
28	1225	6	0.44%	17.47%	69	1323	20	1.46%	69.15%
29	1227	7	0.51%	17.98%	70	1327	35	2.56%	71.71%
30	1229	8	0.58%	18.57%	71	1333	18	1.32%	73.03%
31	1231	8	0.58%	19.15%	72	1338	58	4.24%	77.27%
32	1233	13	0.95%	20.10%	73	1345	12	0.88%	78.14%
33	1235	11	0.80%	20.91%	74	1352	53	3.87%	82.02%
34	1237	13	0.95%	21.86%	75	1361	18	1.32%	83.33%
35	1238	14	1.02%	22.88%	76	1371	81	5.92%	89.25%
36	1240	12	0.88%	23.76%	77	1384	11	0.80%	90.06%
37	1242	8	0.58%	24.34%	78	1402	53	3.87%	93.93%
38	1244	12	0.88%	25.22%	79	1433	0	0.00%	93.93%
39	1246	8	0.58%	25.80%	80	1500	83	6.07%	100.00%
40	1248	21	1.54%	27.34%					
							1368	100.00%	

Note: Cut scores in bold.

Table 8.1.1.19
2009 AIMS A Frequency Distribution
Science Grade 4

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	70	7.80%	7.80%	41	1243	6	0.67%	30.21%
1	1033	1	0.11%	7.92%	42	1245	9	1.00%	31.22%
2	1082	3	0.33%	8.25%	43	1246	10	1.11%	32.33%
3	1108	7	0.78%	9.03%	44	1248	10	1.11%	33.44%
4	1124	8	0.89%	9.92%	45	1250	12	1.34%	34.78%
5	1136	2	0.22%	10.14%	46	1252	15	1.67%	36.45%
6	1145	6	0.67%	10.81%	47	1253	3	0.33%	36.79%
7	1153	0	0.00%	10.81%	48	1255	16	1.78%	38.57%
8	1159	7	0.78%	11.59%	49	1257	2	0.22%	38.80%
9	1165	2	0.22%	11.82%	50	1259	12	1.34%	40.13%
10	1170	2	0.22%	12.04%	51	1261	8	0.89%	41.03%
11	1174	1	0.11%	12.15%	52	1263	18	2.01%	43.03%
12	1178	6	0.67%	12.82%	53	1265	8	0.89%	43.92%
13	1182	2	0.22%	13.04%	54	1267	15	1.67%	45.60%
14	1185	2	0.22%	13.27%	55	1269	12	1.34%	46.93%
15	1188	1	0.11%	13.38%	56	1271	17	1.90%	48.83%
16	1191	7	0.78%	14.16%	57	1273	8	0.89%	49.72%
17	1194	2	0.22%	14.38%	58	1276	17	1.90%	51.62%
18	1197	5	0.56%	14.94%	59	1278	11	1.23%	52.84%
19	1200	3	0.33%	15.27%	60	1281	18	2.01%	54.85%
20	1202	3	0.33%	15.61%	61	1283	12	1.34%	56.19%
21	1205	7	0.78%	16.39%	62	1286	22	2.45%	58.64%
22	1207	5	0.56%	16.95%	63	1289	10	1.11%	59.75%
23	1209	4	0.45%	17.39%	64	1292	16	1.78%	61.54%
24	1211	3	0.33%	17.73%	65	1295	8	0.89%	62.43%
25	1213	2	0.22%	17.95%	66	1298	15	1.67%	64.10%
26	1215	6	0.67%	18.62%	67	1302	7	0.78%	64.88%
27	1217	8	0.89%	19.51%	68	1305	18	2.01%	66.89%
28	1219	9	1.00%	20.51%	69	1310	11	1.23%	68.12%
29	1221	5	0.56%	21.07%	70	1314	29	3.23%	71.35%
30	1223	7	0.78%	21.85%	71	1319	11	1.23%	72.58%
31	1225	6	0.67%	22.52%	72	1324	37	4.12%	76.70%
32	1227	11	1.23%	23.75%	73	1331	25	2.79%	79.49%
33	1229	4	0.45%	24.19%	74	1338	42	4.68%	84.17%
34	1230	6	0.67%	24.86%	75	1346	15	1.67%	85.84%
35	1232	6	0.67%	25.53%	76	1356	46	5.13%	90.97%
36	1234	8	0.89%	26.42%	77	1369	11	1.23%	92.20%
37	1236	9	1.00%	27.42%	78	1387	33	3.68%	95.88%
38	1238	3	0.33%	27.76%	79	1419	0	0.00%	95.88%
39	1239	6	0.67%	28.43%	80	1500	37	4.12%	100.00%
40	1241	10	1.11%	29.54%					
							897	100.00%	

Note: Cut scores in bold.

Table 8.1.1.20
2009 AIMS A Frequency Distribution
Science Grade 8

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	46	5.35%	5.35%	41	1243	4	0.47%	23.37%
1	1050	4	0.47%	5.81%	42	1244	6	0.70%	24.07%
2	1092	0	0.00%	5.81%	43	1246	7	0.81%	24.88%
3	1114	1	0.12%	5.93%	44	1247	8	0.93%	25.81%
4	1129	7	0.81%	6.74%	45	1248	4	0.47%	26.28%
5	1140	1	0.12%	6.86%	46	1250	8	0.93%	27.21%
6	1149	3	0.35%	7.21%	47	1251	11	1.28%	28.49%
7	1156	2	0.23%	7.44%	48	1253	14	1.63%	30.12%
8	1162	5	0.58%	8.02%	49	1254	10	1.16%	31.28%
9	1168	4	0.47%	8.49%	50	1256	11	1.28%	32.56%
10	1173	0	0.00%	8.49%	51	1257	4	0.47%	33.02%
11	1177	0	0.00%	8.49%	52	1259	25	2.91%	35.93%
12	1181	4	0.47%	8.95%	53	1261	9	1.05%	36.98%
13	1185	3	0.35%	9.30%	54	1262	13	1.51%	38.49%
14	1188	1	0.12%	9.42%	55	1264	3	0.35%	38.84%
15	1191	1	0.12%	9.53%	56	1265	10	1.16%	40.00%
16	1194	3	0.35%	9.88%	57	1267	10	1.16%	41.16%
17	1197	3	0.35%	10.23%	58	1269	15	1.74%	42.91%
18	1200	3	0.35%	10.58%	59	1270	6	0.70%	43.60%
19	1203	2	0.23%	10.81%	60	1272	17	1.98%	45.58%
20	1205	1	0.12%	10.93%	61	1274	6	0.70%	46.28%
21	1207	3	0.35%	11.28%	62	1276	15	1.74%	48.02%
22	1210	3	0.35%	11.63%	63	1278	3	0.35%	48.37%
23	1212	2	0.23%	11.86%	64	1280	26	3.02%	51.40%
24	1214	5	0.58%	12.44%	65	1282	13	1.51%	52.91%
25	1216	6	0.70%	13.14%	66	1284	17	1.98%	54.88%
26	1218	5	0.58%	13.72%	67	1287	1	0.12%	55.00%
27	1220	2	0.23%	13.95%	68	1289	26	3.02%	58.02%
28	1222	6	0.70%	14.65%	69	1292	4	0.47%	58.49%
29	1223	5	0.58%	15.23%	70	1295	33	3.84%	62.33%
30	1225	6	0.70%	15.93%	71	1298	4	0.47%	62.79%
31	1227	7	0.81%	16.74%	72	1302	44	5.12%	67.91%
32	1228	4	0.47%	17.21%	73	1306	3	0.35%	68.26%
33	1230	2	0.23%	17.44%	74	1310	32	3.72%	71.98%
34	1232	7	0.81%	18.26%	75	1315	7	0.81%	72.79%
35	1233	8	0.93%	19.19%	76	1322	69	8.02%	80.81%
36	1235	3	0.35%	19.53%	77	1330	7	0.81%	81.63%
37	1236	4	0.47%	20.00%	78	1343	40	4.65%	86.28%
38	1238	4	0.47%	20.47%	79	1364	0	0.00%	86.28%
39	1240	5	0.58%	21.05%	80	1500	118	13.72%	100.00%
40	1241	16	1.86%	22.91%					
							860	100.00%	

Note: Cut scores in bold.

Table 8.1.1.21
2009 AIMS A Frequency Distribution
Science High School

Raw Score	Scale Score	Freq.	%	Cum. %	Raw Score	Scale Score	Freq.	%	Cum. %
0	1000	47	5.72%	5.72%	41	1247	8	0.97%	27.89%
1	1088	1	0.12%	5.85%	42	1248	7	0.85%	28.75%
2	1122	3	0.37%	6.21%	43	1250	5	0.61%	29.35%
3	1140	1	0.12%	6.33%	44	1251	10	1.22%	30.57%
4	1152	5	0.61%	6.94%	45	1253	8	0.97%	31.55%
5	1161	1	0.12%	7.06%	46	1254	9	1.10%	32.64%
6	1168	3	0.37%	7.43%	47	1255	11	1.34%	33.98%
7	1174	1	0.12%	7.55%	48	1257	15	1.83%	35.81%
8	1179	8	0.97%	8.53%	49	1259	6	0.73%	36.54%
9	1184	1	0.12%	8.65%	50	1260	11	1.34%	37.88%
10	1187	2	0.24%	8.89%	51	1262	13	1.58%	39.46%
11	1191	2	0.24%	9.14%	52	1263	11	1.34%	40.80%
12	1194	5	0.61%	9.74%	53	1265	4	0.49%	41.29%
13	1197	1	0.12%	9.87%	54	1267	9	1.10%	42.39%
14	1200	5	0.61%	10.48%	55	1268	10	1.22%	43.61%
15	1202	1	0.12%	10.60%	56	1270	17	2.07%	45.68%
16	1205	8	0.97%	11.57%	57	1272	12	1.46%	47.14%
17	1207	0	0.00%	11.57%	58	1274	13	1.58%	48.72%
18	1209	1	0.12%	11.69%	59	1276	7	0.85%	49.57%
19	1211	4	0.49%	12.18%	60	1278	17	2.07%	51.64%
20	1213	5	0.61%	12.79%	61	1280	15	1.83%	53.47%
21	1215	5	0.61%	13.40%	62	1282	26	3.17%	56.64%
22	1217	4	0.49%	13.89%	63	1284	9	1.10%	57.73%
23	1219	1	0.12%	14.01%	64	1287	20	2.44%	60.17%
24	1221	4	0.49%	14.49%	65	1290	17	2.07%	62.24%
25	1222	4	0.49%	14.98%	66	1292	19	2.31%	64.56%
26	1224	2	0.24%	15.23%	67	1295	13	1.58%	66.14%
27	1226	9	1.10%	16.32%	68	1298	22	2.68%	68.82%
28	1227	6	0.73%	17.05%	69	1302	13	1.58%	70.40%
29	1229	4	0.49%	17.54%	70	1305	36	4.38%	74.79%
30	1231	9	1.10%	18.64%	71	1309	13	1.58%	76.37%
31	1232	6	0.73%	19.37%	72	1314	32	3.90%	80.27%
32	1234	7	0.85%	20.22%	73	1319	8	0.97%	81.24%
33	1235	5	0.61%	20.83%	74	1325	28	3.41%	84.65%
34	1237	8	0.97%	21.80%	75	1331	12	1.46%	86.11%
35	1238	9	1.10%	22.90%	76	1339	43	5.24%	91.35%
36	1239	9	1.10%	24.00%	77	1349	1	0.12%	91.47%
37	1241	4	0.49%	24.48%	78	1363	30	3.65%	95.13%
38	1242	6	0.73%	25.21%	79	1387	0	0.00%	95.13%
39	1244	4	0.49%	25.70%	80	1500	40	4.87%	100.00%
40	1245	10	1.22%	26.92%					
							821	100.00%	

Note: Cut scores in bold.

Part 9: Validity Evidence

Part 9 of the Technical Report provides evidence supporting the reliability and validity of the 2009 AIMS A assessments. All data presented in this section were computed using population test data available in the final electronic data files. The following AERA/APA/NCME standards are addressed: 1.5, 1.7, 2.1, 2.4, 2.10, 2.13, 3.16, 4.15, 6.5, 7.1, 7.3, and 7.10.

9.1 Reliability

AERA/APA/NCME standards for Educational and Psychological Testing refer to reliability as the “consistency of [a measure] when the testing procedure is repeated on a population of individuals or groups.” A reliable test produces stable scores; that is, very similar score distributions would result if the test were administered repeatedly under similar conditions to the same students without memory or fatigue affecting the scores. Reliability of the 2009 Spring AIMS A assessments were estimated by internal consistency for all tests. It should be noted that due to the large number of non-responders in the sample and the low number of test items in the rater and performance tasks subtests the accuracy of the reliability coefficient may be problematic.

9.1.1 Measures of Internal Consistency

For tests consisting of constructed response and/or multiple choice items, Cronbach’s alpha is a frequently used measure of internal consistency. Cronbach’s alpha is computed as (Crocker & Algina, 1986)

$$\hat{\alpha} = \frac{k}{k-1} \left(1 - \frac{\sum \sigma_i^2}{\sigma_x^2} \right),$$

where k = number of items, σ_x^2 = the total score variance, and σ_i^2 = the variance of item i .

Reliability estimates for the tests administered as part of the 2009 Spring AIMS A assessment are presented in Table 9.1.1.1 and Table 9.1.1.2. Note that a high degree of internal consistency is evident for all CRT tests.

Table 9.1.1.1
2009 AIMS A Internal Consistency

Grade	Mathematics				Reading				Science			
	N	Alpha			N	Alpha			N	Alpha		
		MC	PT	RI		MC	PT	RI		MC	PT	RI
03	877	.86	.87	.84	877	.82	.88	.83				
04	898	.89	.87	.84	898	.89	.87	.85	897	.89	.90	.86
05	807	.86	.82	.84	807	.84	.91	.87				
06	798	.84	.87	.83	798	.87	.87	.85				
07	804	.84	.87	.85	804	.87	.90	.87				
08	860	.83	.90	.82	860	.86	.90	.86	860	.87	.93	.88
HS	1368	.81	.91	.88	1368	.87	.93	.89	821	.87	.88	.87

9.2 Validity

“Validity refers to the degree to which evidence and theory support the interpretations of test scores entailed by proposed users of tests. Validity is, therefore, the most fundamental consideration in developing and evaluating tests” (AERA/APA/NCME, 1999). The purpose of test score validation is not to validate the test itself, but to validate interpretations of the test scores for particular purposes or uses. Test score validation is not a quantifiable property but an ongoing process, beginning at initial conceptualization and continuing throughout the entire assessment process.

The 2009 AIMS A tests were designed and developed to provide fair and accurate ability scores that support appropriate, meaningful, and useful educational decisions. Evidence of this is also provided in Part 2 (Involvement of Arizona Educators), Part 3 (Test Design), Part 4 (Test Development), Part 5 (Test Administration), Part 6 (Data for Operational Analysis), Part 7 (Calibration and Scaling), Part 8 (Reliability), and Part 10 (Classification).

9.2.1 Correlations among AIMS A Assessments

Correlations were examined between scale scores on 2009 AIMS A tests by grade level. Note that data used for the calculation of correlation included records with valid scale scores in all content areas and tests in each grade level. Sample sizes are therefore slightly lower than presented in other parts of this Technical Report.

All correlations are presented in Tables 9.2.1.1 through 9.2.1.7. The patterns of correlation presented in the tables are consistent with expectations given the constructs measured.

Table 9.2.1.1
2009 AIMS A Correlations among Assessments
Grade 3

Test	Math	Reading
Math	1	.873
Reading	.873	1

N=877

Table 9.2.1.2
2009 AIMS A Correlations among Assessments
Grade 4

Test	Math	Reading	Science
Math	1	.901	.875
Reading	.901	1	.891
Science	.875	.891	1

N=897

Table 9.2.1.3
2009 AIMS A Correlations among Assessments
Grade 5

Test	Math	Reading
Math	1	.856
Reading	.856	1

N=807

Table 9.2.1.4
2009 AIMS A Correlations among Assessments
Grade 6

Test	Math	Reading
Math	1	.896
Reading	.896	1

N=798

Table 9.2.1.5
2009 AIMS A Correlations among Assessments
Grade 7

Test	Math	Reading
Math	1	.890
Reading	.890	1

N=804

Table 9.2.1.6
2009 AIMS A Correlations among Assessments
Grade 8

Test	Math	Reading	Science
Math	1	.898	.766
Reading	.898	1	.792
Science	.766	.791	1

N=860

Table 9.2.1.7
2009 AIMS A Correlations among Assessments
High School

Test	Math	Reading	Science
Math	1	.870	.840
Reading	.870	1	.851
Science	.840	.851	1

N=821

Part 10: Classification

Part 10 of this Technical Report provides information regarding classifying students into proficiency categories. The following AERA/APA/NCME standards are covered in this part: 1.5, 1.7, 2.14, 2.15, 4.9, 4.19, 4.20, 4.21, and 6.5.

Scores from the 2009 AIMS A assessments are used to classify students into one of four performance categories: Falls Far Below the Standard, Approaches the Standard, Meets the Standard, and Exceeds the Standard. This part of the Technical Report provides information regarding classifying students into these four performance categories. Arizona educators made recommendations for cut scores for each category in a standard setting workshop facilitated by Dr. Steven Elliott. Analyses were conducted to examine the consistency and accuracy with which students were assigned to performance categories.

10.1 Standard Setting Technical Documentation

Standard setting for the AIMS A Mathematics, Reading, and Science tests was conducted in early May, 2009 using the Bookmark Standard Setting Procedure. All technical documentation regarding the standard setting is available in the Standard Setting Technical Report in Appendix G.

Final scale score ranges for each of the four performance level categories for the AIMS A tests are presented below in Table 10.1.1.

