



To: State Board of Education
From: Department of Education
Date: August 5, 2015
RE: Preliminary Approval of New Cut Scores for Selected Licensure Tests

On June 23-24, 2015, the DOE and Pearson facilitated new score setting studies for 10 CORE content tests that had relatively low pass rates: Physics, Life Science, Chemistry, Historical Perspectives, CTE Agriculture, CTE Family and Consumer Science and the 4 Early Childhood Generalist subtests. These score setting studies were conducted by panels of Indiana teachers and teacher educators in the respective content areas. The data from these studies was analyzed and accompanies this memo. See attached charts for recommended scores and pass rates.

The State Board of Education rule governing the process for adopting new cut scores is found at 511 IAC 15-7-2. Subsection (b) applies to the action requested by the IDOE:

511 IAC 15-7-2 Minimum acceptable scores

Authority: IC 20-28-2-6; IC 20-28-5-12

Affected: IC 4-22-7-7; IC 20-28-5-3

Sec. 2. (a) The board shall approve assessments and determine minimum acceptable scores using psychometrically appropriate techniques for cut score setting for assessments required for an applicant to demonstrate proficiency in:

- (1) a content area as described in the following:
 - (A) 511 IAC 15-6-1 through 511 IAC 15-6-23;
 - (B) 511 IAC 15-6-25 through 511 IAC 15-6-32; and
 - (C) 511 IAC 15-6-34;
- (2) basic reading, writing, and mathematics; and
- (3) pedagogy.

(b) Prior to taking final action to approve assessments and determine minimum acceptable scores, the board shall do the following:

(1) Provide public notice of the proposed action at least thirty (30) days prior to taking final action. The public notice shall include the following:

- (A) A summary of each assessment.
 - (B) The proposed minimum acceptable scores for each assessment.
 - (C) A summary of the cut score setting methodology.
 - (D) The time period in which the department will accept public comments.
- (2) Accept and consider public comment.

(c) In taking final action to approve the assessments and minimum acceptable score, the board shall establish the effective date of the approved assessments and minimum acceptable scores that shall be not sooner than ninety (90) days after the date of the final action.

(d) An applicant who obtains at least the minimum acceptable score on an assessment required under section 1 of this rule during the time the applicant is enrolled in an approved program may use that score even if a different score or a different assessment is required at the time of application for the license. (*Indiana State Board of Education; 511 IAC 15-7-2; filed Nov 18, 2014, 3:51 p.m.: 20141217-IR-511130399FRA*)*

DOE Recommendation: The DOE recommends preliminary approval of the panel-recommended cut scores for 5 CORE tests (Chart I attached):

Early Childhood Generalist subtest 1: Reading and English Language Arts
Early Childhood Generalist subtest 2: Mathematics
Early Childhood Generalist subtest 3: Science, Health and PE
Early Childhood Generalist subtest 4: Social Studies and Fine Arts
Science—Life Science

The preliminarily approved cut scores will be posted for public comment for 30 days with a summary of each assessment and a summary of the score setting methodology. All public comments received will be shared with the board for consideration prior to final approval of the cut scores.

Materials included: The following charts have been prepared to display pertinent data from the score setting process to inform the discussion on adjusting cut scores:

- A. **Chart I** --Indiana CORE Assessments for Educator Licensure Passing Score Comparison from August 2013 and June 2015 (4 Early Childhood Generalists subtests and Life Science)
- B. **Chart II**-- Indiana CORE Assessments for Educator Licensure Passing Score Comparison from August 2013 and June 2015 (CTE Ag, CTE Family and Consumer Science, Chemistry, Physics and Historical Perspectives)
- C. June 2015 Passing Score Review Report (summary of the score setting process)
- D. Background of Licensure Test Program and Implementation

Background of Licensure Test Program and Implementation

Proficiency tests for teacher candidates have been required by statute and rule since the mid-1980s (IC 20-28-5-12; 511 IAC 15-7) in the areas of basic skills (reading, writing and math proficiency required for preparation program entry), content and pedagogy. Indiana's vendor since the inception of the testing program was Educational Testing Service (ETS); the ETS test products (NTE, Praxis I and Praxis II) were nationally normed and were not based on or aligned to Indiana standards. In 2011, the Department of Education and the Indiana Department of Administration jointly issued an RFP seeking vendors to develop rigorous licensure tests that were based on Indiana's Educator Standards, which were adopted by the Professional Standards Board in 2010. These standards, developed with assistance from Indiana classroom teachers and teacher educators, can be found here: <http://www.doe.in.gov/licensing/repa-teacher-standards>. Pearson ES was the vendor selected to develop the licensure test program based on these standards; IDOE transitioned to the Pearson CORE tests in 2014.

