California Department of Education
March 2011

# *ADDENDUM TO THE*
# CALIFORNIA MODIFIED ASSESSMENT TECHNICAL REPORT SPRING 2010 ADMINISTRATION

*The purpose of this addendum to the California Modified Assessment (CMA) Technical Report for the Spring 2010 Administration is to provide the raw-score-to-scale-score conversions and analyses for estimating the reliability of classification decisions. These analyses were completed following the adoption of the CMA performance levels for English–language arts (grade nine), Algebra I (grades seven through eleven) and Life Science (grade ten) by the State Board of Education in March 2011.*

# Score Conversion Tables

In August 2010, a standard setting for the California Modified Assessment (CMA) was conducted to establish performance-level cut scores for high school phase 1 (English–language arts [ELA] in grade nine, Life Science in grade ten, and end-of-course (EOC) Algebra I in grades seven through eleven). These cut scores were adopted and will be applied to the results of the spring 2011 operational administration. In this addendum, data from the spring 2010 operational administration were used to assess the impact of these cut scores.

In Table 1 through Table 3, the table borders indicate the raw score cuts in the raw-score-to-scale-score conversion tables for these tests. Also shown are the percentages of students from the spring 2010 administration in each performance level defined by the cut scores.

**Table 1. 2010 Standard Setting Performance Levels and Impact Results: ELA, Grade Nine**

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 60 | 600 | 61 | Advanced | 4.6% |
| 59 | 600 | 61 | | |
| 58 | 600 | 61 | | |
| 57 | 595 | 60 | | |
| 56 | 564 | 52 | | |
| 55 | 540 | 47 | | |
| 54 | 520 | 43 | | |
| 53 | 502 | 41 | | |
| 52 | 487 | 38 | | |
| 51 | 473 | 37 | | |
| 50 | 460 | 35 | | |
| 49 | 448 | 34 | | |
| 48 | 437 | 33 | | |
| 47 | 426 | 32 | | |
| 46 | 417 | 31 | | |
| 45 | 407 | 30 | | |
| 44 | 398 | 30 | Proficient | 13.4% |
| 43 | 390 | 29 | | |
| 42 | 381 | 29 | | |
| 41 | 373 | 28 | | |
| 40 | 365 | 28 | | |
| 39 | 358 | 28 | | |
| 38 | 350 | 27 | | |
| 37 | 343 | 27 | Basic | 22.1% |
| 36 | 335 | 27 | | |
| 35 | 328 | 27 | | |
| 34 | 321 | 27 | | |
| 33 | 314 | 27 | | |
| 32 | 307 | 26 | | |
| 31 | 300 | 26 | | |

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 30 | 293 | 26 | | |
| 29 | 286 | 26 | | |
| 28 | 279 | 26 | | |
| 27 | 272 | 27 | Below Basic | 36.2% |
| 26 | 265 | 27 | | |
| 25 | 258 | 27 | | |
| 24 | 251 | 27 | | |
| 23 | 243 | 27 | | |
| 22 | 236 | 27 | | |
| 21 | 228 | 28 | | |
| 20 | 221 | 28 | | |
| 19 | 213 | 28 | | |
| 18 | 205 | 29 | | |
| 17 | 196 | 29 | | |
| 16 | 188 | 30 | | |
| 15 | 178 | 30 | | |
| 14 | 169 | 31 | | |
| 13 | 159 | 32 | | |
| 12 | 150 | 33 | | |
| 11 | 150 | 33 | Far Below Basic | 23.6% |
| 10 | 150 | 33 | | |
| 9 | 150 | 33 | | |
| 8 | 150 | 33 | | |
| 7 | 150 | 33 | | |
| 6 | 150 | 33 | | |
| 5 | 150 | 33 | | |
| 4 | 150 | 33 | | |
| 3 | 150 | 33 | | |
| 2 | 150 | 33 | | |
| 1 | 150 | 33 | | |
| 0 | 150 | 33 | | |

**Table 2. 2010 Standard Setting Performance Levels and Impact Results: Algebra I**

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 60 | 600 | 65 | | |
| 59 | 600 | 65 | | |
| 58 | 595 | 63 | | |
| 57 | 557 | 52 | | |
| 56 | 530 | 45 | | |
| 55 | 509 | 41 | | |
| 54 | 491 | 38 | Advanced | 1.9% |
| 53 | 476 | 36 | | |
| 52 | 462 | 34 | | |
| 51 | 450 | 32 | | |
| 50 | 439 | 31 | | |
| 49 | 429 | 30 | | |
| 48 | 419 | 29 | | |
| 47 | 410 | 28 | | |