Table 10.1.1
2009 Spring AIMS A
Final Scale Score Ranges by Performance Level

Test		FFB	AS	MS	ES
Mathematics	3	1000-1221	1222-1249	1250-1294	1295-1500
	4	1000-1221	1222-1249	1250-1301	1302-1500
	5	1000-1222	1223-1249	1250-1302	1303-1500
	6	1000-1186	1187-1249	1250-1313	1314-1500
	7	1000-1181	1182-1249	1250-1315	1316-1500
	8	1000-1200	1201-1249	1250-1300	1301-1500
	HS	1000-1198	1199-1249	1250-1328	1329-1500
Reading	3	1000-1210	1211-1249	1250-1301	1302-1500
	4	1000-1186	1187-1249	1250-1331	1332-1500
	5	1000-1162	1163-1249	1250-1330	1331-1500
	6	1000-1164	1165-1249	1250-1336	1337-1500
	7	1000-1181	1182-1249	1250-1339	1340-1500
	8	1000-1195	1196-1249	1250-1330	1331-1500
	HS	1000-1186	1187-1249	1250-1344	1345-1500
Science	4	1000-1187	1188-1249	1250-1330	1331-1500
	8	1000-1196	1197-1249	1250-1314	1315-1500
	HS	1000-1196	1197-1249	1250-1308	1309-1500

Note: FFB= Falls Far Below the Standard; AS= Approaches the Standard; MS= Meets the Standard; ES= Exceeds the Standard.

Table 10.1.2
2009 Spring AIMS A
Standard Error of Measurement at Cut Scores

Test		AS		MS		ES	
		Cut Score	SEM	Cut Score	SEM	Cut Score	SEM
Mathematics	3	1222	11	1250	9	1295	13
	4	1222	12	1250	10	1302	14
	5	1223	11	1250	10	1303	14
	6	1187	12	1250	10	1314	13
	7	1182	15	1250	10	1316	13
	8	1201	13	1250	10	1301	12
	HS	1199	19	1250	14	1329	22
Reading	3	1211	15	1250	13	1302	17
	4	1187	18	1250	15	1332	26
	5	1163	25	1250	18	1331	27
	6	1165	14	1250	10	1337	15
	7	1182	13	1250	10	1340	15
	8	1196	13	1250	11	1331	17
	HS	1187	19	1250	14	1345	26
Science	4	1188	13	1250	10	1331	19
	8	1197	14	1250	10	1315	20
	HS	1197	15	1250	11	1309	18

Note: FFB=Falls Far Below the Standard; AS= Approaches the Standard; MS= Meets the Standard; ES= Exceeds the Standard.

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APPENDIX A

AIMS A Eligibility Criteria

Arizona Department of Education
Alternate Assessment Eligibility Determination
 08/24/09

The Arizona Department of Education offers criterion reference tests in compliance with the US Department of Education federal regulations and guidance. Please see the Eligibility Decision Flow Chart for AIMS to guide you through which assessment would best suit your student with special needs. A student must have an Individualized Education Program (IEP) in order to be considered for participation in an alternate assessment.

AIMS A (Alternate) <ul style="list-style-type: none"> Assesses grades 3–8 and high school Includes mathematics, reading, and science (grades 4, 8, and 10) Assesses qualifying students in all areas Addresses Arizona <i>Alternate</i> Academic Content Standards Based on <i>Alternate</i> Academic Achievement Standards 	AIMS EA (Enhanced Accessibility) <ul style="list-style-type: none"> Assesses grades 4–8 and high school Includes mathematics and reading Assesses qualifying students in mathematics and/or reading Addresses <i>grade-level</i> Arizona Academic Content Standards Based on <i>Modified</i> Academic Achievement Standards 	AIMS <ul style="list-style-type: none"> Assesses grades 3–8 and high school Includes mathematics, reading, writing (grades 5, 6, 7, and HS), and science (grades 4, 8, and 10) Addresses <i>grade-level</i> Arizona Academic Content Standards Based on <i>grade-level</i> Academic Achievement Standards
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STUDENT NAME: _____	STUDENT ID: _____
SAIS ID: _____	DATE OF BIRTH: _____
SCHOOL: _____	GRADE LEVEL: _____
CASE MANAGER: _____	

AIMS A
<input type="checkbox"/> The student has an IEP with goals based on <i>Alternate</i> Academic Content Standards.
<input type="checkbox"/> The student is exposed to high quality instruction focusing on <i>Alternate</i> Academic Content Standards.

Part I: AIMS A Eligibility Requirements

In order to be considered for AIMS A, students must meet all three of the following criteria in all content areas that are tested: Mathematics, Reading, and Science (Science is only for grades 4, 8, and 10).

1. Evidence of a Significant Cognitive Disability

Empirical evidence (formal testing results, multidisciplinary evaluation team results, etc.) of a significant cognitive disability prevents the acquisition of the grade-level Arizona Academic Content Standards. Please note that students with learning disabilities who have overall intellectual and/or adaptive behavior abilities within the average range are not students with *most significant cognitive disabilities*. The student functions *like* a student with MR across *all* areas: commensurate abilities in mathematics, reading, *and* writing, adaptive behavior scores, and measures of intellectual abilities.

Check disability category:

- ☐ MIMR ☐ MOMR ☐ SMR
☐ MD with MR component ☐ MDSSI with MR component ☐ TBI with MR component
☐ Autism with MR component ☐ Other _____

Example 1: An eighth-grade student functioning at second-grade level in reading and writing and at fourth-grade level in mathematics does *not* qualify under criteria 1.

Example 2: A tenth-grade student functioning at the second-grade level in mathematics, reading, and writing, *does* qualify under criteria 1.

The student meets the *Evidence of a SCD* criterion for AIMS A eligibility.

- ☐ Yes ☐ No

2. Curricular Outcomes

The student has access to high-quality instruction based on *Alternate Academic Standards* (in all content areas tested) and the student's IEP goals and objectives focus on enrolled grade-level *Alternate Academic Standards*.

The student meets the *Curricular Outcomes* criterion for AIMS A eligibility.

- ☐ Yes ☐ No

3. Intensity of Instruction

Is extremely difficult for the student to acquire, maintain, generalize, and apply academic skills across environments, even with high-quality extensive/intensive, pervasive, frequent, and individualized instruction in multiple settings in all content areas tested.

The student meets the *Intensity of Instruction* criterion for AIMS A eligibility.

- ☐ Yes ☐ No

The student is eligible for AIMS A.

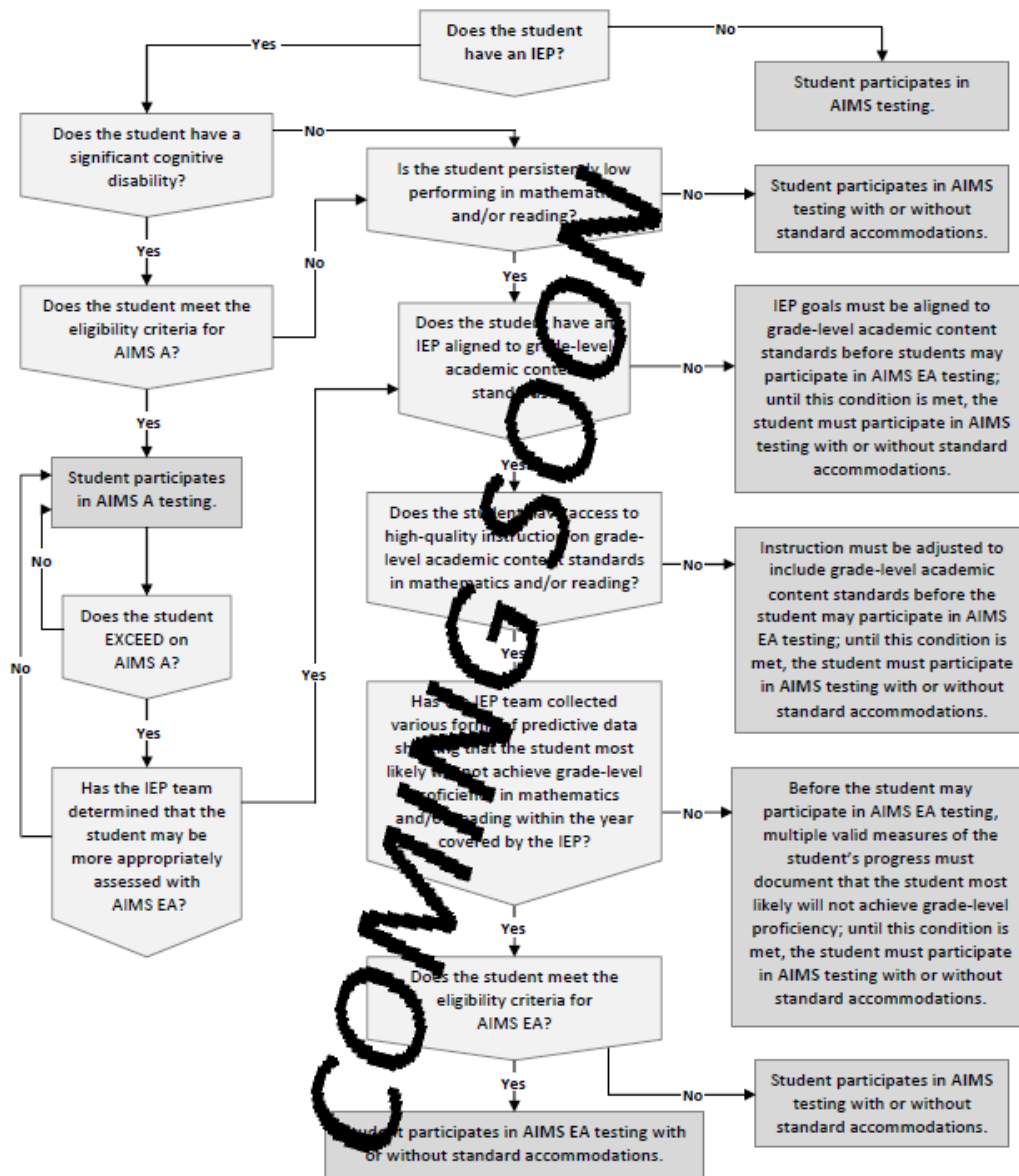
- ☐ Yes (*All responses above are marked Yes.*)
☐ No (*Any response above is marked No and student must participate in AIMS.*)

Parent Notification

Parents must be notified that the student's AIMS assessment will be based on Alternate Academic Achievement Standards.

Eligibility Decision Flow Chart for AIMS

IEP teams must consider participation in general education assessments (AIMS 3-8 and HS), with or without standard accommodations, for students before considering participation in an alternate assessment- AIMS A (alternate achievement standards). Eligibility is determined based on the needs and abilities of each individual student. Please see the AA Eligibility Determination form for further information.



Arizona Department of Education

July 2009

APPENDIX B

AIMS A Scoring Rubric

AIMS A RATER ITEM SCORING RUBRIC			
Level 4	Level 3	Level 2	Level 1
The student correctly performs the task without assistance or with a single repetition of instructions or refocusing through natural cues. Cues may include wait time or pointing.	The student correctly performs the task with general prompts and a single cue. Cues may include physical/verbal cues, auditory cues, objects, tactual cues, visual cues, or sign language.	The student correctly performs the task with specific prompts and up to 2 cues. Cues may include physical/verbal cues, auditory cues, objects, tactual cues, visual cues, or sign language.	The student does not perform the task at Level 2 or provides an incorrect response despite Level 2 support. Student requires extensive assistance and cannot perform the task without full adult support (hand over hand).
<ul style="list-style-type: none"> The student responds or performs task correctly with no assistance. If the student does not respond independently, responds incorrectly, or does not perform the requested task when given wait time, the teacher repeats the instructions and/or refocuses the student's attention. 	<ul style="list-style-type: none"> If the student responds incorrectly or does not perform the task at Level 4 when given wait time, the teacher provides general prompts and includes a single cue for the expected response from the student: <ul style="list-style-type: none"> Elaborate or provide additional clarifying information on directions or expected response. Demonstrate a similar response; "This is a picture of a dog. Show me the picture of a cat." 	<ul style="list-style-type: none"> If the student responds incorrectly or does not perform the task at Level 3 when given wait time, the teacher provides specific prompts and cues to direct the student's correct response: <ul style="list-style-type: none"> Model exact response; "This is a picture of a dog. What is this?" (Show a picture/object representing a dog.) Physically guide the student to the correct response. 	
The student then responds correctly.	The student then responds correctly.	The student responds correctly <i>after</i> being given the correct answer.	The student does not respond or does not respond correctly. Teacher demonstrates response and moves on to the next prompt.
Record a score of 4	Record a score of 3	Record a score of 2	Record a score of 1
If the student still does not respond correctly— move to Level 3 supports.	If the student still does not respond correctly— move to Level 2 supports.	If the student still does not respond correctly— move to Level 1 supports.	

Arizona Department of Education has adapted the rubric from the Colorado Student Assessment Program Alternate Level of Independence Performance Rubric.

APPENDIX C

Item Writer Selection Criteria

APP AIMS A Committee Participant Selection Criteria

ARIZONA DEPARTMENT OF EDUCATION

PROCEDURE FOR SELECTION OF EDUCATOR COMMITTEES

ARIZONA ASSESSMENT SECTION

Although our database contains over 1000 educators, the Assessment Section is always recruiting new teachers to serve on the committees, and have prevailed upon veteran teachers to become Ambassadors of the Assessment by encouraging their colleagues to apply.

Once Arizona educators are identified and entered into the database, the Assessment Section uses the following procedures for selecting membership for a committee:

- Identify the purpose/function of the committee
- Establish the date and time of the committee
- Determine the criteria for membership on the committee:
 - Content area of expertise
 - Grade level experience
 - Specific skill or knowledge expertise for committee function
 - Prior experience on ADE committees—a minimum 50% of each committee will have prior experience
 - Location of district/school
 - Rural/urban/suburban
 - Approximately 50% of committee members from Maricopa County when appropriate for purpose of committee
 - Ethnicity of school population or committee member
 - SES of school population
 - Number of committees served on recently—a committee member cannot serve on a series of committees used to develop items. Otherwise, they would be passing judgment on their own prior work. (This is a change in procedure)*
- Review the database for educators that meet the criteria established
- Select committee members based on criteria for particular committee for primary and alternate list
- Invitations are sent to selected committee members on primary list **
- After decline and accept emails are received by established deadline, additional invitations issued to members on alternate list
- Committee meeting held
- Review performance of participants

* ADE is concerned that utilizing the same committee members on a series of committees will reduce the input from a variety of educators and have requested that past committee participation be part of the selection process. As the pool of teachers expands, individual members will serve on fewer committees.

** It is not the policy to inform all members in our database of scheduled committee meetings, but only those invited to a particular meeting.

Beginning in April of 2006, all past participants have been invited to update their applications on a yearly basis in order to have the most current information in the database. Also, when Arizona educators participate on a committee, they are asked to review their information and note anything that might have changed. The application identifies the demographics of each committee member: geographic location in Arizona, ethnicity of school/district population and/or committee participant, and a detailed biographical background including participation on AIMS A committees.

In order to replace past participants who have moved, changed positions, or no longer possess the time to serve, a recruitment letter was sent in October of 2006 to solicit recommendations from District Superintendents regarding prospective educators whose expertise and participation could be of great benefit. The ADE is constantly recruiting Arizona educators to serve on the various AIMS A committees as well as encouraging retention of its veteran contributors and recognizing them as excellent Ambassadors of the Assessment.

APPENDIX D

Item Writing Workshop for Reading and Mathematics

AIMS-A Item Writing Committee



SEPTEMBER 20, 2008
BLACK CANYON CONFERENCE CENTER

ADE Staff and Facilitators



- **Leila Williams, Ph.D.**
AIMS A Test Item Development Coordinator
- **Danielle Gordon**
AIMS A Technical Quality and Data Analysis Coordinator
- **Melanie Mosiman**
AIMSEA Item Development Coordinator
- **Marilee Beach**
Item Development Coordinator
- **Jennifer Fogus**
AIMS A Administrative Assistant
- **Charlie Bruen, Ph.D**
Director of Data Analysis, Budget, and Technology
- **Roberta Alley**
Deputy Associate Superintendent for Assessment

Welcome



Requirements:

- Content and assessment expertise
- Ability to be innovative
- Willingness to adhere to detailed item specifications
- Desire to be part of the AIMS-A development process.

Goal



- **Create new field test items for Spring 2009**
 - Reading Committees will write new items for each of the reading strands at each grade level (3-8 and HS).
 - Math Committees will write new items for each of the mathematic strands at each grade level (3-8 and HS).