The Rules for Educator Preparation and Accountability (REPA) that became effective in May 2010 provided a 3-year timeframe for teacher preparation institutions to align their programs to the Educator Standards; that work continues. The DOE, through webinars, group training, and newsletters, continues to emphasize to Deans and Directors of preparation programs how critical it is to their students' success to be taught, and to master, the educator standards during their preparation programs. This fall, DOE and Pearson will conduct regional meetings with teacher preparation program officials to continue the emphasis on standards alignment and to provide updates and training on test data analysis tools. The DOE and all the teacher preparation institutions have access to an online tool called Results Analyzer that can be used by teacher preparation programs to analyze how their students are performing on the CORE tests on each specific standard. This detailed information can help inform the institutions' program improvement for Indiana's prospective teachers.

The development of the majority of the CORE tests proceeded during 2012 and 2013. On August 7, 2013, the State Board of Education voted final approval for 61 CORE content and pedagogy exams and their panel-recommended passing scores. At that time the State Board requested to review operational test data after tests had been in place for one year, and annually thereafter. The CORE assessments became effective on February 10, 2014; between that date and May 31, 2014, a transition period was in place during which time either Praxis II or CORE assessments were accepted. As of June 1, 2014, CORE tests were required. However, Praxis II tests passed (prior to the transition) while a candidate was completing a preparation program are honored regardless of the candidate's application date.

Since February 2014, the DOE and its licensure test vendor, Pearson ES, have held weekly program management calls and have been proactive in reviewing data and taking appropriate steps to ensure fair, valid and reliable assessments and to provide useful data to the board. In early September 2014, the DOE and Pearson began discussing operational data for selected CORE assessments and taking appropriate steps to address candidate performance: for instance, extending the length of the testing time beginning in December 2014 for three content tests (Mathematics, Middle School Math and Physics) due to performance data that suggested candidates were running out of time. As of December 15, 2014, the testing time for those three tests was extended by 30 minutes.

Based on DOE/vendor concerns over low pass rate data, as well as concerns expressed from the field, the DOE and Pearson conducted new score setting studies in December 2014 for 10 CORE content area tests: the four Elementary Education Generalist subtests, Mathematics, Middle School Mathematics, Middle School Science, Middle School English Language Arts, English Learners and Science-Physical

Science. The panels of educators conducting these reviews were Indiana classroom teachers in the content areas and teacher educators. The data collected in these studies led to new cut scores being recommended to and adopted by the State Board of Education in March 2015. The new scores were effective for tests taken on or after June 10, 2015 and should, over time, positively impact statewide pass rates.

On June 23-24, 2015, the DOE and Pearson facilitated new score setting studies for 10 additional CORE content tests that had relatively low pass rates: Physics, Life Science, Chemistry, Historical Perspectives, CTE Agriculture, CTE Family and Consumer Science and the 4 Early Childhood Generalist subtests. These score setting studies were conducted by panels of Indiana teachers and teacher educators in the respective content areas. The data from these studies was analyzed and accompanies this memo. See attached charts for recommended scores and pass rates.

- Lower cut scores (resulting in higher projected pass rates) were recommended for the following tests:

- Early Childhood Generalist subtest 1: Reading and English Language Arts
- Early Childhood Generalist subtest 2: Mathematics
- Early Childhood Generalist subtest 3: Science, Health and PE
- Early Childhood Generalist subtest 4: Social Studies and Fine Arts
- Science—Life Science

- Higher cut scores (resulting in lower projected pass rates) were recommended for the following tests:

- CTE Agriculture
- CTE Family and Consumer Sciences
- Science—Chemistry
- Science—Physics

- No change in cut score was recommended for the test in Historical Perspectives

Indiana CORE Assessments for Educator Licensure
 Passing Score Comparison August 2013 and June 2015