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 46 | 401 | 27 | Proficient | 9.8% |
| 45 | 393 | 26 | | |
| 44 | 385 | 26 | | |
| 43 | 378 | 25 | | |
| 42 | 371 | 25 | | |
| 41 | 364 | 25 | | |
| 40 | 357 | 24 | | |
| 39 | 350 | 24 | | |
| 38 | 343 | 24 | Basic | 25.7% |
| 37 | 337 | 24 | | |
| 36 | 331 | 23 | | |
| 35 | 324 | 23 | | |
| 34 | 318 | 23 | | |
| 33 | 312 | 23 | | |
| 32 | 306 | 23 | | |
| 31 | 300 | 23 | | |
| 30 | 294 | 23 | Below Basic | 39.7% |
| 29 | 288 | 23 | | |
| 28 | 282 | 23 | | |
| 27 | 276 | 23 | | |
| 26 | 270 | 23 | | |
| 25 | 263 | 23 | | |
| 24 | 257 | 23 | | |
| 23 | 251 | 24 | | |
| 22 | 244 | 24 | Far Below Basic | 22.9% |
| 21 | 238 | 24 | | |
| 20 | 231 | 24 | | |
| 19 | 224 | 25 | | |
| 18 | 217 | 25 | | |
| 17 | 210 | 25 | | |
| 16 | 202 | 26 | | |
| 15 | 195 | 26 | | |
| 14 | 186 | 27 | | |
| 13 | 178 | 28 | | |
| 12 | 169 | 29 | | |
| 11 | 159 | 30 | | |
| 10 | 150 | 31 | | |
| 9 | 150 | 31 | | |
| 8 | 150 | 31 | | |
| 7 | 150 | 31 | | |
| 6 | 150 | 31 | | |
| 5 | 150 | 31 | | |
| 4 | 150 | 31 | | |
| 3 | 150 | 31 | | |
| 2 | 150 | 31 | | |
| 1 | 150 | 31 | | |
| 0 | 150 | 31 | | |

**Table 3. 2010 Standard Setting Performance Levels and Impact Results: Science, Life Science**

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 60 | 600 | 65 | | |
| 59 | 600 | 65 | | |
| 58 | 592 | 62 | | |
| 57 | 555 | 51 | | |
| 56 | 529 | 45 | | |
| 55 | 508 | 40 | | |
| 54 | 490 | 37 | Advanced | 5.7% |
| 53 | 475 | 35 | | |
| 52 | 462 | 33 | | |
| 51 | 450 | 31 | | |
| 50 | 439 | 30 | | |
| 49 | 428 | 29 | | |
| 48 | 419 | 28 | | |
| 47 | 410 | 27 | | |
| 46 | 401 | 27 | | |
| 45 | 393 | 26 | | |
| 44 | 385 | 26 | | |
| 43 | 378 | 25 | Proficient | 14.2% |
| 42 | 371 | 25 | | |
| 41 | 364 | 24 | | |
| 40 | 357 | 24 | | |
| 39 | 350 | 24 | | |
| 38 | 343 | 24 | | |
| 37 | 337 | 23 | | |
| 36 | 331 | 23 | | |
| 35 | 324 | 23 | Basic | 26.5% |
| 34 | 318 | 23 | | |
| 33 | 312 | 23 | | |
| 32 | 306 | 23 | | |
| 31 | 300 | 23 | | |
| 30 | 294 | 23 | | |
| 29 | 288 | 23 | | |
| 28 | 282 | 23 | | |
| 27 | 276 | 23 | Below Basic | 34.7% |
| 26 | 270 | 23 | | |
| 25 | 264 | 23 | | |
| 24 | 257 | 23 | | |
| 23 | 251 | 23 | | |