Teamwork and Resources



- Facilitators will provide instructions
- One person will be assigned to check for proper coding of items.
- Refer to the word lists, DOKs, and checklists.
- Write items on scratch paper
- Record items on templates on the
- Laptop
- Revise, edit and rewrite



Blue Prints

Math Blue Print

Grade 3	POs	%	MC	PI
Strand 1- Number Sense and Operations	10	25	9	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	5	17.5	6	1
Strand 3- Patterns, Algebra, and Functions	4	17.5	6	1
Strand 4- Geometry and Measurement	8	22.5	8	1
Strand 5- Structure and Logic	2	17.5	6	1
Total	29	100%	35	5

Grade 4	POs	%	MC	PI
Strand 1- Number Sense and Operations	17	25	9	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	10	17.5	6	1
Strand 3- Patterns, Algebra, and Functions	7	17.5	6	1
Strand 4- Geometry and Measurement	10	22.5	8	1
Strand 5- Structure and Logic	3	17.5	6	1
Total	47	100%	35	5

Grade 5	POs	%	MC	PI
Strand 1- Number Sense and Operations	9	25	9	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	9	17.5	6	1
Strand 3- Patterns, Algebra, and Functions	6	17.5	6	1
Strand 4- Geometry and Measurement	5	22.5	8	1
Strand 5- Structure and Logic	2	17.5	6	1
Total	31	100%	35	5

Grade 6	POs	%	MC	PI
Strand 1- Number Sense and Operations	9	22.5	8	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	12	22.5	8	1
Strand 3- Patterns, Algebra, and Functions	7	17.5	6	1
Strand 4- Geometry and Measurement	5	20	7	1
Strand 5- Structure and Logic	2	17.5	6	1
Total	35	100%	35	5

Grade 7	POs	%	MC	PI
Strand 1- Number Sense and Operations	12	22.5	8	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	13	22.5	8	1
Strand 3- Patterns, Algebra, and Functions	7	17.5	6	1
Strand 4- Geometry and Measurement	3	20	7	1
Strand 5- Structure and Logic	2	17.5	6	1
Total	37	100%	35	5

Grade 8	POs	%	MC	PI
Strand 1- Number Sense and Operations	7	22.5	8	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	14	22.5	8	1
Strand 3- Patterns, Algebra, and Functions	8	17.5	6	1
Strand 4- Geometry and Measurement	4	20	7	1
Strand 5- Structure and Logic	1	17.5	6	1
Total	34	100%	35	5

Grade HS	POs	%	MC	PI
Strand 1- Number Sense and Operations	7	17.5	6	1
Strand 2- Data Analysis, Probability, and Discrete Mathematics	18	25	9	1
Strand 3- Patterns, Algebra, and Functions	9	17.5	6	1
Strand 4- Geometry and Measurement	6	20	7	1
Strand 5- Structure and Logic	10	20	7	1
Total	50	100%	35	5

Blue Prints

Reading Blue Print

Grade 3	POs	%	MC	PI
Strand 1- Reading Process	4	32	6	2
Strand 2- Comprehending Literary Text	3	24	6	0
Strand 3- Comprehending Informational Text	5	44	8	3
Total	12	100%	20	5

Grade 4	POs	%	MC	PI
Strand 1- Reading Process	2	28	6	1
Strand 2- Comprehending Literary Text	3	32	8	0
Strand 3- Comprehending Informational Text	4	40	6	4
Total	9	100%	20	5

Grade 5	POs	%	MC	PI
Strand 1- Reading Process	2	28	6	1
Strand 2- Comprehending Literary Text	2	32	8	0
Strand 3- Comprehending Informational Text	4	40	6	4
Total	8	100%	20	5

Grade 6	POs	%	MC	PI
Strand 1- Reading Process	2	32	6	2
Strand 2- Comprehending Literary Text	2	24	8	0
Strand 3- Comprehending Informational Text	4	44	6	3
Total	8	100%	20	5

Grade 7	POs	%	MC	PI
Strand 1- Reading Process	2	32	6	2
Strand 2- Comprehending Literary Text	1	24	6	0
Strand 3- Comprehending Informational Text	4	44	8	3
Total	7	100%	20	5

Grade 8	POs	%	MC	PI
Strand 1- Reading Process	2	32	6	2
Strand 2- Comprehending Literary Text	2	24	6	0
Strand 3- Comprehending Informational Text	4	44	8	3
Total	8	100%	20	5

Grade HS	POs	%	MC	PI
Strand 1- Reading Process	4	32	6	2
Strand 2- Comprehending Literary Text	4	24	6	0
Strand 3- Comprehending Informational Text	6	44	8	3
Total	14	100%	20	5

Who are students with significant cognitive disabilities?



- Martha – Elementary School Student with Multiple Disabilities Severe Sensory Impaired.
- Sarah - Middle School student with Down Syndrome
- Jordon – High School Student with a cognitive disability and autism.

APPENDIX E

2009 AIMS A Monitoring Review

The Individuals with Disabilities Education Act (IDEA) and Title I of the No Child Left Behind Act (NCLB) require the inclusion of all students with disabilities in the State assessment system. Title I further requires that the assessment results for all students be used for system accountability to ensure that the best education possible is provided to all students (Improving the Academic Achievement of the Disadvantaged, 2007).

The Arizona Department of Education (ADE) Assessment and Exceptional Student Services sections monitor the administration of Arizona's Instrument to Measure Standards Alternate (AIMS A) during the spring testing window. Assessment monitoring is conducted to ensure test validity and reliability and also for continuity in subsequent assessment years. The Individuals with Disabilities Education Act (IDEA) (300.149) requires, and state law (ARS 15-755) authorizes, monitoring and evaluation activities to determine the effectiveness of programs for meeting the educational needs of children with disabilities. These practices help to ensure that programs are carried out and educational results for children with disabilities improve.

This monitoring was conducted through the dissemination of web cameras for the video recording of students as they are administered the performance and rater sections of the assessment and in person by ADE throughout the testing window from February 15th 2009 to March 31st 2009. The onsite testing monitors evaluated the environment in which the student was being assessed as well as the administration of each section of the assessment.

The video monitoring evaluated information about the assessment administration, standardized activities, and data collection procedures. Teachers were selected for video monitoring based on the students for whom they administered the AIMS A. Students were randomly selected to be representative of the population that took AIMS A in 2008. The sampling was done based on special education need, ethnicity, gender, and region. A total of 60 students were selected, and 49 were returned. A committee of ADE specialist in special education and familiar with the AIMS A assessments reviewed the recording and made the following suggestion for the 2010 administration.

- To clarify what constitutes prompting, modeling, and cueing.
- To provide guideline on the proper testing environment.
- To amend the Rater Item Data Sheets to include more information on the items being assessed.

From the committee's suggestions, the following will be instituted for the 2010 administration of AIMS A.

- Each district is required to send a representative to AIMS A training and agree to train all staff in their district on the proper administration. Included in the training is a clarification of prompting, modeling, and cueing which is based on recommendations from the National Alternate Assessment Center and guidelines on the proper testing environment.
- The Performance Task and Rater Item Directions will be clarified to include those definitions on prompting, modeling, and cueing provided by the National Alternate Assessment Center.
- The Rater Item Data Sheets will be amended to include more information on the items being assessed.

APPENDIX F

2009 AIMS A Teacher Survey

The following table represents responses given by teachers after administering the 2009 AIMS A assessment. A total of 88 teachers responded to the online survey.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
AIMS A directions were clear.	5%	19%	15%	47%	15%
AIMS A facilitated the participation in the state's assessment system of students who historically would have been left out.	6%	8%	24%	43%	19%
AIMS A had appropriate rigor for my students with significant cognitive disabilities.	14%	20%	20%	40%	6%
AIMS A online system was easy to use.	6%	7%	7%	49%	32%
AIMS A Scoring Rubric was useful in reflecting students' performance and abilities.	8%	16%	18%	47%	11%
AIMS A was aligned to Arizona's Alternate Academic Standards.	3%	6%	18%	60%	13%
AIMS A was aligned to my classroom instruction.	10%	17%	16%	52%	5%
AIMS A will influence my classroom instruction.	10%	20%	22%	43%	5%

APPENDIX G

2009 Standard Setting Report

SUMMARY REPORT

ACHIEVEMENT LEVELS

FOR

ARIZONA'S INSTRUMENT to MEASURE STANDARDS

ALTERNATE (AIMS A)

For Arizona Department of Education

Exceptional Student Services



May 30, 2009

From May 14 to May 16, 2009, a Standard Setting Session was held in Phoenix with 37 Arizona educators to: (1) establish achievement levels for students with disabilities, in Grades 3 through 8 and 10, who participated in the Arizona Alternate Assessment (Arizona's Instrument to Measure Standards Alternate, AIMS A) and (2) refine the performance level descriptors for each grade level and content area assessed. The session was led by Stephen N. Elliott from Vanderbilt University with assistance from Arizona Department of Education (ADE) personnel Roberta Alley, Dr. Leila Williams, Danielle Gordon, Melanie Mosiman, Dr. Charles Bruen, Marilee Beach, and Forster Okoli. A copy of the agenda for this meeting is provided as **Appendix A**. The results from this Standard Setting Session are summarized in this document and are offered as recommendations to guide Arizona educational leaders' decisions for determining achievement levels on AIMS A in Reading, Mathematics, and Science for over 6,400 students with significant disabilities.

Overview of Standard Setting

Standard Setting is the process of determining appropriate achievement levels that correspond to a specified level of proficiency. The purpose is to establish achievement levels that are based on what students in each achievement level should know and be able to perform. For example, if a student obtained or exceeded the achievement level corresponding to the "Meets" level, then that student should have demonstrated knowledge, skills, and competencies sufficient to be called "proficient" for AYP purposes. This requires the participant to first specify what a proficient student should be expected to understand and perform, and then to determine the achievement levels that correspond to those expectations.

Besides deriving achievement levels for each content area, this process yields descriptions of what students who achieve the various achievement levels typically know and are able to perform. By examining the description of students' typical performances in a given achievement level, one gains an understanding of the knowledge, skills, and abilities typically held by students in that level and identify skills that a given student is not yet able to perform consistently. This type of information helps teachers communicate with others about a student's progress, next year's instructional goals, and the status of the student relative to the state's learning standards.

There is a good deal of judgment involved in Standard Setting and a need to establish a high level of confidence in these judgments. Thus, it is important to have a representative group of educators familiar with the curricular and instructional needs of students with significant disabilities and also knowledgeable of the current alternate assessment to participate on a Standard Setting Panel. It is also typical to have several general

educators knowledgeable of the state's academic standards and curriculum, and a few parents of students with significant disabilities on the committee.

AIMS A includes Reading, Mathematics, and Science tests. At each grade level, 3-8 and 10, there are 20 Reading items and 22 Mathematics items, respectively. The Science test, which is administered at grades 4, 8, and 10, also has 20 items. Each item on each test at every grade level is worth 4 points. Thus, scores on the Reading and Science tests range from 0 to 80, while scores on the Mathematics test range from 0 to 88. The primary objective of the Standard Setting Panel was to determine where along the score continuums in each content area, the score or cut point would be for a marginally proficient student. In other words, the panel's main job was to determine "how many score points was enough" to be deemed to "meet the standard" in reading, mathematics and science in each tested grade. Once the "Meets" cut point was established for a grade level test, the panel determined the cut points for the "Approaches" and "Exceeds" achievement levels at that same grade level.

The Bookmark Procedure

Several different approaches to establishing achievement standards exist. An item mapping method referred to as the Bookmark Procedure was utilized to establish the achievement (performance) standards for AIMS A for students with significant disabilities. The Bookmark Procedure (Lewis, Mitzel, & Green, 1996) was developed by researchers at CTB/McGraw-Hill and has been used to establish the achievement standards for many states' regular achievement tests and several states' alternate assessments over the past decade. This procedure is recognized as a scientifically defensible procedure by the USDE. Standard Setting using this procedure involves presenting experienced educators a booklet with a set of test items ordered from easiest to most difficult. A separate test booklet of items is presented for each content area (i.e., reading, mathematics, and science) and an item map with item difficulty data accompanies the test item booklet. After carefully studying the ordered-items in a booklet, a unique achievement level for a given achievement (performance) level is identified. The participants determine the achievement level by placing a bookmark at the location in the booklet where they think a student who is functioning at a given level will likely respond successfully to items preceding the bookmark. Items preceding the bookmark represent content that all proficient students should likely know and perform. The final achievement level is computed as the median of the number of items immediately before and after the bookmark. Although this sounds quite simple, in fact, committee members often expend considerable effort in reaching their final decisions about the knowledge, skills, and competencies needed to be considered "proficient."

A general description of the steps involved in the Bookmark Procedure for each of the content areas in AIMS A follows:

- ❑ Introduction to Standard Setting
- ❑ Review all Items on the assessment
- ❑ Review and discuss the current Performance Level Descriptors for each achievement level
- ❑ Reach Consensus on the definition of “Meets the Standard” as measured by AIMS A
- ❑ Round 1: Individuals independently place marks in test booklets to indicate “Meets the Standard” achievement level
- ❑ Post-Round 1: Individuals at each table discuss their placements of marks for the “Meets the Standard” achievement level
- ❑ Round 2: Teams at each table make a consensus decision about marks for the “Meets the Standard” achievement level
- ❑ Post-Round 2: Feedback is provided about the median achievement levels and the likely distribution of students at each level, then the group can discuss rationale for their ratings
- ❑ Round 3: Teams collectively make final decisions about marks for each of four levels of Achievement
- ❑ Post-Round 3: Feedback is provided about the Committee’s Median Achievement levels and likely impact on student distributions
- ❑ Review and discuss the trends across grade levels for a given content area and examine any significant outliers
- ❑ Review and revise, if necessary, the descriptions associated with each of the four levels of achievement

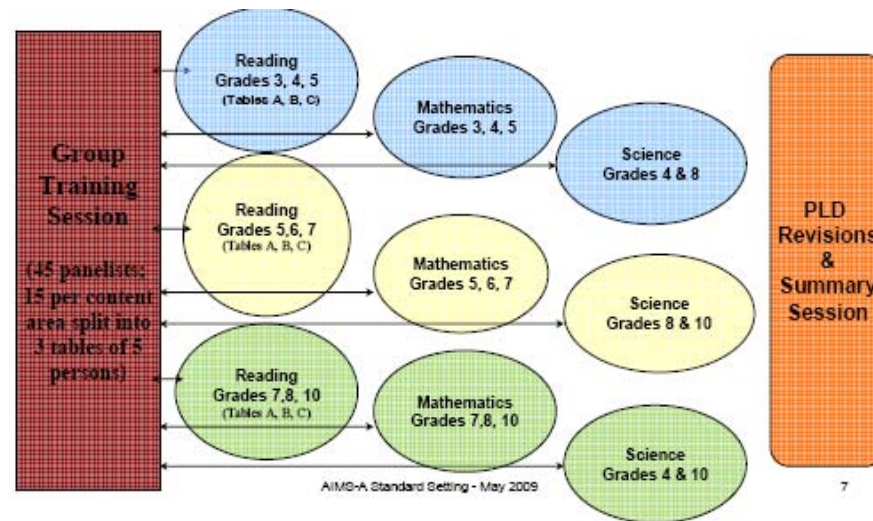
The three-round Bookmarking procedure was followed for each content area assessed by AIMS A for Grades 3, 4, 5, 6, 7, 8, and 10 in Reading, Mathematics, and Science. The outcome of this Bookmark procedure resulted in identified achievement levels for each of the grade-level content areas on AIMS A. The detailed result of what constitutes a “proficient performance” on AIMS A contributes information that can be integrated with other students’ results on AIMS to be used for school accountability. Together the results from AIMS A and AIMS provide assessment data for all students in Arizona Public Education Associations (PEAs) for the federally required adequate yearly progress (AYP) calculation and report.

Participants and Group Assignments

The 37 participants in the Standard Setting Session represented educators from school districts and educational agencies from across the state. All the participants were familiar with, or had experience administering, AIMS A. The participants and their professional affiliations are listed in **Appendix B**. These participants formed nine teams representing elementary, middle and high schools who worked together for the entire 3-day session. Five teams had four members (three special educators and a regular educator or dual certified educator) and four teams had five members (four special educators and a regular educator or dual certified educator). This team structure was designed to enhance the developmental sensitivity and representativeness of the team’s decisions. Three groups of participants – elementary, middle school, and high

school – were created to determine cut scores for each grade and content area. To improve consistency and achieve equity in the recommended cut scores across the 3-8 and 10 grade-spans, a cross-lag design with different groups of teachers was used to ensure independent replications of Reading and Mathematics cut scores in grades 5 and 7, and for Science in all grades 4, 8, and 10. A visual of the three groups and their various grade and content assignments is provided as Figure 1.

Figure 1. Overview of the AIMS A Standard Setting Session and Grade-Level Teams



Overview of the Students of Interest

The sample of students in the AIMS A database at each grade level averaged 870 per grade with a range from 798 (6th grade) to 1368 (high school) students in prescribed assessment years and is representative of the state's school age population. Students eligible to take AIMS A were all identified with approved criteria that included having a significant disability and functioning several grade levels below their age mate peers with milder disabilities. The majority of the students qualifying to take AIMS A has been receiving special education services since entering school and has been classified as moderate or severely mentally retarded, or autistic. These students have been receiving instruction based on the Arizona Alternate Academic Standards and have been determined to need significantly more accommodations than allowed to take AIMS.

Definition of Proficient (Meets the Standard)

One of the most important steps in Standard Setting is to achieve a consensus definition of what it means to be “proficient.” Once a consensus definition of proficient is determined, it provides a foundation for making decisions about the knowledge and skills that a student should be able to demonstrate if they are to be considered proficient. The participants in the Standard Setting Session spent considerable time discussing what it means for a student to be *proficient* or in the terms of the Arizona Achievement Standards to *meet the standard*. To facilitate their thinking about this definition, they were provided the performance level descriptors approved by the Arizona State Board of Education, a copy of the state's content standards for students with significant disabilities, and a copy of AIMS A items. The state's four achievement levels for each of the content areas assessed by AIMS A are documented in **Appendix C**. These achievement levels were a centerpiece of the Standard Setting Training Session (see **Appendix D** for training slides).

Materials and Decisions about Achievement levels

The key materials used to conduct the Standard Setting were ordered item test booklets, item maps with AIMS A items from each content area rank ordered by difficulty from easiest to hardest (see **Appendix E**), and item graphs (see **Appendix F**) and item tables (see **Appendix G**) portraying the total score distributions of students who were administered AIMS A in spring 2009. An example of the item map for AIMS A

Reading is displayed in **Appendix E**. Figures 2, 3, and 4 provide score distributions for the 4th, 8th, and 10th grade AIMS A Reading test. These distributions are illustrative of those in Mathematics and Science at the same grades and indicate AIMS A overall is a difficult test for about 15% of eligible students. Some students, however, also do very well on the tests.