CHART I

Test Code	Assessment Name	N First Time Test Takers	N Scorable Items on Test	Current Passing Score*	Current Pass Rate	Panel- based Rec. Passing Score*	Preliminary Pass Rate
014	Early Childhood Generalist Subtest 1: Reading and English Language Arts	229	40	30	24%	24	80%
015	Early Childhood Generalist Subtest 2: Mathematics	214	40	29	54%	25	85%
016	Early Childhood Generalist Subtest 3: Science, Health, and Physical Ed.	226	32	23	50%	20	81%
017	Early Childhood Generalist Subtest 4: Social Studies and Fine Arts	224	32	23	36%	19	77%
045	Science - Life Science	238	80	52	38%	48	53%

* The Current Passing Score and Panel-based Recommended Passing Score are the current and recommended number of scorable items a candidate needs to answer correctly to achieve a passing score.

INTERPRETIVE NOTES AND CAUTIONS. The notes below are an integral part of the accompanying table.

- Panel-based Recommended Passing Score is the median of panel members' total-test judgments for the scorable item set, rounded to the nearest integer, collected during a Passing Score Review Meeting conducted in June 2015.
- Data are supplied for candidates taking the tests between February 10, 2014 and July 2, 2015.
- Data reflect candidates' initial (first time) attempts.
- Data are supplied for test fields for which the number of unique candidates is ten or more.
- Passing scores for these test fields were initially adopted at the Panel-Recommended Passing Score by the State Board of Education in August 2013, using panel recommendations from March 2013.
- Extreme caution should be used in interpreting data for small numbers of candidates (e.g., less than 100 candidates).
- The candidates for whom results are presented in this document may not reflect the same proportion of all the types and capabilities of candidates in the population who will take the tests in the future.

Indiana CORE Assessments for Educator Licensure
 Passing Score Comparison August 2013 and June 2015

CHART II

Test Code	Assessment Name	N First Time Test Takers	N Scorable Items on Test	Current Passing Score*	Current Pass Rate	Panel-based Rec. Passing Score*	Preliminary Pass Rate
009	Career and Technical Education - Agriculture	45	80	53	60%	54	53%
011	Career and Technical Education - Family and Consumer Sciences	59	80	56	61%	64	17%
043	Science - Chemistry	100	80	52	70%	54	65%
047	Science - Physics	25	80	50	72%	55	52%
051	051 Social Studies - Historical Perspectives	295	56	36	45%	36	45%

* The Current Passing Score and Panel-based Recommended Passing Score are the current and recommended number of scorable items a candidate needs to answer correctly to achieve a passing score.

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- The candidates for whom results are presented in this document may not reflect the same proportion of all the types and capabilities of candidates in the population who will take the tests in the future.



**Passing Score Review Report
Early Childhood Generalist -**

Subtest 1: Reading and English Language Arts

Subtest 2: Mathematics

Subtest 3: Science, Health, and Physical Education

Subtest 4: Social Studies and Fine Arts

Career and Technical Education – Agriculture

Career and Technical Education – Family and Consumer Sciences

Science – Chemistry

Science – Life Science

Science – Physics

Social Studies – Historical Perspectives

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Prepared for
Indiana Department of Education
South Tower, Suite 600
115 West Washington Street
Indianapolis, IN 46204

Developed and Produced by
Evaluation Systems
Pearson
P.O. Box 226
Amherst, MA 01004

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Indiana CORE Assessments for Educator Licensure

Passing Score Review Report

Introduction

The Evaluation Systems group of Pearson is working with the Indiana Department of Education (IDOE) to develop and administer the Indiana CORE Assessments for Educator Licensure program. The tests are based on IDOE-approved Indiana educator standards and include the following assessments.

- Core Academic Skills Assessment (CASA), an assessment of basic skills in reading, writing, and mathematics that may be used to satisfy entrance requirements at Indiana educator preparation programs.
- Developmental (pedagogy) area assessments that are based on the Indiana school setting developmental teacher standards and are required for educator licensure.
- Content area assessments that are based on the Indiana content area (and administrator) educator standards and are required for educator licensure.

CASA became operational in July 2013. The developmental and content area tests required for licensure became operational in February 2014. IDOE and Pearson have been monitoring candidate performance on the assessments in the program. As a result of this monitoring, IDOE has requested that Pearson conduct a passing score review meeting for the following tests.