| Raw Score | Scale Score | CSEM | Performance Level | % Students at Performance Level |
|---|---|---|---|---|
| 22 | 245 | 24 | | |
| 21 | 238 | 24 | | |
| 20 | 231 | 24 | | |
| 19 | 225 | 24 | | |
| 18 | 217 | 25 | | |
| 17 | 210 | 25 | | |
| 16 | 203 | 26 | | |
| 15 | 195 | 26 | | |
| 14 | 187 | 27 | | |
| 13 | 178 | 27 | | |
| 12 | 169 | 28 | | |
| 11 | 160 | 29 | Far Below Basic | 18.9% |
| 10 | 150 | 30 | | |
| 9 | 150 | 30 | | |
| 8 | 150 | 30 | | |
| 7 | 150 | 30 | | |
| 6 | 150 | 30 | | |
| 5 | 150 | 30 | | |
| 4 | 150 | 30 | | |
| 3 | 150 | 30 | | |
| 2 | 150 | 30 | | |
| 1 | 150 | 30 | | |
| 0 | 150 | 30 | | |

# Decision Classification Analyses

The methodology used for estimating the reliability of classification decisions is described in Livingston and Lewis (1995) and is implemented using Educational Testing Service's (ETS) proprietary computer program RELCLASS-COMP (Version 4.14).

Decision accuracy describes the extent to which examinees are classified in the same way as they would be on the basis of the average of all possible forms of a test. Decision accuracy answers the question: How does the actual classification of test takers, based on their single-form scores, agree with the classification that would be made on the basis of their true scores, if their true scores were somehow known? RELCLASS-COMP estimates decision accuracy using an estimated multivariate distribution of reported classifications on the current form of the examination and the classifications based on an all-forms average (true score).

Decision consistency describes the extent to which examinees are classified in the same way as they would be on the basis of a single form of a test other than the one for which data are available. Decision consistency answers the question: What is the agreement between the classifications based on two non-overlapping, equally difficult forms of the test? RELCLASS-COMP also estimates decision consistency using an estimated multivariate distribution of reported classifications on the current form of the exam and classifications on a hypothetical alternate form using the reliability of the test and strong true score theory.

In each case, the proportion of classifications with exact agreement is the sum of the entries in the diagonal of the contingency table representing the multivariate distribution. Reliability of classification at a cut score is estimated by collapsing the multivariate distribution at the passing score boundary into an *n* by *n* table (where *n* is the number of performance levels) and summing the entries in the diagonal. Figure 1 and Figure 2 present the two scenarios graphically.

**Figure 1 Decision Accuracy for Achieving a Performance Level**

| | | Decision made on a form actually taken | |
|---|---|---|---|
| | | Does not achieve a performance level | Achieves a performance level |
| True status on all-forms average | Does not achieve a performance level | Correct classification | Mis-classification |
| | Achieves a performance level | Mis-classification | Correct classification |

**Figure 2 Decision Consistency for Achieving a Performance Level**

| | | Decision made on the alternate form taken | |
|---|---|---|---|
| | | Does not achieve a performance level | Achieves a performance level |
| Decision made on the form taken | Does not achieve a performance level | Correct classification | Mis-classification |
| | Achieves a performance level | Mis-classification | Correct classification |

The results of spring 2010 CMA analyses are presented in Table 4 through Table 6. Each table includes the contingency tables for the various performance level classifications. The proportion of accurately classified students can be determined by summing across the diagonals of the upper tables; these proportions ranged from 0.64 to 0.65 across all of the CMA tests. The proportion of students that were classified consistently (diagonals of the lower tables) was 0.53 across all proficiency levels for these CMA tests.

When the decisions are collapsed to below proficient versus proficient and above, which are the critical categories for adequate yearly progress (AYP) calculations; the proportion of students that were classified accurately range from 0.92 to 0.94 across all CMA tests. Similarly, the proportion of students that are classified consistently range from 0.89 to 0.91 for students classified into below proficient versus proficient and advanced.

Note that, due to rounding, the values reported for "Total" may differ from the sum of the associated cell entries.