Figure 2. Grade 4 Reading

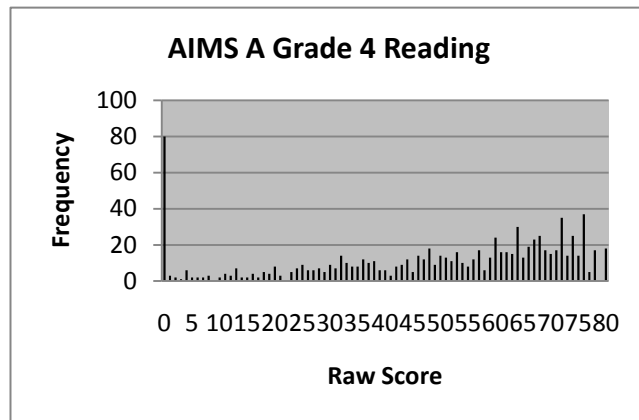


Figure 3. Grade 8 Reading

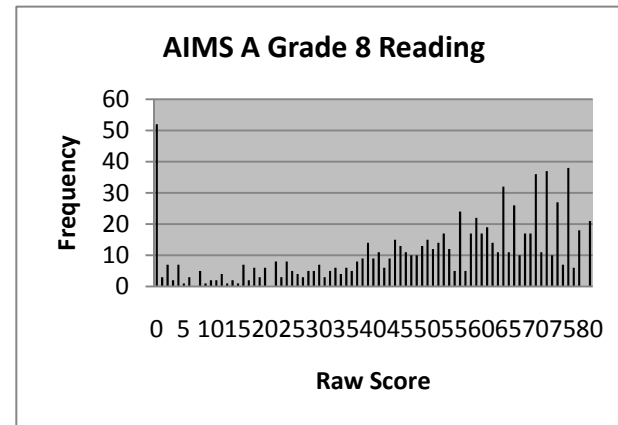
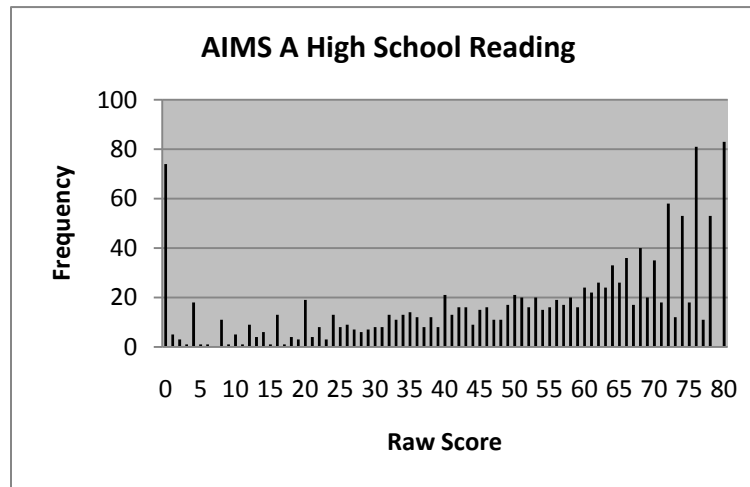


Figure 4. High School Reading



To facilitate communication and decision-making about AIMS A Standard Setting outcomes, the following assumptions were stated and agreed upon by all participants at the outset of the process:

- ❑ Arizona's academic achievement levels are Falls Far Below, Approaches, Meets, and Exceeds the Standard.
- ❑ The 4 levels of achievement for a given content area need not be equal in nature; that is, they need not cover the same number of items or possible points, nor do they necessarily need to represent an equal proportion of students.
- ❑ There are likely developmental differences that should be considered when setting performance standards.
- ❑ Given the need to yield overall decisions of "proficient" or "not proficient yet" for AYP, a single number for a achievement level must be determined even though we know that all scores have some error and it is best professional practice to provide a confidence band around a score. To off-set concerns about error in a single score, it is recommended that important decisions be based on more than one test score.
- ❑ Different people reviewing the same items and same impact data might reasonably derive somewhat different achievement levels in the three content areas. Therefore, to establish confidence in the recommended cut scores a replication method was employed at a subset of grades (i.e., 5 and 7 for Reading and Math, and 4, 8, and 10 for Science) whereby "second" teams of educators independently set cut scores.
- ❑ The results of the Standard Setting Process would be presented to the Arizona State Board of Education as recommendations to follow when determining whether or not a student meets the standard (e.g., is proficient) on AIMS A. Thus, the participants' recommendations are advisory.

After reading the consensus definition of *meets the standard*, participants used the rank-ordered item tables to record their decisions about what alternate knowledge and skills it took to be considered *proficient*. Participants first made independent decisions about the number of items it would take to *meet the standard*, then worked with their tablemates to reach a consensus on the number of items that it would take to *meet the standard*. Once all the table leaders reported a consensus number of items for the *meets the standards* level, the median number of items needed to *meets the standard* as defined by all tables was determined. Once this achievement level was determined, it served as the "Meets the Standard" achievement level for the content area, and then impact data were provided via the cumulative score distribution figures. To

operationalize impact, all participants were provided a cumulative frequency distribution with the percentage of students likely to be considered as *meeting the standard* in a content area. In some cases, participants requested comparison data for students on AIMS. The consensus achievement level and impact data collectively were discussed among the entire group of participants and a final decision was made about an achievement level at each grade level for a given content area.

After reaching a final decision about the *meets the standard* achievement level for each area, teams were asked to determine the achievement levels differentiating AIMS A performances at the Falls Far Below level from the Approaches level, and the Meets level from the Exceeds level of achievement. For these decisions, an abbreviated version of Bookmarking featuring only the table consensus decisions with impact data as feedback was used to determine median cut points.

Finally, after all cut point recommendations for each content area in each grade were completed, an integrated review of the suggested cut points and related impact data across all grades was presented to the participants by the session leader. This review focused on consistency across grades for a given content area. Given that the numbers of possible score points were the same across grades within content areas, it was easy to identify outliers by looking at both the recommended cut scores and the likely percentage of students "passing" rates. Using this approach, the cut score for the *meets the standard* level for Reading at grades 3 and 10 were considered relatively low and the cut score for Mathematics at grade 5 was considered relatively high. The respective teams that set the original cut scores agreed to review their recommendations. The outcomes of these reviews were adjustments that resulted in cut scores that were more consistent with those for the same content area at other grades.

Standard Setting Results

The results of the 2009 AIMS A Standard Setting Session are summarized in a series of tables (1, 2, and 3) and figures (5 through 10) that follow. The initial table for each content area provides the recommended raw cut scores for at each grade level for the four achievement levels. These tables also provide impact data in the form of the number and percentage of students that would be at each achievement level in each grade in 2009, if these cut scores were adopted. The accompanying figures simply provide a visual depiction of the same data for each content area. Finally, an integrated summary table is provided of the raw score ranges for each achievement levels in a given content area. Please note that AIMS A tests have different items and different performance level descriptors (PLDs) for each grade level.

Table 1. AIMS A Reading								
Recommended Cut Score								
Grade	3	4	5	6	7	8		10
Far Below	0 - 20	0 - 16	0 - 12	0 - 12	0 - 15	0 - 16		0 - 12
Approaches	21 - 40	17 - 44	13 - 42	13 - 40	16 - 39	17 - 40		13 - 40
Meets	41 - 64	45 - 70	43 - 68	41 - 66	40 - 67	41 - 70		41 - 72
Exceeds	65 - 80	71 - 80	69 - 80	67 - 80	68 - 80	71 - 80		73 - 80
Number of Students								
Grade	3	4	5	6	7	8		10
Far Below	141	125	89	104	112	100		130
Approaches	156	200	209	193	141	134		244

Meets	384	391	334	335	346	451		683
Exceeds	196	182	175	166	205	175		311
Total	877	898	807	798	804	860		1368
Percentage of Students								
Grade	3	4	5	6	7	8		10
Far Below	16.08	13.9	11.02	13.04	13.91	11.63		9.5
Approaches	17.78	22.27	23.92	24.2	17.55	15.6		17.8
Meets	43.76	43.53	43.37	41.96	43.04	52.46		49.91
Exceeds	22.33	20.26	21.69	20.8	25.5	20.34		22.73

Figure 5. Reading Recommended Cut Scores

Across the Grades

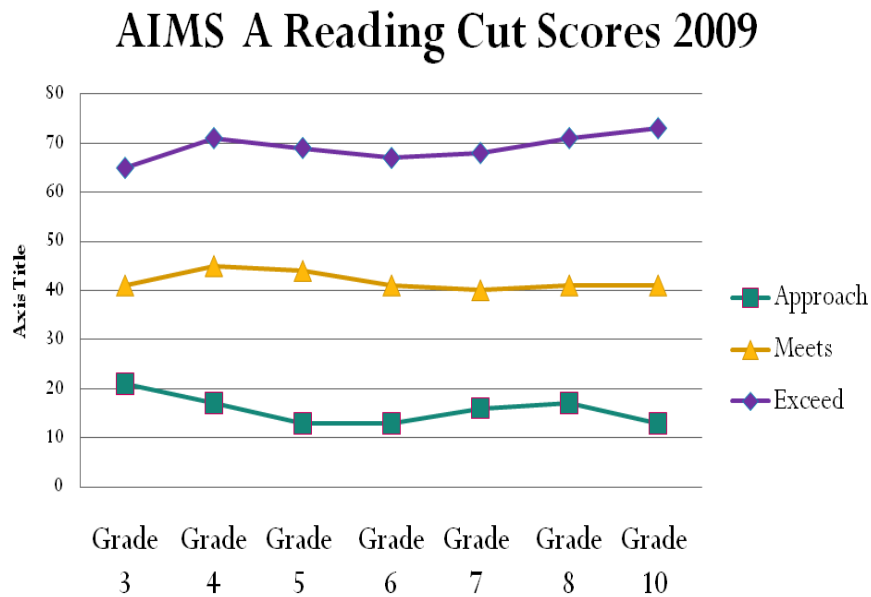


Figure 6. Percentage of Students at Each Reading

Achievement Level

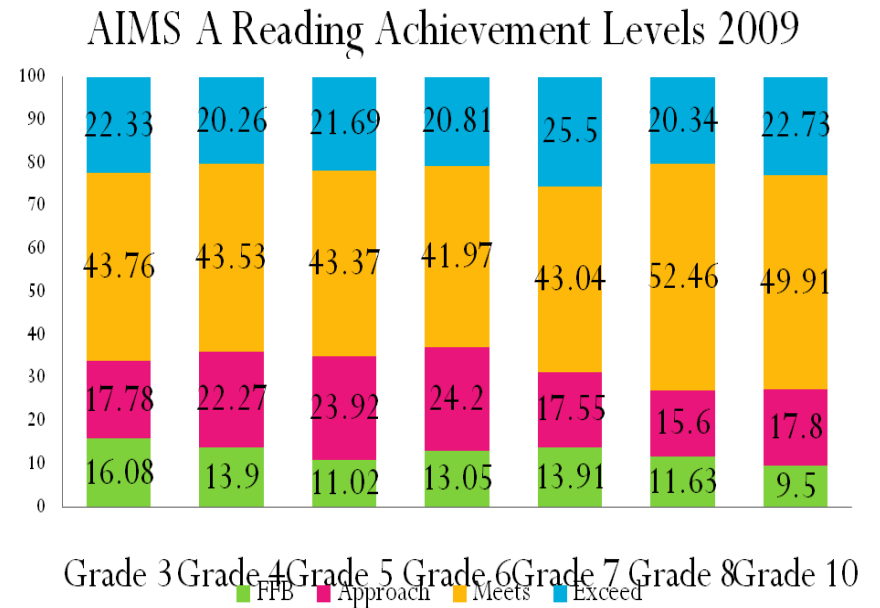


Table 2. AIMS A Mathematics								
Recommended Cut Score								
Grade	3	4	5	6	7	8		10
Far Below	0 - 20	0 - 20	0 - 20	0 - 16	0 - 12	0 - 16		0 - 16
Approaches	21 - 40	21 - 40	21 - 40	17 - 44	13 - 40	17 - 40		17 - 40
Meets	41 - 72	41 - 72	41 - 72	45 - 72	41 - 72	41 - 68		41 - 76
Exceeds	73 - 88	73 - 88	73 - 88	73 - 88	73 - 88	69 - 88		77 - 88
Number of Students								
Grade	3	4	5	6	7	8		10
Far Below	130	168	146	106	92	115		192
Approaches	142	140	149	202	166	185		293

Meets	388	358	399	366	387	360		728
Exceeds	217	232	113	124	159	200		155
Total	877	898	807	798	804	860		1368
Percentage of Students								
Grade	3	4	5	6	7	8		10
Far Below	14.8	18.7	18.08	13.33	11.44	13.4		14.03
Approaches	16.17	15.59	18.48	25.34	20.64	21.51		21.42
Meets	44.22	39.85	49.46	45.89	48.15	41.85		53.23
Exceeds	24.74	25.82	14.00	15.55	19.79	23.26		11.33

Figure 7. Mathematics Recommended Cut Scores

Across the Grades

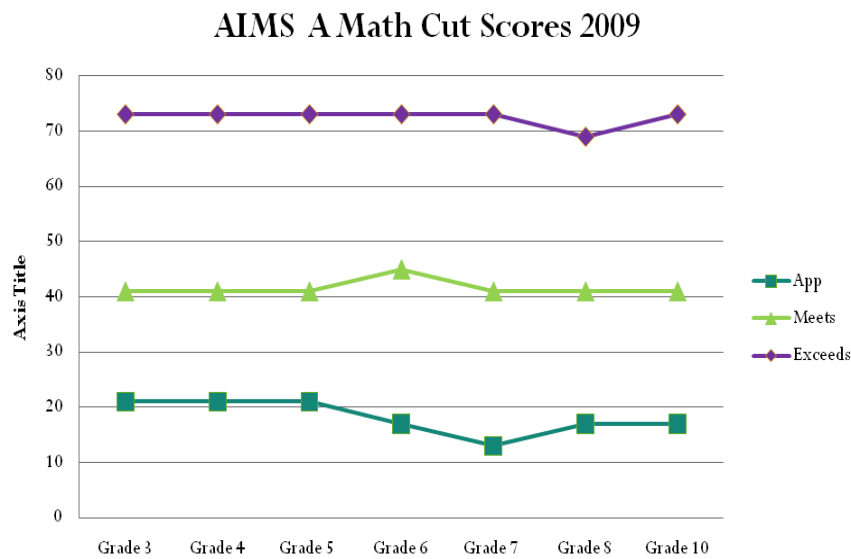


Figure 8. Percentage of Students at Each Mathematics

Achievement Level

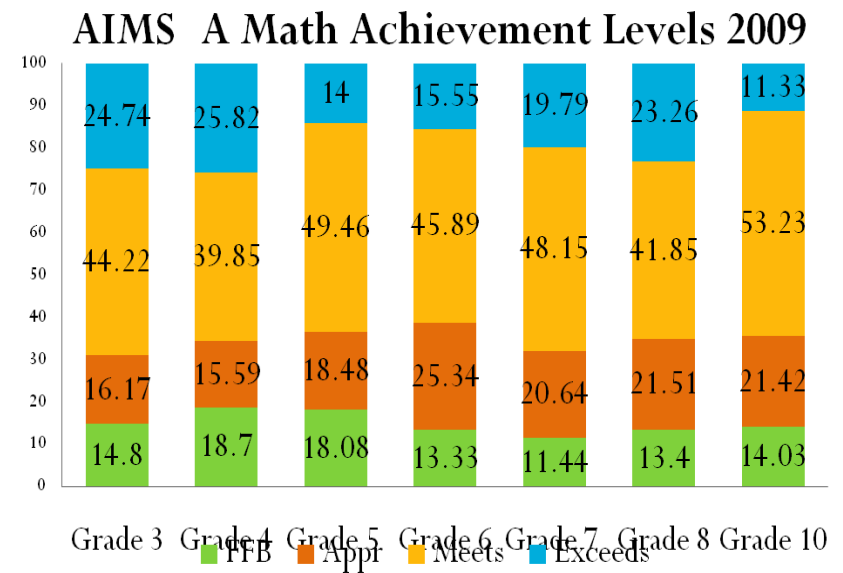


Table 3. AIMS A Science Recommended Cut Score								
Grade	3	4	5	6	7	8		10
Far Below		0 - 14				0 - 16		0 - 12
Approaches						17 - 45		13 - 42

		15 - 44						
Meets		45 - 72				46 - 74		43 - 70
Exceeds		73 - 80				75 - 80		71 - 80
Number of Students								
Grade	3	4	5	6	7	8		10
Far Below		119				85		80
Approaches		181				141		156
Meets		388				393		378
Exceeds		209				241		207
Total		897				860		821
Percentage of Students								

Grade	3	4	5	6	7	8		10
Far Below		13.24				9.91		9.73
Approaches		20.15				16.41		19.01
Meets		43.25				45.72		46.04
Exceeds		23.3				28.01		25.2

Figure 9. Science Recommended Cut Scores

Across the Grades

AIMS A Science Cut Scores 2009

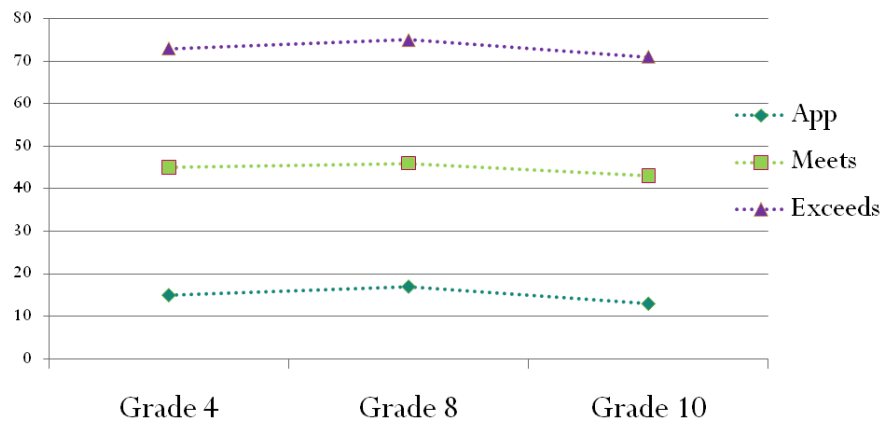
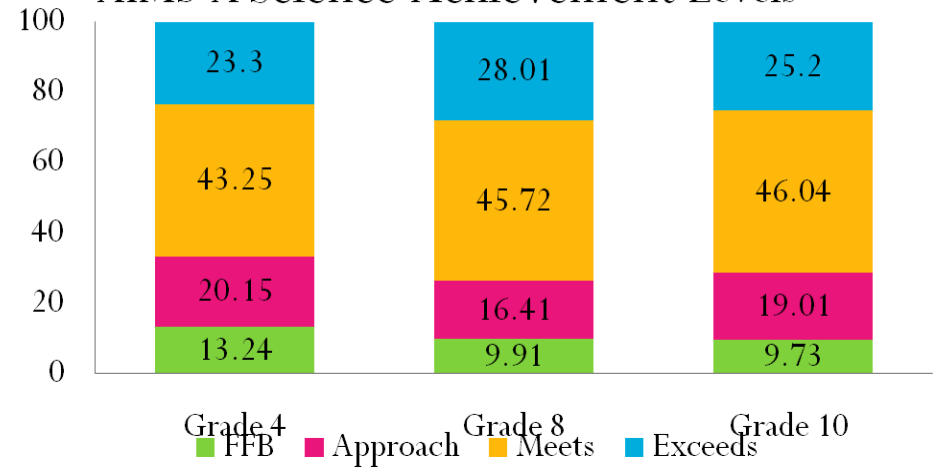


Figure 10. Percentage of Students at Each Science

Achievement Level

AIMS A Science Achievement Levels



The following principles guided the development of final cut scores for AIMS A achievement levels for each content area:

- Creditable assessment systems for interpreting student achievement should reflect general developmental trends and instructional expectations whereby older or more advanced students, on average, consistently exhibit more knowledge and skills in a given content area. Given the design of AIMS A where there are an equal number of items on each test and these items are based on grade-sequenced extended content standards, it was expected that cut scores across grades for the same content would be very similar.
- The recommended cut scores can be conceptualized with a confidence band of ± 5 raw score points based on what is known about the standard error of measurement for the tests. Given it is an accepted scientific practice to use confidence or error bands around scores when making important decisions, the panel supported the application of such a band for the purposes of making final adjustments to cut scores. However, this adjustment procedure was not necessary because the recommended cut scores were quite uniform and conformed to the expected developmental trends.