- Early Childhood Generalist Subtest 1: Reading and English Language Arts
- Early Childhood Generalist Subtest 2: Mathematics
- Early Childhood Generalist Subtest 3: Science, Health, and Physical Education
- Early Childhood Generalist Subtest 4: Social Studies and Fine Arts
- Career and Technical Education – Agriculture
- Career and Technical Education – Family and Consumer Sciences
- Science – Chemistry
- Science – Life Science
- Science – Physics
- Social Studies – Historical Perspectives

Report Purpose. This report presents results of the passing score review meeting that was conducted on June 23-24, 2015 for the tests listed previously. The results of the meeting may be used by the IDOE as they recommend new passing scores for the tests to the Indiana State Board of Education (SBOE). Evaluation Systems will work with the IDOE to provide additional information as needed for the presentation of the passing score recommendations to the SBOE.

Background

Evaluation Systems group of Pearson conducted a passing score review meeting with licensed Indiana educators and college faculty who prepare teachers in the content areas listed above. A modified-Angoff approach was used to gather passing score recommendations (standard

setting judgments) for each test. Panel members participated in three rounds of standard setting judgments.

Final panel recommended passing scores for the tests are provided to the Indiana Department of Education. These recommendations are based on the informed judgments of Indiana educators and educator preparation faculty who participated on the Passing Score Review panels. The IDOE may use the panel recommendations as they determine passing scores to recommend for the tests. The passing score review process employed for the Indiana CORE Assessments for Educator Licensure program is consistent with recognized psychometric principles and procedures, as outlined below.

Indiana Passing Score Review Panels

Educators and educator preparation faculty from across Indiana were invited to participate in the Passing Score Review activities. Educators were eligible to participate on a passing score review panel if they were licensed to teach the content area. Educator preparation faculty members were eligible to participate if they prepared prospective educators in the content area. The following table provides information about the composition of the Passing Score Review Panel.

Panel	Number Invited	Number Accepted	Number Attended
Early Childhood Generalist *	37	12	11
Career and Technical Education – Agriculture	24	8	6
Career and Technical Education – Family and Consumer Sciences	24	9	7
Science – Chemistry	30	12	12
Science – Life Science	49	9	9
Science – Physics	30	11	11
Social Studies – Historical Perspectives	35	10	9

* Panel reviewed four Early Childhood Generalist subtests.

Summary of Passing Score Review Meeting Procedures

The Indiana panels followed industry-accepted procedures for setting standards on licensing exams and certification tests. These procedures were used to determine a passing score recommendation for each assessment. Panel members first participated in a simulated test administration in which they were instructed to “take the test.” The purpose of this activity was to provide a context for panel members prior to making standard setting judgments.

Following the simulated test administration, panel members were trained in the procedures to be used to make passing score recommendations (i.e., standard setting judgments). Training included a discussion of the hypothetical reference group of candidates who have the “just acceptable” level of knowledge and skills to receive an initial educator license in Indiana. Panel members were referred to the Indiana educator standards to define the knowledge and skills expected of Indiana teachers. Panel members completed three rounds of standard setting judgments.

Panel members provided item-by-item judgments during the first round of the standard setting process. Following the first round of item-by-item judgments, panel members were provided with the results of their item ratings, the median rating provided by the panel, and the distribution of item ratings by other members on their panel. They were also provided with information on the percentage of candidates who answered each item correctly. During the second round of standard setting judgments, panel members were provided an opportunity to revise any item-by-item judgment in light of the round one ratings and the information on candidate performance on the items.

Following the second round of item-by-item judgments, each panel member’s final item ratings were used to calculate a recommended passing score for the test. Panel members were provided with the results of their recommended passing score for the test, the panel recommended passing score for the test, and the distribution of the recommended passing scores by other members on their panel. They were also provided with information on the impact of the panel recommended passing score on candidate pass rates. During the third round of the passing score review process, panel members were asked to provide a test-based recommended passing score for the test.

The test-based panel recommended passing score reflects the median rating of all panelists of their final judgments regarding estimated performance of candidates who have the “just acceptable” level of knowledge and skills to receive an initial Indiana educator license in the content area.