**Table 4 Reliability of Classification for ELA Grade Nine**

| | Placement Score | Far Below Basic | Below Basic | Basic | Proficient | Advanced | Category Total |
|---|---|---|---|---|---|---|---|
| Decision Accuracy All-forms Average | 0 – 22 | 0.15 | 0.08 | 0.00 | 0.00 | 0.00 | 0.24 |
| | 23 – 30 | 0.06 | 0.25 | 0.05 | 0.00 | 0.00 | 0.36 |
| | 31 – 37 | 0.00 | 0.06 | 0.13 | 0.02 | 0.00 | 0.22 |
| | 38 – 44 | 0.00 | 0.01 | 0.05 | 0.07 | 0.01 | 0.13 |
| | 45 – 60 | 0.00 | 0.00 | 0.00 | 0.02 | 0.03 | 0.05 |
| | **Estimated Proportion Correctly Classified: Total = 0.64, Proficient & Above = 0.92** | | | | | | |
| Decision Consistency Alternate Form | 0 – 22 | 0.14 | 0.09 | 0.01 | 0.00 | 0.00 | 0.24 |
| | 23 – 30 | 0.09 | 0.20 | 0.07 | 0.01 | 0.00 | 0.36 |
| | 31 – 37 | 0.00 | 0.07 | 0.11 | 0.04 | 0.00 | 0.22 |
| | 38 – 44 | 0.00 | 0.01 | 0.04 | 0.06 | 0.02 | 0.13 |
| | 45 – 60 | 0.00 | 0.00 | 0.00 | 0.02 | 0.03 | 0.05 |
| | **Estimated Proportion Consistently Classified: Total = 0.53, Proficient & Above = 0.89** | | | | | | |

**Table 5 Reliability of Classification for Algebra I**

| | Placement Score | Far Below Basic | Below Basic | Basic | Proficient | Advanced | Category Total |
|---|---|---|---|---|---|---|---|
| Decision Accuracy All-forms Average | 0 – 22 | 0.14 | 0.09 | 0.00 | 0.00 | 0.00 | 0.23 |
| | 23 – 30 | 0.06 | 0.28 | 0.06 | 0.00 | 0.00 | 0.40 |
| | 31 – 38 | 0.00 | 0.08 | 0.16 | 0.02 | 0.00 | 0.26 |
| | 39 – 46 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.10 |
| | 47 – 60 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 |
| | **Estimated Proportion Correctly Classified: Total = 0.64, Proficient & Above = 0.94** | | | | | | |
| Decision Consistency Alternate Form | 0 – 22 | 0.13 | 0.09 | 0.01 | 0.00 | 0.00 | 0.23 |
| | 23 – 30 | 0.09 | 0.21 | 0.08 | 0.01 | 0.00 | 0.40 |
| | 31 – 38 | 0.01 | 0.08 | 0.13 | 0.04 | 0.00 | 0.26 |
| | 39 – 46 | 0.00 | 0.01 | 0.04 | 0.05 | 0.01 | 0.10 |
| | 47 – 60 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 |
| | **Estimated Proportion Consistently Classified: Total = 0.53, Proficient & Above = 0.91** | | | | | | |

**Table 6 Reliability of Classification for Life Science**

| | Placement Score | Far Below Basic | Below Basic | Basic | Proficient | Advanced | Category Total |
|---|---|---|---|---|---|---|---|
| **Decision Accuracy** | 0 – 22 | 0.11 | 0.08 | 0.00 | 0.00 | 0.00 | 0.19 |
| | 23 – 30 | 0.05 | 0.24 | 0.05 | 0.00 | 0.00 | 0.35 |
| | 31 – 38 | 0.00 | 0.07 | 0.17 | 0.03 | 0.00 | 0.27 |
| **All-forms Average** | 39 – 46 | 0.00 | 0.00 | 0.04 | 0.09 | 0.01 | 0.14 |
| | 47 – 60 | 0.00 | 0.00 | 0.00 | 0.02 | 0.04 | 0.06 |
| | **Estimated Proportion Correctly Classified: Total = 0.65, Proficient & Above = 0.93** | | | | | | |
| **Decision Consistency** | 0 – 22 | 0.10 | 0.08 | 0.01 | 0.00 | 0.00 | 0.19 |
| | 23 – 30 | 0.08 | 0.19 | 0.07 | 0.01 | 0.00 | 0.35 |
| | 31 – 38 | 0.01 | 0.08 | 0.13 | 0.05 | 0.00 | 0.26 |
| **Alternate Form** | 39 – 46 | 0.00 | 0.00 | 0.04 | 0.07 | 0.02 | 0.14 |
| | 47 – 60 | 0.00 | 0.00 | 0.00 | 0.02 | 0.04 | 0.06 |
| | **Estimated Proportion Consistently Classified: Total = 0.53, Proficient & Above = 0.90** | | | | | | |

# Reference

Livingston, S. A., and Lewis, C. (1995). Estimating the consistency and accuracy of classification based on test scores. *Journal of Educational Measurement*, Vol. 32, pp. 179–97.