The recommended achievement levels for AIMS A Reading, Mathematics, and Science followed these guidelines and are intended to be of use to educators, parents, and other educational stakeholders interested in the achievement of students with significant disabilities. At the conclusion of the Standard Setting Session, the data featured in Tables 1, 2, and 3 were presented and discussed among all three grade-level groups of panelists. The result was that panel members unanimously endorsed the cut scores documented in this report.

Following the endorsement of the cut scores, panelists revisited the Performance Level Descriptors for each content area and grade level with the purpose of documenting ways to improve them as communication tools. After the Arizona State Board of Education approval of the final cut scores, further refinements to the PLDs become possible by using the item maps to identify discriminating items just beyond cut scores. These items can then be added to the PLDs to provide a comprehensive description of what it means to *meet the standard* for students with significant cognitive disabilities in Arizona.

Reference

Lewis, D.M., Mitzel, H.C., & Green, D.R. (1996, June). Standard setting: A Bookmark approach. In D.R. Green (Chair), *IRT-based standard-setting procedures utilizing behavioral anchoring*. Symposium conducted at the meeting of the Council of Chief State School Officers National Conference on Large Scale Assessment, Phoenix, AZ.

About the Primary Author of this Report

Stephen N. Elliott received his doctorate at Arizona State University in 1980 and is a Professor of Special Education and the Dunn Family Chair of Educational and Psychological Assessment in Peabody College at Vanderbilt University. Steve teaches courses on the measurement and assessment of academic and social behavior. He currently co-directs three USDE research grants concerning the validity of testing modifications and alternate assessments for students with disabilities. He also directs Peabody College's Interdisciplinary Program in Educational Psychology and serves as the Director of the Learning Sciences Institute, a trans-institutional center for externally funded research. He has authored more than 140 journal articles, 20 books, 35 chapters, and 5 widely used behavior-rating scales. His research focuses on scale development and (a) the assessment of children's social skills and academic competence and (b) the use of testing accommodations and alternate assessment methods for evaluating the academic performance of students with disabilities for purposes of educational accountability. Steve has helped design alternate assessments in several states (HI, ID, MS, & WI) and has led Standard Settings in each of these states for these assessments of students with significant disabilities. In 2009, he was named a Fellow in the American Educational Research Association and selected as a Senior Scientist for Division 16 of the American Psychological Association.

Appendix A

Session Agenda

AIMS A 2009 Standard Setting

**Standard Setting Workshop
Arizona Alternate Assessment – AIMS A
May 14 - 16, 2009**

Leaders: Stephen Elliott, Vanderbilt University **Location: Sheraton Crescent**
Roberta Alley, ADE 2620 W. Dunlap Avenue

Phoenix, AZ

Danielle Gordon, ADE

Leila Williams, ADE

Thursday, May 14

8:30 a.m. **Welcome/Introductions**

8:45 a.m. **Non-Disclosure and Travel Procedures**

9:00 a.m. – 12:00 p.m. **Workshop**

☐ Workshop Goals and Role of Participants

Goal #1 Review the AIMS A items and the related statistics for science, reading, and mathematics items for grades 3 through 8 and 10 and impact data based on 2009 results.

Goal #2 Establish recommended proficiency cut-scores for AIMS A science, reading, and mathematics assessments for students with significant disabilities in grades 3 through 8 and 10.

❑ **Background of Arizona’s Statewide Assessment & Accountability System**

❑ **Introduction to Standard Setting: Rationale and the Bookmarking Procedure**

- Activity: Connecting PLDs to Item Maps
- Defining the Marginally Proficient Student

❑ **Major Steps in a Modified Bookmark Procedure**

Review and complete all AIMS-A Multiple Choice and Rating Scale Items

Review and Discuss current Performance Level Descriptors for each achievement level

Reach Consensus on the definition of “Meets the Standard”

Round 1: Individual Proficiency Cut-Point Determination

Post-Round #1 Discussion

Round 2: Team Consensus for Proficiency Cut-Point

Post-Round #2 Discussions with Feedback on Impact

Round 3: Teams Final Decisions

Post Round #3: Feedback & likely impact on student distributions

Review and Revise Proficiency Level Descriptors

Committee Recommendations to the State Board of Education for approval and adoption

☐ **Table Assignments & Decision Making Guidelines**

Thursday, May 14 (1:00 a.m. – 5:00 p.m.)

☐ **Review Standard Setting Procedures and Discuss Issues**

☐ Review the AIMS-A Reading Items grades 3, 4 & 5 and Conduct Standard Setting

☐ Review the AIMS-A Reading Items grades 5, 6 & 7 and Conduct Standard Setting

☐ Review the AIMS-A Reading Items for 7, 8, & High School and Conduct Standard Setting

Friday, May 15 (8:00 a.m. – 5:00 p.m.)

☐ **Review Standard Setting Procedures and Discuss Issues**

☐ **Complete Review of AIMS A Reading Items**

☐ Review the AIMS-A Mathematics Items grades 3, 4 & 5 and Conduct Standard Setting

☐ Review the AIMS-A Mathematics Items grades 5, 6 & 7 and Conduct Standard Setting

☐ Review the AIMS-A Mathematics Items for grades 7, 8, & High School and Conduct Standard Setting

Saturday, May 16 (8:00 a.m. – 5:00 p.m)

☐ **Review Standard Setting Procedures and Discuss Issues**

☐ **Complete Review of AIMS A Mathematics Items**

☐ Review the AIMS-A Science grade 4 & 8 and Conduct Standard Setting

☐ Review the AIMS-A Science grades 8 & 10 Conduct Standard Setting

☐ Review the AIMS-A Science for grades 10 & 4 Conduct Standard Setting

☐ **Suggestions for Refining AIMS-A Performance Level Descriptors**

☐ **Review Results of Standard Setting Workshop**

□ **Participant Evaluations**

Appendix B

Participants in the 2009 Standard Setting for AIMS A

Last	First	Race	Sex	Title or Occupation	Certification	District
Adams-Brown	Susan	B	F	Resource Teacher Middle School; 7 & 8 Social Studies; Language Arts, Math	Elementary/Spec Cross Cat	Cartwright Elementary District
Andersen	Tamara	B	F	Special Education K-5, Self Contained	Special Education MIMR K-12	Tolleson Elementary District
Apuna	Sandra	W	F	District Language Arts Coordinator	Elementary/Junior High School / Special Education	Gilbert Unified District
Barsevich	Valerie	W	F	Sixth Grade - Mathematics	Elem & Spec Ed Mentally Hand Certif./Principalship	Tucson Unified School District
Bates	Heather	W	F	Freshman English Teacher and Junior English Teacher	Secondary, English and Special Education, CCS	Tucson Unified School District
Bonney-Clay	Mepet	W	F	High School Self Contained Spec Education Teacher age (14-21)	Cross Categorical Special Education	Parker Unified School District
Cassidy	Kay	A	F	Retired	Secondary	(blank)
Cox	Rebecca	W	F	Primary Special Education/ Supervision of RTI Program Grades K-3	Elementary/Special Education	Flagstaff Unified District
Csurka	Lucy	W	F	Jr High Art and Reading /7th Grade Reading	Secondary 7-12; Art K12, Spec Educ K12, LD/MR/SelfContained	Theodore Roosevelt School
D'Antonio-Schleich	Peggy	W	F	Special Education Teacher	Special education-Cross Categorical	Phoenix Union High School District

Dumas	Donna	W	F	Retired	BS Elementary, K-8th, Special Educ., MA Administration	(blank)
Duncan	Elizabeth	W	F	Int. MOMR, Self Contained Teacher	Special Ed, Elementary	Roosevelt Elementary District
Faiveley	Patricia	W	F	4th Grade all subjects	Elementary, Special Education.	Scottsdale Unified District
Fetter	Kathy	W	F	Spec Educ Cross Categorical Spec Class K-2 Teacher__	Standard Spec Educ LD K-12; Stand Spec Educ MR K-12; Provisional Struct English Imm Endorsement K-12	Amphitheater Unified District
Fortier	Jacqueline	H	F	Teacher of Moderately Cognitively Impaired 9-12	Secondary Certification, Special education.	Tucson Unified School District
Franklin	Rebecca	W	F	Teacher 9-12+ Grade Self-Contained Life Skills Prgm, MIMR,MOMR,	Special Education - Arizona	Kingman Unified School District
Fritsche	Janice	W	F	High School Special Services	Cross Cat K-12, severely profound k- 12, ,OTR	Douglas Unified School District
Geiger	Vicki	W	F	Education Prgm Specialist- Special Education @ State Hospital & Adult Educational services through Rio Salado	Reg Education K-8, Special Educ K-12 ED and LD	Arizona State Hospital
Hammond	Mary Jo	W	F	K-5 Language Arts resource room	Elementary/Special Education	Kingman Unified School District
Hart	Holly	W	F	5/6th Grade Cross Categorical Self Contained	Special Education	Washington Elementary District

Hebein	Jenna	W	F	self contained 3rd grade cross categorical developmental class (MIMR-MOMR)	Elementary, cross cat. Special Education, severe/profound special ed	Washington Elementary District
Hellerud	Linda	W	F	H.S. Special Education -MIMR, Resource Room	Spec Ed, Mental Retardation, Learning Disabilities	Colorado River Union High School District
Johnson	Jennifer	W	F	Special Education Facilitator	Elem, Secondary, Sp Ed: Cross-Categorical K-12, Severe & Profound Disabilities, English, History	Amphitheater Unified District
Morrow	Karin	W	F	Self-Contained MI/MO High School	Cross-Cat Sped K-12, Elem. Ed. K-8	Dysart Unified District
Mosiman	Michael	W	M	Resource and Self-Contained ED/MIMR	Special Education K-12	Tempe Elementary District
Peaslee	Kimberly	W	F	High School Instructional Specialist 9-12	Special Education / Principal	Phoenix Union High School District
Pyle	David	W	M	Teacher, Self-contained 5-8, Reading, Math and Written Expression	Special Education K-12, Principal	
Roth	Natalie	W	F	Reading and Math; Gifted 3-6 Teacher	K-12; Drama & Speech; Principal	Deer Valley Unified District
Sholl	Shyla	H	F	Self-Contained, Cross-Categorical Special Education Teacher 3-5	Elementary K-8 and Spec Education, Cross-Categorical K-12	Amphitheater Unified District
Sims	Kimberly	H	F	Working on doctoral studies Educational Leadership & Teacher	Spec Education K-12, LD, ED, MR	Student-doctoral degree

				Innovation		
Stair	Carin	W	F	K-5 resource teacher	Stand SpEd Learning Disabilities k-12; Mental Retardation; Administrative Certificate/Principal SEI	Tucson Unified School District
Swartz	Najah	NA	F	Hearing Impaired Itinerant Teacher K- 12	Hearing Impaired k-12 Special Education	Tucson Unified School District
Thompson	Loriann	W	F	H.S. Severe Autism Program	SpEd ED, LD, OHI, SMR, MR	Tempe Union High School District
Tiernan	Maureen	W	F	9th – 12th grade Medical Fragile	K-12 Special Education	Phoenix Union High School District
Walch	Betty	W	F	Retired	Special Ed. Secondary, Administrative.	(blank)
Whitaker	Johanna	B	F	3-7 cross-categorical moderate- severe/behavioral	Cross Categorical K-12	Washington Elementary District
Williams	Christina	W	F	Inclusion Specialist	Spec. Ed. K-12, Severe/ Profound	Vail Unified School District

Appendix C

Example Performance Level Descriptors

Arizona Alternate Standard Performance Level Descriptors

Grade 4 Reading

Exceeds the Standard – Students with significant cognitive disabilities who score in this level can typically function independently or with minimal cueing to demonstrate mastery of subject matter as reflected by the alternate reading standard.

Meets the Standard – Students with significant cognitive disabilities who score in this level can typically function with moderate support through the use of visual representations, manipulatives, and objects to demonstrate a solid understanding of subject matter as reflected by the alternate reading standard.

Approaches the Standard – Students with significant cognitive disabilities who score in this level can typically function with extensive support through the use of visual representations, manipulatives, and objects to demonstrate partial understanding of subject matter as reflected by the alternate reading standard.

Falls Far Below the Standard – Students with significant cognitive disabilities who score in this level may have significant gaps and limited knowledge and skills that are necessary to satisfactorily meet the state’s alternate reading standard. Students will typically require a considerable amount of additional instruction and intervention in order to achieve a satisfactory level of understanding.

Students at the “ Exceeds the Standard ” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “ Meets the Standard ” level generally know the skills required at the “Approaches” level and are able to:	Students at the “ Approaches the Standard ” level generally know and are able to:
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Students at the “Exceeds the Standard” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “Meets the Standard” level generally know the skills required at the “Approaches” level and are able to:	Students at the “Approaches the Standard” level generally know and are able to:
<ul style="list-style-type: none"> • Follow a set of multi-step directions in order. • Identify specific facts in text. • Select a synonym, antonym, and homonym. • Make a prediction. 	<ul style="list-style-type: none"> • Locate information from functional text. • Determine meaning of a simple or environmental word. • Identify the conflict or problem. 	<ul style="list-style-type: none"> • Identify cause and effect. • Find a solution to a problem. • Identify one aspect of the setting. • Describe a character’s trait.
80----- 71	70----- 45	44----- 17

These descriptors do not include all the skills and knowledge as contained in the Alternate Reading Standard.

Arizona Alternate Standard Performance Level Descriptors

Grade 4 Mathematics

Exceeds the Standard – Students with significant cognitive disabilities who score in this level can typically function independently or with minimal cueing to demonstrate mastery of subject matter as reflected by the alternate mathematics standard.

Meets the Standard – Students with significant cognitive disabilities who score in this level can typically function with moderate support through the use of visual representations, manipulatives, and calculators to demonstrate a solid understanding of subject matter as reflected by the alternate mathematics standard.

Approaches the Standard – Students with significant cognitive disabilities who score in this level can typically function with extensive support through the use of visual representations, manipulatives, and calculators to demonstrate partial understanding of subject matter as reflected by the alternate mathematics standard.

Falls Far Below the Standard – Students with significant cognitive disabilities who score in this level may have significant gaps and limited knowledge and skills that are necessary to satisfactorily meet the state’s alternate mathematics standard. Students will typically require a considerable amount of additional instruction and intervention in order to achieve a satisfactory level of understanding.

Students at the “ Exceeds the Standard ” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “ Meets the Standard ” level generally know the skills required at the “Approaches” level and are able to:	Students at the “ Approaches the Standard ” level generally know and are able to:
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Students at the “Exceeds the Standard” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “Meets the Standard” level generally know the skills required at the “Approaches” level and are able to:	Students at the “Approaches the Standard” level generally know and are able to:
<ul style="list-style-type: none"> • Subtract whole numbers. • Add whole numbers. • Tell time to the hour/half/quarter hour. • Draw a conclusion from bar graph, line graph, or pie chart. 	<ul style="list-style-type: none"> • Complete a simple pattern. • Order three whole numbers (through 50). • Identify line graphs and a pie chart. 	<ul style="list-style-type: none"> • Identify shapes. • Select the appropriate measuring tool. • Compare two whole numbers (10 or greater). • Identify simple valid arguments using <i>if.....then</i> statements. • Demonstrate number concepts using manipulatives, symbols, objects, or pictures. • Match numerals in contextual situations. • Identify/match whole numbers in contextual situations.
88 ----- 73	72 ----- 41	40 ----- 21

These descriptors do not include all the skills and knowledge as contained in the Alternate Mathematics Standard.

Arizona Alternate Standard Performance Level Descriptors

Grade 4 Science

Exceeds the Standard – Students with significant cognitive disabilities who score in this level can typically function independently or with minimal cueing to demonstrate mastery of subject matter as reflected by the alternate science standard.

Meets the Standard – Students with significant cognitive disabilities who score in this level can typically function with moderate support through the use of visual representations, manipulatives, and objects to demonstrate a solid understanding of subject matter as reflected by the alternate science standard.

Approaches the Standard – Students with significant cognitive disabilities who score in this level can typically function with extensive support through the use of visual representations, manipulatives, and objects to demonstrate partial understanding of subject matter as reflected by the alternate science standard.

Falls Far Below the Standard – Students with significant cognitive disabilities who score in this level may have significant gaps and limited knowledge and skills that are necessary to satisfactorily meet the state’s alternate science standard. Students will typically require a considerable amount of additional instruction and intervention in order to achieve a satisfactory level of understanding.