Table 1, which follows, provides a summary of the final test-based panel recommended passing scores for the tests, including the number of scorable items, and the total possible points.

**Table 1:
Test-Based Panel Recommended Passing Scores**

Test Code	Assessment Name	Item Type(s)	Total Scorable Items²	Total Possible Score Points	Test-Based Panel Recommended Passing Score³
014	Early Childhood Generalist Subtest 1: Reading and English Language Arts	MCQ ¹	40	40	24
015	Early Childhood Generalist Subtest 2: Mathematics	MCQ	40	40	25
016	Early Childhood Generalist Subtest 3: Science, Health, and Physical Education	MCQ	32	32	20
017	Early Childhood Subtest 4: Social Studies and Fine Arts	MCQ	32	32	19
009	Career and Technical Education – Agriculture	MCQ	80	80	54

Test Code	Assessment Name	Item Type(s)	Total Scorable Items²	Total Possible Score Points	Test-Based Panel Recommended Passing Score³
011	Career and Technical Education – Family and Consumer Sciences	MCQ	80	80	64
043	Science – Chemistry	MCQ	80	80	54
045	Science – Life Science	MCQ	80	80	48
047	Science – Physics	MCQ	80	80	55
051	Social Studies – Historical Perspectives	MCQ	56	56	36

¹ Multiple-Choice Question (MCQ)

² In addition to the scorable items, each test form includes items which are designated as “non-scorable” for the purpose of collecting data on their psychometric characteristics, for consideration of their use as scorable items on future test forms.

³ The panel recommended passing score for the assessment is the median of panel member total-test judgments for the scorable item set, rounded to the nearest integer.

Determination of Passing Scores

The Indiana State Board of Education (SBOE) will establish a passing score for each of these assessments. These passing scores will be based on the recommendations of Indiana educators and educator preparation faculty who participated on Standard Setting Panels. The SBOE may consider setting the passing score for each test at the panel recommended passing score or setting the passing scores at one or more standard errors of measurement (SEM)¹ above or below the panel recommended passing scores, as noted in Table 2 included in Appendix A. See “Standard Error of Measurement” in Appendix A for a discussion of the considerations behind such a policy decision.

Once the tests have been operational for an additional period of approximately six months to one year, the IDOE may wish to review the impact of the passing scores and may choose to recommend that the SBOE adjust the passing scores on the basis of candidate performance on the assessments.

¹ Standard error of measurement (SEM) refers to an estimated SEM that is calculated based on Frederic Lord’s classic paper (Lord, 1955).

Appendix A

Considerations in Setting Passing Scores

As described in the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and the National Council on Measurement in Education, 1999), the standard setting process is a key piece of validity evidence supporting a testing program.

Defining the minimum level of knowledge and skill required for licensure or certification is one of the most important and difficult tasks facing those responsible for credentialing. Verifying the appropriateness of the cutscore or scores on the tests is a critical element in validity. The validity of the inference drawn from the test depends on whether the standard for passing makes a valid distinction between adequate and inadequate performance. Often, panels of experts are used to specify the level of performance that should be required. Standards must be high enough to protect the public, as well as the practitioner, but not so high as to be unreasonably limiting. Verifying the appropriateness of the cutscore or scores on a test used for licensure or certification is a critical element of the validity of test results (p. 157).

In determining the passing score for each test, the Indiana State Board of Education may consider the following factors and options that affect the standard setting process in determining a passing score recommendation.

Professional Judgments

The recommended passing scores for the tests are based upon the professional judgments provided by the members of the Indiana Standard Setting Panel for that field. An industry-accepted method for conducting standard setting for licensure and certification tests was employed to gather passing score recommendations. Panel members were trained in the standard setting process. They were provided opportunities to ask questions and seek clarification about the standard setting process. Specifically panel members were trained in how to make judgments regarding just acceptable candidates who have the knowledge and skills needed to receive an initial Indiana educator license.