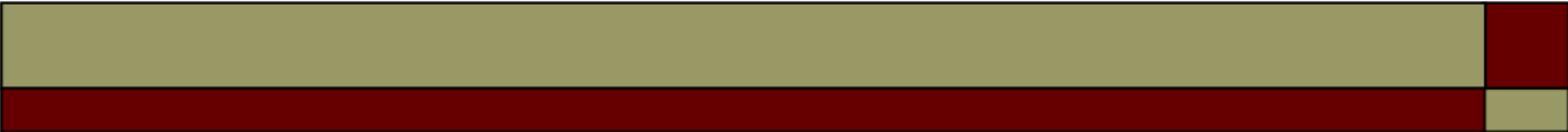
Students at the “ Exceeds the Standard ” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “ Meets the Standard ” level generally know the skills required at the “Approaches” level and are able to:	Students at the “ Approaches the Standard ” level generally know and are able to:
--	---	--

Students at the “Exceeds the Standard” level generally know the skills required at the “Meets” and “Approaches” levels and are able to:	Students at the “Meets the Standard” level generally know the skills required at the “Approaches” level and are able to:	Students at the “Approaches the Standard” level generally know and are able to:
<ul style="list-style-type: none"> • Identify seasons. • Use magnets with a variety of objects. • Identify a characteristic of an animal that helps it to survive. 	<ul style="list-style-type: none"> • Select a resource that could be used in an investigation. • Communicate an observation. • Select technology that improves lives. 	<ul style="list-style-type: none"> • Identify the sources of water. • Identify characteristic of an animal. • Identify science related career using pictures/manipulatives. • Demonstrate safe behavior when conducting an experiment. • Identify parts of a plant or animal. • Demonstrate how components of a system work.
80 ----- 73	72 ----- 45	44 ----- 15

These descriptors do not include all the skills and knowledge as contained in the Alternate Science Standard.

Appendix D

Standard Setting Training Slides



2009 Standard Setting for the Arizona Alternate Assessment (AIMS A)

**Stephen N. Elliott, PhD
Vanderbilt University
Nashville, TN**



Standard Setting Session Goals

1. Review all AIMS A items, current item difficulty (mean percent correct) data, and estimates of potential impact
2. Set Performance Level cut scores for the AIMS A using the Bookmark Procedure
 - Grades 3, 4, 5, 6, 7, 8, & 10 for Reading & Mathematics
 - Grades 4, 8, & 10 for Science
3. Provide feedback to standard setting panel on cut scores & refine AIMS A performance level descriptors.
4. Report to State Board of Education on May 18, 2009.

Key question to be answered: How much is enough?



Session Leader's Brief Bio

- ❑ PhD in Educational Psychology, Arizona State University (1980)
- ❑ Professor of Special Education and Dunn Family Chair of Educational & Psychological Assessment, Vanderbilt University
- ❑ Director, Learning Sciences Institute, Vanderbilt University
- ❑ Principal Investigator for 4 USDE projects concerning inclusive assessment design and practice; consultant on 4 other statewide projects (in AZ, ID, MS, SC) concerning the assessment of students with significant disabilities
- ❑ Author of 100+ articles and chapters on assessment of children with disabilities or at risk for educational difficulties.
- ❑ Led standard settings for Alternate Assessments in HI, ID, MS, WI, & AZ.

AZ Alternate Assessment & Data Management Leaders



ADE Support Team

- Roberta Alley, Deputy Associate Superintendent
- Charles Bruen, Ed.D., Director of Data Analysis
- Danielle Gordon, Data Analysis and Technical Quality Coordinator
- Leila Williams, Ph.D. Alternate Assessment Coordinator
- Melanie Mosiman, Coordinator of AIMS EA
- Marilee Beach, Coordination of AIMS support materials
- Forster Okoli, Data Analyst



Standard Setting Session (3 day) Overview

- ❑ Introductions
- ❑ Workshop Goals & Roles of Participants
- ❑ Background of AIMS A Reading, Math, and Science
- ❑ Standard Setting Rationale & Bookmark Procedure
- ❑ Definitions of AIMS A Performance Levels
- ❑ Introduce the Major Steps in Bookmark Procedure
- ❑ Table Assignments & Decision Making Guidelines
- ❑ Review the AIMS A Items, Data & Scoring Criteria
- ❑ Review Standard Setting Procedures and Discuss Issues
- ❑ Recommend cut scores at each Grade for Reading, Math, & Science
- ❑ Review Results of Standard Setting for Each Content Area



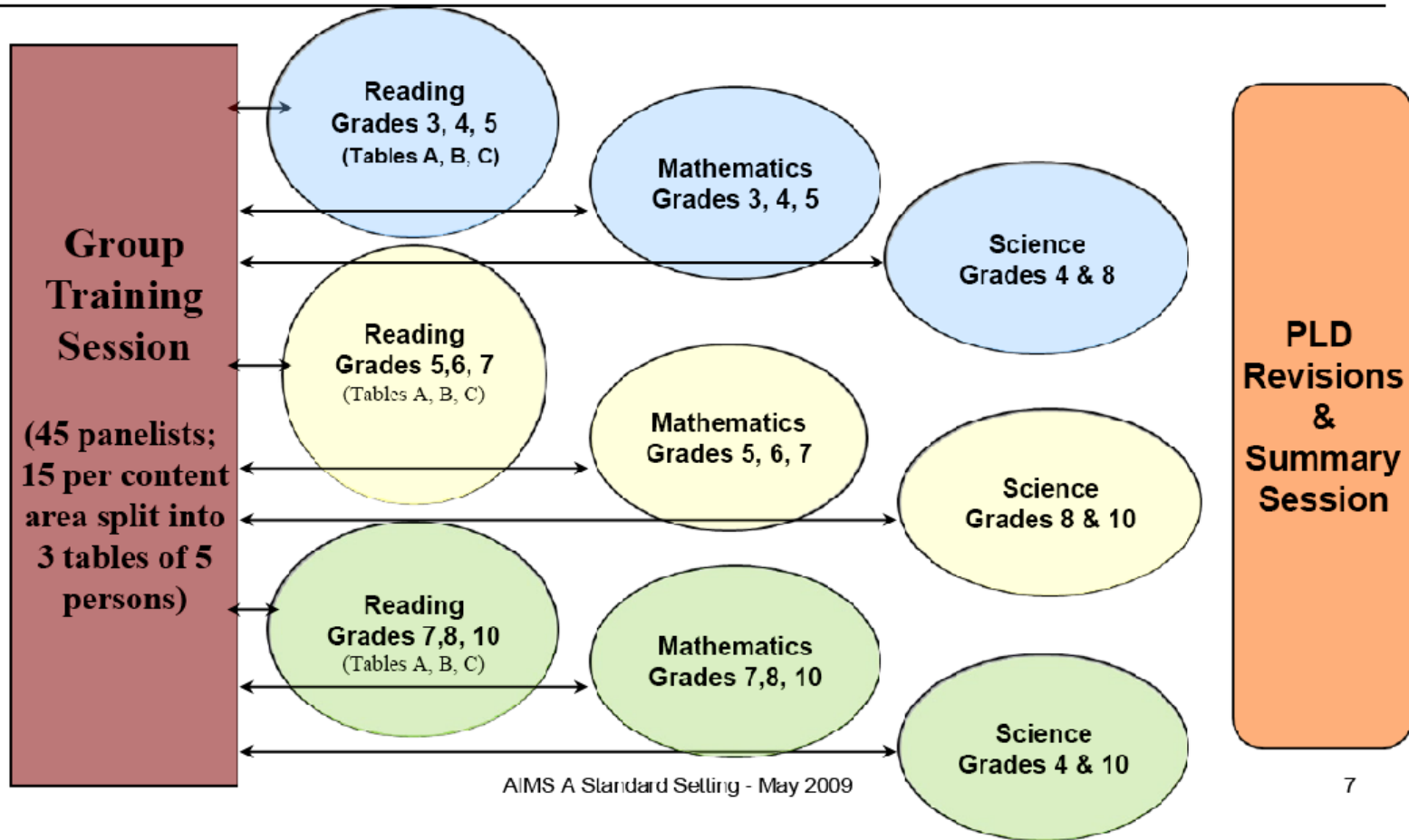
Standard Setting Rationale: Establishing Alternate Achievement Standards

Judgment Based Approach

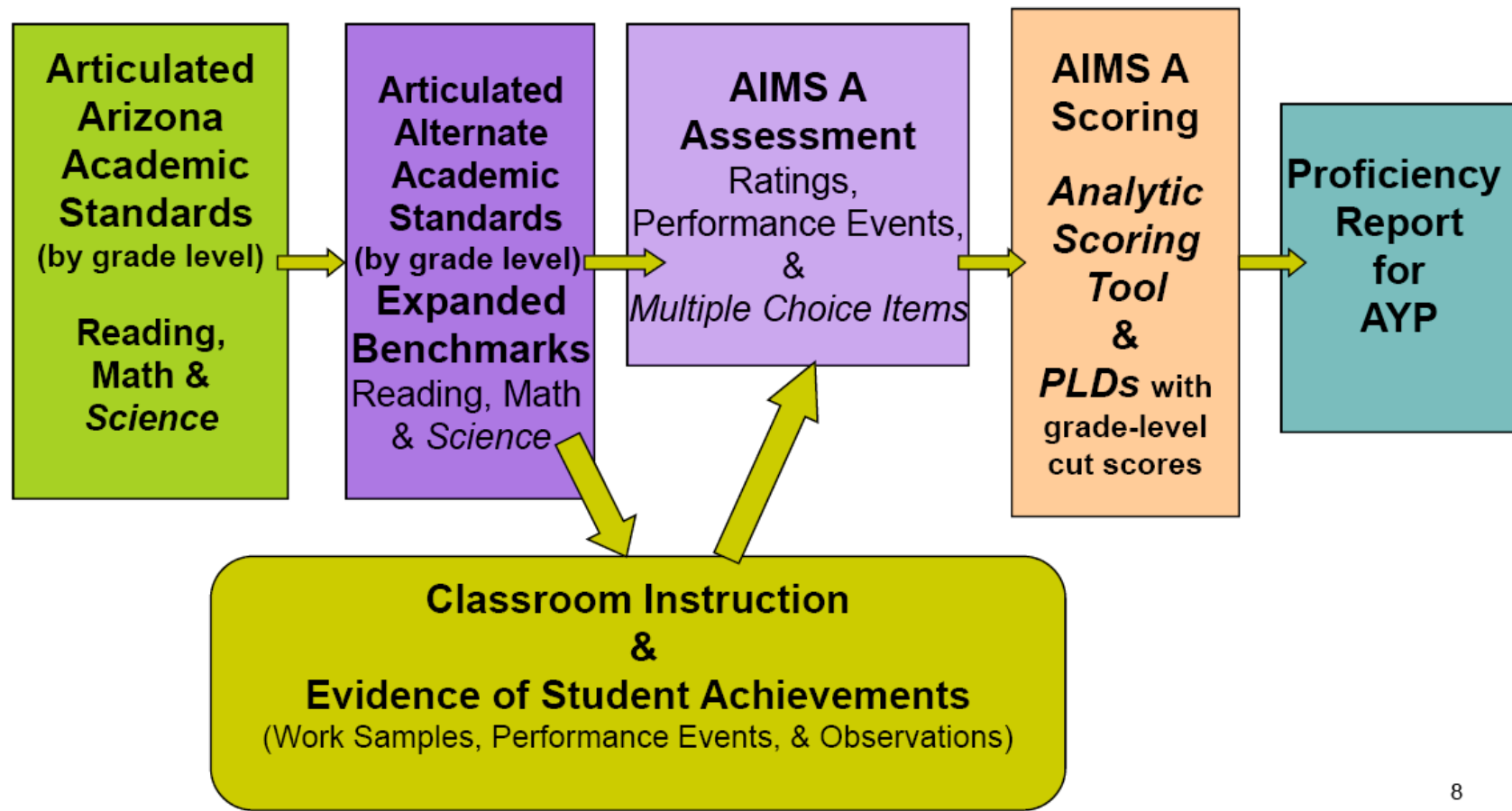
- ❑ Item Mapping Method (Bookmarking Procedure)
- ❑ A group of 45 stakeholders (teachers, administrators, content teachers, etc.) participate in a multi-day process that will result in recommended cut points on the AIMS A for Spring 2009
- ❑ Cut scores are based on what students in each performance level in each content area should know and be able to perform

2009 AIMS A Standard Setting Session:

Groups, Content, & Grades



Review of the AIMS A Components



Content Standards Assessed by AIMS A

- **Reading: 3 Strands (20 items at every grade level)**
 - 1. Reading Process
 - 2. Comprehending Literary Text
 - 3. Comprehending Informational Text




- **Mathematics: 5 Strands (22 items at every grade level)**
 - 1. Number Sense & Operations
 - 2. Data Analysis, Probability, and Discrete Math
 - 3. Patterns, Algebra, & Functions
 - 4. Measurement
 - 5. Structure & Logic

- **Science: 6 Strands (20 items at every grade level)**
 - 1. Inquiry Process
 - 2. History/Nature of Science
 - 3. Personal/Social Perspectives
 - 4. Life Science
 - 5. Physical Science
 - 6. Earth/Space Science

Sample Multiple Choice: 6th Grade Reading

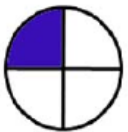
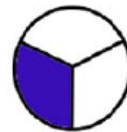
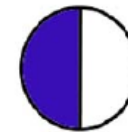
September				
Mon.	Tues.	Wed.	Thur.	Fri.
1	2	3 Picture Day	4	5
8	9	10	11	12
15	16	17	18	19
22 Book Fair	23	24	25	26
29	30			

What is on September 22?

<p>A</p>  <p>Picture Day</p>	<p>B</p>  <p>Book Fair</p>	<p>C</p>  <p>Nothing</p>
<p>Back</p>		<p>Next</p>

Sample Multiple Choice: 6th Grade Math

Which is the largest?

A	B	C
		
$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{2}$
Back		Next

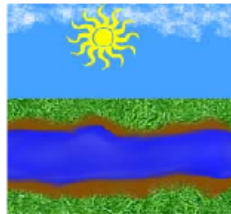
Sample Multiple Choice: 4th Grade Science

Pick the desert.

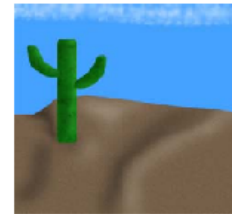
A



B



C



Back

Next

Sample Rater Item

RATER ITEMS AIMS A GRADE 5 Math

STUDENT NAME _____ DATE _____
TEACHER _____

<i>Prompt Objective</i>	<i>Type of Assistance</i>	<i>Score</i>
PRACTICE "Pick 1." Given 10 blocks, student picks 1.	PRACTICE	PRACTICE
1. "What number is larger, 11 or 20?" Student identifies the larger number, 11 or 20, using a number line.		
2. "Pick the pie chart." Student identifies the bar graph from a variety of graphic representations using pictures, symbols, text, manipulatives, or actions.		
3. "What comes next in the pattern?" Student adds to a pattern of 3 or more images/numbers using pictures, symbols, text, manipulatives, or actions.		
4. "Record this data." Student records given data for a probability activity.		
5. "How many do you see?" Student estimates a number of items presented using pictures, symbols, text, manipulatives, or actions.		

Rater Item Scoring Rubric

AIMS A RATER ITEM SCORING RUBRIC			
Level 4	Level 3	Level 2	Level 1
The student correctly performs the task without assistance or with a single repetition of instructions or refocusing through natural cues. Cues may include wait time or pointing.	The student correctly performs the task with general prompts and a single cue. Cues may include physical/verbal cues, auditory cues, objects, tactual cues, visual cues, or sign language.	The student correctly performs the task with specific prompts and up to 2 cues. Cues may include physical/verbal cues, auditory cues, objects, tactual cues, visual cues, or sign language.	The student does not perform the task at Level 2 or provides an incorrect response despite Level 2 support. Student requires extensive assistance and cannot perform the task without full adult support (hand over hand).
<ul style="list-style-type: none"> The student responds or performs task correctly with no assistance. If the student does not respond independently, responds incorrectly, or does not perform the requested task when given wait time, the teacher repeats the instructions and/or refocuses the student's attention. 	<ul style="list-style-type: none"> If the student responds incorrectly or does not perform the task at Level 4 when given wait time, the teacher provides general prompts and includes a single cue for the expected response from the student: <ul style="list-style-type: none"> Elaborate or provide additional clarifying information on directions or expected response. Demonstrate a similar response; "This is a picture of a dog. Show me the picture of a cat." 	<ul style="list-style-type: none"> If the student responds incorrectly or does not perform the task at Level 3 when given wait time, the teacher provides specific prompts and cues to direct the student's correct response: <ul style="list-style-type: none"> Model exact response; "This is a picture of a dog. What is this?" (Show a picture/object representing a dog.) Physically guide the student to the correct response. 	
The student then responds correctly.	The student then responds correctly.	The student responds correctly <i>after</i> being given the correct answer.	The student does not respond or does not respond correctly. Teacher demonstrates response and moves on to the next prompt.
Record a score of <u>4</u>	Record a score of <u>3</u>	Record a score of <u>2</u>	Record a score of <u>1</u>
If the student still does not respond correctly— move to Level 3 supports.	If the student still does not respond correctly— move to Level 2 supports.	If the student still does not respond correctly— move to Level 1 supports.	

4 pts.

2 pts.

1 pt.

0 pts.

Performance Tasks Scoring

PERFORMANCE TASKS AIMS A GRADE 8 Reading			
STUDENT NAME _____		DATE _____	
TEACHER _____			
Prompt Objective	0	1	2
PRACTICE – NO SCORE Show story “Anna’s First Day of School.” “Point to the A in Anna.”	PRACTICE – NO SCORE The student is unable to perform the task.	PRACTICE – NO SCORE The student is able to point to A after the teacher models the correct response.	PRACTICE – NO SCORE The student points to A without assistance or with a single repetition of instruction or redirection.
1.1 Read story “Anna’s First Day of School.” “Who is this story about?”	The student is unable to perform the task.	The student is able to indicate Anna after the teacher models the correct response.	The student indicates Anna without assistance or with a single repetition of instruction or redirection.
1.2 Reread story “Anna’s First Day of School” if necessary and show the picture cards of Anna at home and Anna in school. “Where is Anna going?”	The student is unable to perform the task.	The student is able to indicate school after the teacher models the correct response.	The student indicates school without assistance or with a single repetition of instruction or redirection.
1.3 Reread story “Anna’s First Day of School” if necessary and show the map and the dictionary. “What does Anna use to find English class?”	The student is unable to perform the task.	The student is able to indicate a map after the teacher models the correct response.	The student indicates a map without assistance or with a single repetition of instruction or redirection.
1.4 Reread story “Anna’s First Day of School” if necessary and show the map. “What class does Anna have after English?”	The student is unable to perform the task.	The student is able to indicate on the schedule after the teacher models the correct response.	The student indicates on the schedule without assistance or with a single repetition of instruction or redirection.
1.5 Reread story “Anna’s First Day of School” if necessary and show the word cards big and small. “How does Anna feel about school?”	The student is unable to perform the task.	The student is able to indicate emotion after the teacher models the correct response.	The student indicates emotion without assistance or with a single repetition of instruction or redirection.

0 pts.

2 pts.

4 pts.

15

Item Scoring Summary

- ❑ Each multiple-choice item is scored 0 or 4
- ❑ Each performance item is scored 0, 2, or 4
- ❑ Each rating item is scored 0, 1, 2, or 4

Thus, regardless of the type of item or content area, a score of 0 mean “cannot do” and a score of 4 “can do without any assistance.” The result is...

- ❑ Reading total scores ranging from 0 to 80
- ❑ Math total scores ranging from 0 to 88
- ❑ Science total scores ranging from 0 to 80

Mean Score Data Across Grades

AIMS A Total Mean Scores

	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	# Items	# Items	# Items	# Items	# Items	# Items	# Items
	Mean %	Mean %	Mean %	Mean %	Mean %	Mean %	Mean %
	Total Score	Total Score	Total Score	Total Score	Total Score	Total Score	Total Score
Reading	.6166 (.13) 20 61.66% 49.33	.6604 (.11) 20 66.04% 52.83	.6350 (.10) 20 63.50% 50.80	.6194 (.10) 20 61.94% 49.55	.6461 (.10) 20 64.61% 51.69	.6376 (.11) 20 63.76% 51.01	.6901 (.11) 20 69.01% 55.21
Math	.6274 (.15) 22 62.74% 55.21	.6211 (.14) 22 62.11% 54.66	.5623 (.16) 22 56.23% 49.48	.5822 (.12) 22 58.22% 51.23	.5989 (.11) 22 59.89% 52.70	.5871 (.12) 22 58.71% 51.66	.5735 (.10) 22 57.35% 50.47
Science		.6816 (.10) 20 68.16% 59.98				.7386 (.08) 20 73.86% 65.00	.6875 (.13) 20 68.75% 60.5

Transforming AIMS A Scores

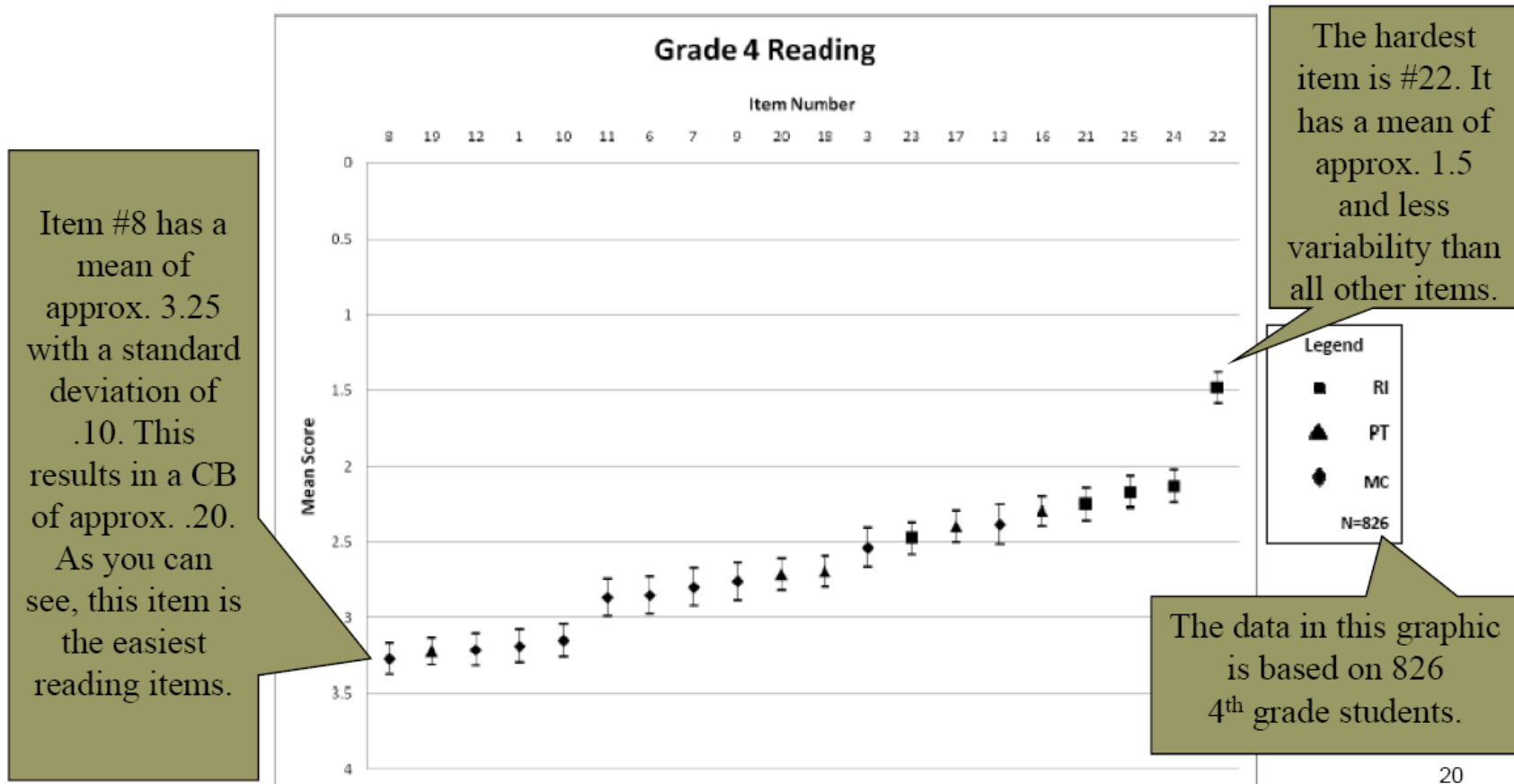
- To facilitate comparisons of total scores on AIMS A where different tests or subscales that have different numbers of items (e.g., 20 Reading items, 22 Math items), we use percentage correct scores. These scores are then transformed mathematically to an individual Reading, Math, or Science total score based on the total possible number of points earned. The final transformation of scores to a performance level for AYP reporting is done by a standard setting panel and is based on their consensus professional judgment.
- The table below provides examples of AIMS A Reading and Math score transformations. Given the Science test has 22 items, the transformations for it are the same as the Math Test.

Reading % Correct Score	Reading Total Score	Reading Performance Level		Math % Correct Score	Math Total Score	Math Performance Level
0	0	?		0	0	?
.10	8	?		.10	8.8	?
.20	16	?		.20	17.6	?
.30	24	?		.30	26.4	?
.40	32	?		.40	35.2	?
.50	40	?		.50	44	?
.60	48	?		.60	52.8	?
.70	56	?		.70	61.6	?
.80	64	?		.80	70.4	?
.90	72	?		.90	79.2	?
1.0	80	?		1.0	88	?

Score Variability & Confidence Bands

- ❑ The **mean score** is the most representative score for a group, however, when scores **vary considerably** one must be cautious about using the mean to make important decisions.
- ❑ A **confidence band** is used in statistical analysis to represent the uncertainty in an estimate of a curve or function based on limited or noisy data. Confidence bands are often used as part of the graphical presentation of results in a statistical analysis. Confidence bands represent the uncertainty in an estimate of a single numerical value.

Item Score Distribution & Confidence Bands



20



Interpreting Scores: 4 Level Performance Descriptors

Students earn a Total Score for each content area. The total scores are used to guide the determination of which of the four Performance Levels best describe the students' achievement.

Falls Far Below → Approaches → Meets → Exceeds
the Standard the Standard the Standard the Standard

The translation of a Total Score to a Performance Level is a **professional judgment!**

Excellent judgments are based on a clear understanding of what is expected of the learner, what the assessment measures, and how the group actually performed on the assessment.



Example AIMS A PLD: Grade 4 Reading

Exceeds the Standard – Students with significant cognitive disabilities who score in this level can typically function independently or with minimal cueing to demonstrate mastery of subject matter as reflected by the alternate reading standard.

Meets the Standard – Students with significant cognitive disabilities who score in this level can typically function with moderate support through the use of visual representations, manipulatives, and objects to demonstrate a solid understanding of subject matter as reflected by the alternate reading standard.

Approaches the Standard – Students with significant cognitive disabilities who score in this level can typically function with extensive support through the use of visual representations, manipulatives, and objects to demonstrate partial understanding of subject matter as reflected by the alternate reading standard.

Falls Far Below the Standard – Students with significant cognitive disabilities who score in this level may have significant gaps and limited knowledge and skills that are necessary to satisfactorily meet the state's alternate reading standard. Students will typically require a considerable amount of additional instruction and intervention in order to achieve a satisfactory level of understanding.

Reading Gr 4 PLD with Specific Skills for Exceeds, Meets, & Approaches the Standard

Students at the "Exceeds the Standard" level generally know the skills required at the "Meets" and "Approaches" levels and are able to:	Students at the "Meets the Standard" level generally know the skills required at the "Approaches" level and are able to:	Students at the "Approaches the Standard" level generally know and are able to:	Students at the "Fall Far Below the Standard" level generally know and are able to:
<ul style="list-style-type: none"> Follow a set of multi-step directions in order. Identify specific facts in text. Select a synonym, antonym and homonym. Make a prediction. 	<ul style="list-style-type: none"> Determine meaning of a simple or environmental word. Identify the conflict. 	<ul style="list-style-type: none"> Find a solution to a problem. Identify one aspect of the setting. 	<ul style="list-style-type: none"> Pick one trait of a character.

These descriptors do not include all the skills and knowledge as contained in the Reading Standard.

Focus on Meets the Standard (Proficient)

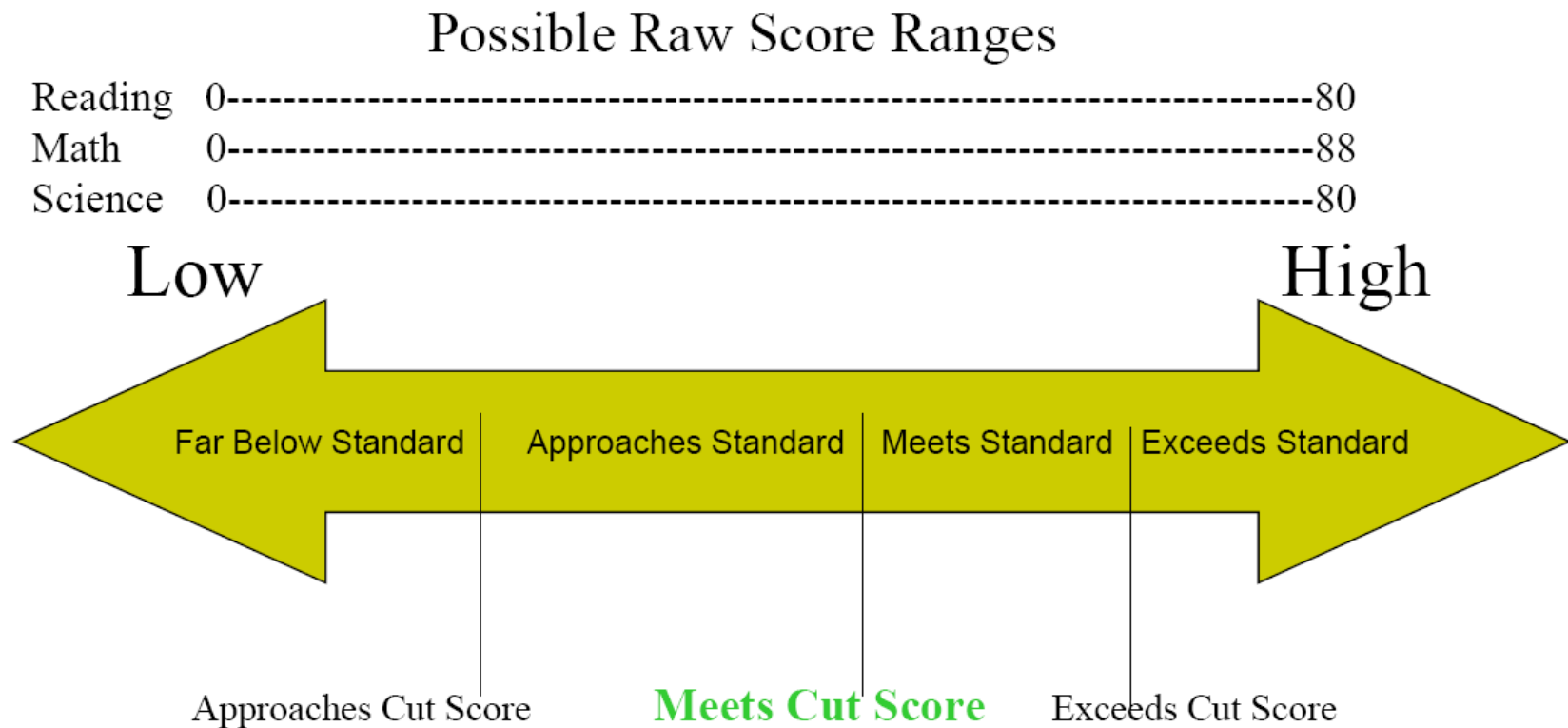
4th grade

Students at the “Meets the Standard” level generally know the skills required at the “Approaches” level and are able to:

- Determine meaning of a simple or environmental word.
- Identify the context.

- **Meets the Standard** – Students with significant cognitive disabilities who score in this level can typically function with moderate support through the use of visual representations, manipulatives, and objects to demonstrate a solid understanding of subject matter as reflected by the alternate reading standard.

Four Performance Levels: Three Cuts Determining Performance Standards





The Marginally Proficient Student (At the Threshold of Meets Standard)

- ❑ Our task is to describe, in as much detail possible, how the marginally proficient student taking AIMS A would perform on each test item.
- ❑ Discuss with your group what “Marginally Proficient” means in each content area. Remember to use the PLDs to help you refine a definition.

Bookmarking Procedure

- ❑ Participants receive a Booklet (Item Map) with a set of test items ordered from easiest to most difficult based on item statistics (mean % correct; the higher the percent correct, the easier the item).
- ❑ Participants study the items and determine the cut score by placing a bookmark (physical sheet or mark) at the location in the booklet where they think a student who is functioning at the Meets Standard level should likely perform.
- ❑ Items preceding the bookmark represent items that “proficient” students should likely perform.

The Marginally Proficient Student (At the Threshold of Meets Standard)

- Panelists' task is to describe, in as much detail possible, how the marginally proficient (Meets Standard) student taking AIMS A would perform on each test item.
- Think of Marginally Proficient as a student receiving special education services who is **just demonstrating** the knowledge and skills that s/he would be expected, based on the definition of Meets Standard, to show for each **grade**.

Sample OIB MAP for Grade 4 Reading

Grade 4 Reading Item Map

Item #8 is a multiple-choice item and is the easiest one on the gr. 4 reading assessment with a mean score of 3.27 and a p value of .8181.

**Examine this item.
What does it measure?**

Which item is the 4th easiest item on the gr. 4 Reading Test? Examine this item. What makes it a little harder than #8?

OIB Page Number	AZID Number	Test Item Number	Mean Score	P-Value	Item Type	Score Key	Strand/ Concept/ PO	Why is this item more difficult than the last item(s)?
1	62094010	8	3.27	0.8181	MC	B	S2C1P02	
2	62094104	19	3.22	0.8060	PT		S3C2P01	
3	62094020	12	3.21	0.8036	MC	B	S2C1P07	
4	62094030	1	3.19	0.7975	MC	C	S2C1P05	

AIMS A Standard Setting - May 2009

29

Continuation of Sample Item Map

OIB Page Number	AZID Number	Test Item Number	Mean Score	P-Value	Item Type	Score Key	Strand/ Concept/ PO	Why is this item more difficult than the last item(s)?
15	62094002	13	2.38	0.5951	MC	C	S2C1PD5	
16	62094101	16	2.29	0.5733	PT		S3C2PD1	
17	62094201	21	2.24	0.5621	RI		S1C6PD1	
18	62094205	25	2.16	0.5418	RI		S3C2PD2	
19	62094204	24	2.12	0.5312	RI		S3C2PD2	
20	62094202	22	1.48	0.3709	RI		S1C4PD6	

The hardest grade 4 Reading Item, #22, is a Rating item and has a mean score of 1.48 and a p value of .3709.

Examine this item and discuss why you think it is the most difficult.

Cumulative Score Distributions: Impact Data

- Before finalizing cut scores, panelist are encouraged to consider the likely effect or impact of them on students.
- By looking at the cumulative distribution of total scores – from 0 to 80 – one can determine the percentage of students who would likely be above and below each cut point.