Standard Error Adjustments of Passing Scores

Based on the number of scorable items answered correctly (or number of possible score points for constructed-response items), the candidate is awarded a raw score on the test. This score is the candidate's "observed" score. Each candidate's observed score is expected to be in a range around the true score. Thus, if a candidate were to take the same test multiple times, without studying or contemplating the answers between tests, there is a random chance that the observed score will be slightly different each time. For candidates whose knowledge and skills are slightly above or below the minimum required level, this may result in:

- a candidate classified as having the required level of knowledge and skills on the basis of their observed score being at or above the panel recommended passing score, when they would be classified differently on the basis of their true score (false positive)
- a candidate classified as *not* yet having the required level of knowledge and skills on the basis of their observed score being below the panel recommended passing score,

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when they would be classified differently on the basis of their true score (false negative)

One way to adjust for this level of measurement error is to set the passing score for the test at one or more standard errors of measurement (SEM) above or below the panel recommended passing score, with consideration to the relative consequences of false positives and false negatives.

For example, a false positive decision on the test may result in a not-yet-qualified candidate receiving a passing score and, if the candidate had also met all other licensure requirements, being awarded an Indiana educator license. On the other hand, a false negative decision on the test may result in a qualified candidate, who had met all licensure requirements, being temporarily denied an Indiana educator license for not yet receiving a passing score on the test. The candidate would have the opportunity to retake the test at a subsequent test administration.

In determining the passing score, the State Board of Education should take into consideration that setting the passing score at one or more SEMs above or below the panel recommended passing score would potentially reduce *either* the incidence of false positives *or* the incidence of false negatives, but not both.

For example, setting the passing score above the panel recommended passing score may reduce the incidence of false positives, but would potentially increase the incidence of false negatives, depending upon the number of candidates whose knowledge and skills are only slightly above the minimum required level. Conversely, setting the passing score below the panel recommended passing score may reduce the incidence of false negatives, but would potentially increase the incidence of false positives, depending on the number of candidates whose knowledge and skills are only slightly below the minimum required level.

Thus, when determining whether or not to set the final passing scores at the panel recommended passing score or at one or more SEMs above or below the panel-based passing scores, the State Board of Education should consider the issues of protecting the public (i.e., children in the classroom) from not-yet qualified candidates (limiting false positive decisions) versus ensuring that qualified candidates are identified as such (limiting false negative decisions).

Tables 2 and 3 provide a summary of panel-based passing scores with SEM adjustments.

**Table 2:
Indiana CORE Assessments for Educator Licensure
Test-Based Panel Recommended Passing Scores with SEM Adjustments**

Test Code	Assessment Name	Total Possible Score Points	Panel-rec. Passing Score -2.0 SEM	Panel-rec. Passing Score -1.0 SEM	Panel-rec. Passing Score	Panel-rec. Passing Score +1.0 SEM	Panel-rec. Passing Score +2.0 SEM
014	Early Childhood Generalist Subtest 1: Reading and English Language Arts	40	18	21	24	27	30
015	Early Childhood Generalist Subtest 2: Mathematics	40	19	22	25	28	31
016	Early Childhood Generalist Subtest 3: Science, Health, and Physical Ed.	32	14	17	20	23	25
017	Early Childhood Generalist Subtest 4: Social Studies and Fine Arts	32	13	16	19	22	25
045	Science - Life Science	80	39	43	48	52	57

The notes below are an integral part of the accompanying table.

Panel-recommended Passing Score is the median of panel members' total-test judgments for the scorable item set, rounded to the nearest integer, collected during a Passing Score Review Meeting conducted in June 2015.

**Table 3:
Indiana CORE Assessments for Educator Licensure
Test-Based Panel Recommended Passing Scores with SEM Adjustments**

Test Code	Assessment Name	Total Possible Score Points	Panel-rec. Passing Score -2.0 SEM	Panel-rec. Passing Score -1.0 SEM	Panel-rec. Passing Score	Panel-rec. Passing Score +1.0 SEM	Panel-rec. Passing Score +2.0 SEM
009	Career and Technical Education - Agriculture	80	46	50	54	58	63
011	Career and Technical Education - Family and Consumer Sciences	80	56	60	64	67	71
043	Science - Chemistry	80	45	50	54	58	62
047	Science - Physics	80	47	51	55	59	63
051	Social Studies - Historical Perspectives	56	29	32	36	39	43

The notes below are an integral part of the accompanying table.

Panel-recommended Passing Score is the median of panel members' total-test judgments for the scorable item set, rounded to the nearest integer, collected during a Passing Score Review Meeting conducted in June 2015.