Grade 4 Reading

Raw Score	Frequency	Percent	Cumulative Percent
0	80	8.91%	8.91%
1	3	0.33%	9.24%
2	2	0.22%	9.47%
3	1	0.11%	9.58%
4	6	0.67%	10.24%
5	2	0.22%	10.47%
6	2	0.22%	10.69%
7	2	0.22%	10.91%
8	3	0.33%	11.25%
9	0	0.00%	11.25%
10	2	0.22%	11.47%
72	35	3.90%	85.52%
73	14	1.56%	87.08%
74	25	2.78%	89.87%
75	14	1.56%	91.43%
76	37	4.12%	95.55%
77	5	0.56%	96.10%
78	17	1.89%	98.00%
79	0	0.00%	98.00%
80	18	2.00%	100.00%

Additional Descriptive Statistics

Grade 4 Reading

- Along with the cumulative frequency distributions and percentage of students with each score, you also have common descriptive statistics for each grade level test.

Statistics	
N	898
Mean	48.53
Median	55
Mode	0
Std. Deviation	23.94
Percentile	
25	33
50	55
75	68

Activity: Connect “Meets the Standard” PLD for Reading to the Item Data

- ❑ Step 1. Re-read the definition of Meets the Standard for Reading at one of your grade level. Note the defining knowledge & skills listed.
- ❑ Step 2. Examine the Reading items at one of your grade levels. Try to find one or more items that represent the defining knowledge & skills for Meets the Standard.
- ❑ Step 3. What are the Mean Scores for the items you located? What makes these items more difficult than others located above it in the Item Map?
- ❑ Step 4. Should students who Meet the Standard be expected to do well on these items? What percent of the students Meeting the Standard would you find acceptable?

Major Steps in Bookmarking Procedure For Grade Performance Level Cut Scores

- ❑ **Round 1:** Individual & Performance cut score
- ❑ Post-Round #1 Discussion
- ❑ **Round 2:** Team Consensus for Performance cut score
- ❑ Post-Round #2 Discussion with feedback on impact
- ❑ **Round 3:** Teams Final Decisions
- ❑ Post Round #3: Feedback on Median cut score & likely impact on student distributions

Informed Judgments: Key Steps & Resources

Standard setting is predicated on informed judgments by knowledgeable panelists.



Decision Making Guidelines

- ☐ Professional Judgments
- ☐ Tolerance for Different Judgments
- ☐ Consensus Building Process
- ☐ Decision-Making Teams or Tables should be Representative
- ☐ Decision-Making Teams need a Leader
- ☐ No Right or Wrong Answers
- ☐ The Resulting Performance Standards are Advisory

Round 1 Form for Meets the Standard Decision

Group # ____ Grade: ____ Content Area: _____ Date: _____

<u>Meets</u>	Round 1: Individual Recommended Cut Point For Meets	Round 2: Consensus Recommended Cut Point For Meets	Round 3: <u>Final</u> Consensus Recommended Cut Point For Meets
Member			
A			
B			
C			
D			
E			
F			
Group	Median		

Each Member of the Group Decides on a Cut Score Independently and the Group Leader Lists it down

Group Leader Finds the Median by Finding the Middle value or Averaging the Two Middle Numbers in the Group

Calculating the Median Score

- The **median** is described as the number separating the higher half of a sample or a population from the lower half.
- The **median** of a finite list of numbers can be found by arranging all the observations from lowest value to highest value and picking the middle one. If there is an even number of observations, the median is not unique, so one often takes the mean of the two middle values. At most half the population have values less than the **median** and at most half have values greater than the median. If both groups contain less than half the population, then some of the population is exactly equal to the median. For example, if $a < b < c$, then the median of the list $\{a, b, c\}$ is b , and if $a < b < c < d$, then the median of the list $\{a, b, c, d\}$ is the mean of b and c , i.e. it is $(b + c)/2$.
- The median can be used when a distribution is skewed, when end values are not known, or when outliers likely represent measurement errors.

Round 2 Form for Meets the Standard Decision

Group # ____ Grade: ____ Content Area: _____ Date: _____

<u>Meets</u>	Round 1: Individual Recommended Cut Point For Meets	Round 2: Consensus Recommended Cut Point For Meets	Round 3: <u>Final</u> Consensus Recommended Cut Point For Meets
Member			
A			
B			
C			
D			
E			
F			
Group	Median	One Score	One Score

**Group Consensus
After Discussion and
Sharing of Individual
Scores and Median**

Round 3 Form for “Meets the Standard” Decision

Group # ____ Grade: ____ Content Area: _____ Date: _____

<u>Meets</u>	Round 1: Individual Recommended Cut Score For Meets Standard	Round 2: Consensus Recommended Cut Score For Meets Standard	Round 3: <u>Final</u> Consensus Recommended Cut Score For Meets Standard
Member			
A			
B			
C			
D			
E			
Group	Median	One Score	One Score

**One Final
Group
Consensus
Score After
Looking At
Impact Data &
Discussion**

Group Leader: _____
Signature

Procedure for Approaches & Exceeds Standards Cut Score Decisions

- Only Round 2 with Impact data for these levels.
- We will find the median of the scores from all groups to get the Approaches & Exceeds Cut score.

Approaches	Round 2: Consensus Recommended Cut Point For Approaches
Member	
A	
B	
C	
D	
E	
Group	Median

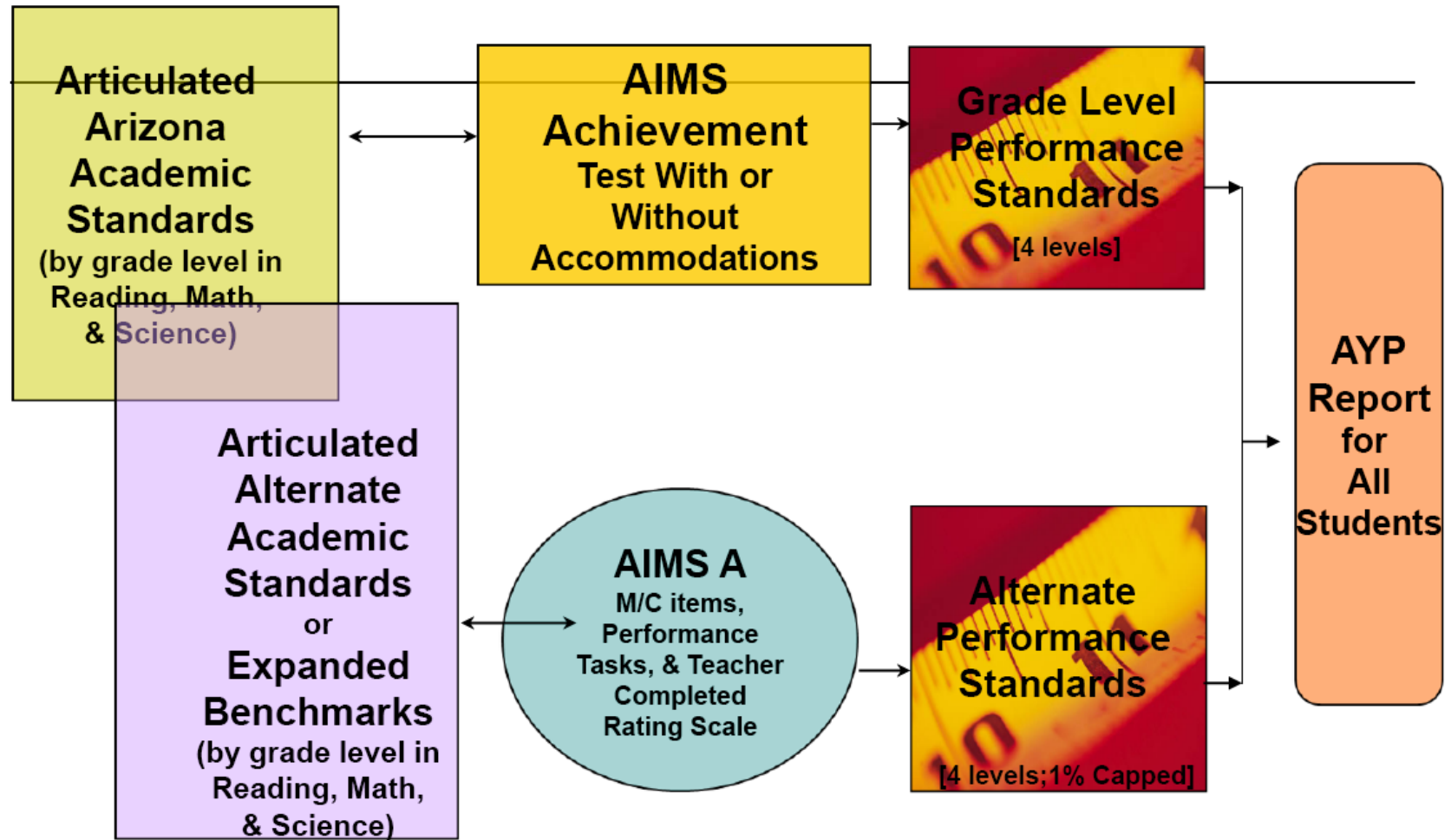
Exceeds	Round 2: Consensus Recommended Cut Point For Exceeds
Member	
A	
B	
C	
D	
E	
Group	Median



Review Standard Setting Procedures, Discuss Any Concerns, & Refine PLDs

- ❑ What student “Should” know versus what they “Do” know
- ❑ What knowledge, skills and abilities separate:
 - Falls Far Below Standards from Approaches Standards
 - **Approaches Standards from Meets Standards**
 - Meets Standards from Exceeds Standards
- ❑ Think about students at the threshold of each level
- ❑ All AIMS A Students – **not just your students**
- ❑ Refine/update PLDs to include specific examples of skills;
keep notes on issues or concerns to facilitate revision work.

Outcome: An Integrated Arizona Assessment System



AIMS A Standard Setting - May 2009

43



**Thank you for the opportunity to work with you to
determine AIMS A Performance Standards!**

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Appendix E

Sample Item Map

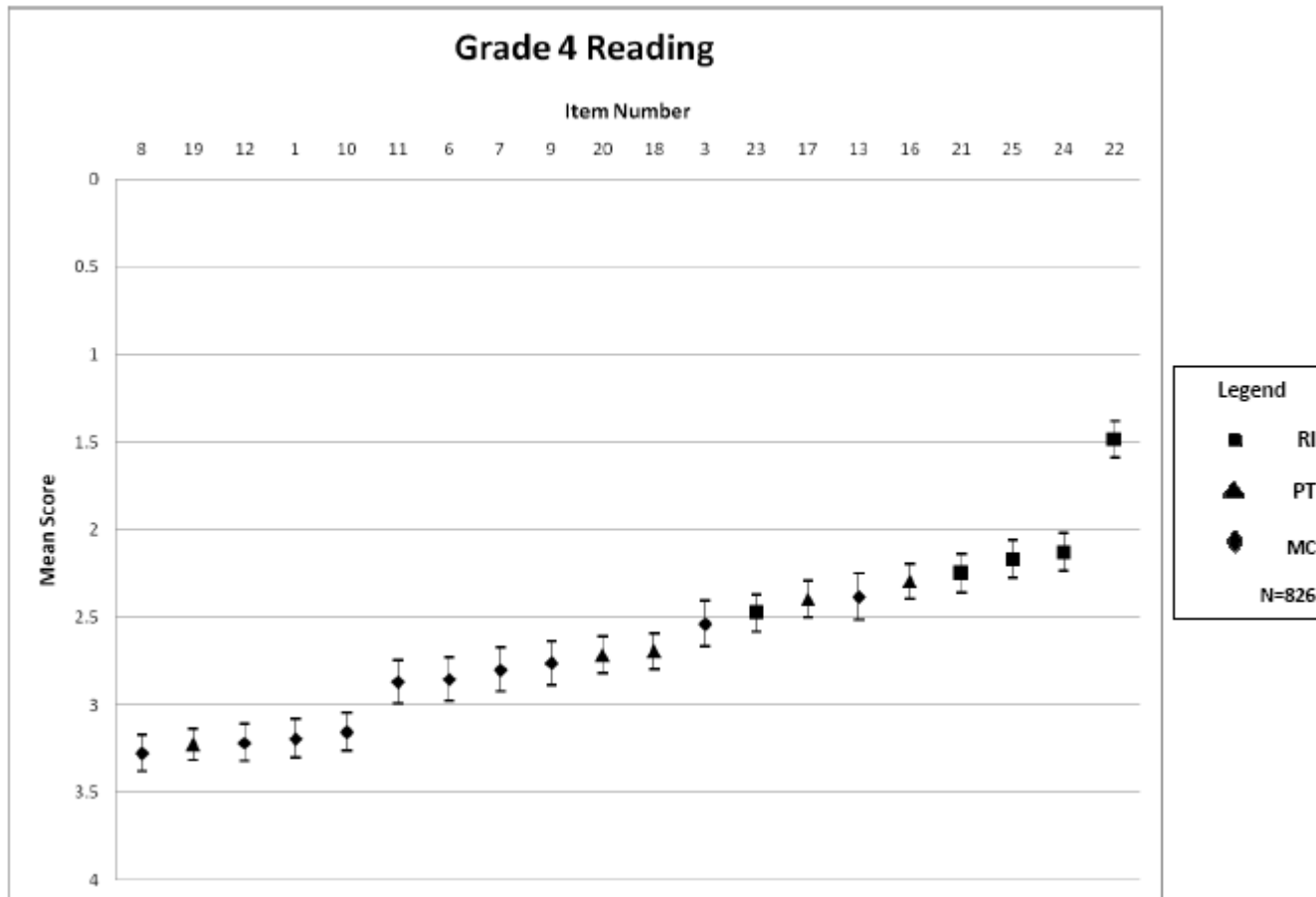
AIMS A Bookmark Standard Setting May 2009

Grade 4 Reading Item Map

OIB Page Number	AZID Number	Test Item Number	Mean Score	P-Value	Item Type	Score Key	Strand/ Concept/ PO	Why is this item more difficult than the last item(s)?
1	62094010	8	3.27	0.8181	MC	B	S2C1PO2	
2	62094104	19	3.22	0.8060	PT		S3C2PO1	
3	62094020	12	3.21	0.8036	MC	B	S2C1PO7	
4	62094030	1	3.19	0.7975	MC	C	S2C1PO5	
5	62094004	10	3.15	0.7878	MC	A	S2C1PO7	
6	62094009	11	2.86	0.7163	MC	B	S2C1PO2	
7	62094023	6	2.85	0.7127	MC	C	S2C1PO7	
8	62094011	7	2.79	0.6993	MC	A	S2C1PO2	
9	62094003	9	2.75	0.6896	MC	C	S2C1PO2	
10	62094105	20	2.71	0.6781	PT		S3C1PO7	
11	62094103	18	2.69	0.6733	PT		S3C2PO1	
12	62094032	3	2.53	0.6339	MC	A	S1C4PO5	
13	62094203	23	2.47	0.6184	RI		S3C2PO1	
14	62094102	17	2.39	0.5981	PT		S3C2PO1	
15	62094002	13	2.38	0.5951	MC	C	S2C1PO5	
16	62094101	16	2.29	0.5733	PT		S3C2PO1	
17	62094201	21	2.24	0.5621	RI		S1C6PO1	
18	62094205	25	2.16	0.5418	RI		S3C2PO2	
19	62094204	24	2.12	0.5312	RI		S3C2PO2	
20	62094202	22	1.48	0.3709	RI		S1C4PO6	

Appendix F

Sample Item Distribution Graph



Appendix G

Sample Cumulative Score Distribution for Impact Analysis

Grade 4 Reading

Statistics	
N	898
Mean	48.53
Median	55
Mode	0
Std. Deviation	23.94
Percentile	
25	33
50	55
75	68

Raw Score	Frequency	Percent	Cumulative Percent
0	80	9%	9%
1	3	0%	9%
2	2	0%	10%
3	1	0%	10%
4	6	1%	10%
5	2	0%	11%
6	2	0%	11%
7	2	0%	11%
8	3	0%	11%
9	0	0%	11%
10	2	0%	12%
11	4	0%	12%
12	3	0%	12%
13	7	1%	13%
14	2	0%	13%
15	2	0%	14%
16	4	0%	14%
17	2	0%	14%
18	5	1%	15%
19	4	0%	15%
20	8	1%	16%
21	3	0%	16%
22	0	0%	16%
23	5	1%	17%
24	7	1%	18%
25	9	1%	19%
26	6	1%	19%
27	6	1%	20%
28	7	1%	21%
29	5	1%	21%
30	9	1%	22%
31	7	1%	23%
32	14	2%	25%
33	10	1%	26%
34	8	1%	27%
35	8	1%	28%
36	12	1%	29%
37	10	1%	30%
38	11	1%	31%

39	6	1%	32%
40	6	1%	33%
41	3	0%	33%
42	8	1%	34%
43	9	1%	35%
44	12	1%	36%
45	5	1%	37%
46	14	2%	38%
47	12	1%	40%
48	18	2%	42%
49	9	1%	43%
50	14	2%	44%
51	13	1%	46%
52	11	1%	47%
53	16	2%	49%
54	10	1%	50%
55	10	1%	51%
56	12	1%	52%
57	17	2%	54%
58	6	1%	55%
59	13	1%	56%
60	24	3%	59%
61	16	2%	61%
62	16	2%	63%
63	15	2%	64%
64	30	3%	68%
65	13	1%	69%
66	19	2%	71%
67	23	3%	74%
68	26	3%	77%
69	17	2%	78%
70	15	2%	80%
71	17	2%	82%
72	35	4%	86%
73	14	2%	88%
74	25	3%	90%
75	14	2%	92%
76	37	4%	96%
77	5	1%	97%
78	17	2%	98%
79	0	0%	98%
80	18	2%	100%

APPENDIX H

Example Item Specification Card

Item Card
Arizona's Instrument to Measure Standards - Alternate
(AIMS-A)
Reading

Item Number:	Grade Level: 4
Item Writer:	Depth of Knowledge Level (DOK): L2 S4
Strand: 2 (Comprehending Literary Text)	
Concept: 1 (Elements of Literature)	
PO: 2 (Identify a solution to a problem in a story)	

Three giraffes wanted to live together. The house was too small. What should they do?

Graphic Suggestion: There should be a graphic showing 3 giraffes and a house

- A go to the movies
- B build a bigger house
- C paint the house

Correct Answer:

B

Vocabulary levels:

K-3