

Smarter Balanced Scoring Specification

For Connecticut

2023–2024 Administration

Summative and Interim Assessments

ELA/L Grades 3–8, HS

Mathematics Grades 3–8, HS



CHANGE LOG

Date	Change Description
3-3-2016	Section 1: Added changes made by CT for the 2015-16 summative tests.
	Section 3.1.1: Updated Attempted/Participation (based on CAT only) & moved the attemptedness rules for the interim assessments to 9.1.
	Section 3.1.1.2: Attemptedness Flag in the Student Data File: updated the flags based on CAT only
4-5-2016	Section 1: Added the change in ELA/L reporting categories, combining Claims 2 and 4.
	Section 6.1: Updated the ELA/L reporting categories, Claim 1, Claims 2/4, and Claim 3.
	Appendix A: Removed the targets measured in PT.
5-3-2016 (Updates based on Pei's comments)	Updated based on Pei's comments
	Section 5.1: Added a sentence on how SE for LOT/HOT is computed.
	Section 3.1.1.2: Added a note on item capture file.
	Section 3.1.2.1: In Table 2, Session 2 (PT) is dropped.
5-11-2016 (Updates based on Jen's comments)	Section 3.3: Pei added an attemptedness table.
	Section 3.1.2.2: Added Attemptedness Flag table provided by Jen.
	Section 3.1.1.2: Added notes about Attemptedness indicator and test status inside the internal note
	Section 3.3: deleted an attemptedness table to go back to the original state. Before Table 3, indicated the a and b is from SY 2014-2015.
5-13-2016	Section 3.1.2.2 – both the bulleted Text and The Chart, changed “had activity” to “logged”
	Section 4.1: Added a phrase to reflect that the theta values were determined by using the 2014 field test data.
5-18-2016	3.1.3.1 Added info on how to score the pre-fetched items.
	6.3 Removed “Assign <i>Above Standard</i> (code=3) to HOSS and assign <i>Below Standard</i> (code=1) to LOSS.” from ICA because this wasn't applied to ICA because the decision was made after the ICA window opened.
7-18-2016	Section 9.1: Dropped “The scores for each IAB test will be used to produce open source scoring configuration packages and for delivery of results and scores to other clients and vendors.
8-26-2016	Added Section 10: Operational Items Used in scores (overall, subscores, or item scores)
10-31-2016	Changed the threshold for target performance category from 0.00 to 0.07.
2-8-2017	Section 1: Added a note on the change in the SB items pool for 2016-2017.
8-1-2017	Section 10: Added condition codes used in hand-scored and AI scored items.
9-1-2017	For grade 11 interim tests, the grade 11 LOSS/HOSS and cuts are added to Tables 5, 6, and 7. Grade 11 interim tests are offered while grade 11 summative tests are not offered.

1-9-2018	Section 3.1.2.1 – updated the start/end positions for the paper tests. Section 11.- added definitions for the different terminology
1-10-2018	Added a footnote to Table 1 regarding the post equating for paper forms.
6-14-2018	Changed the title of Table 1 Updated performance task item position in Table 2
9-13-2018	Added Table 8 for condition codes.
10-12-2018	Added information in the Introduction section to address the ELA/L and Math blueprints update in 2019.
2-11-2019	Added Section 12 Lexile and Quantile Scores
6-23-2019	Section 6.3: Removed scoring rule for ICA reporting category scores and IAB block scores since those rules are the same as summative tests and thus are redundant. Section 9.1: Removed two measures for combo IAB tests (e.g., number of blocks attempted, number of block proficient) since interim test results will be reported in AirWays Reporting (not ORS) in 2019-20.
7-2-2019	Updated Table 8 with condition code in AI scoring “OUT_OF_VOCAB”
8-23-2019	Table 2: Updated item positions in math paper forms because 2019-20 Smarter math paper forms will be used for 2019-20 administration.
12-5-2019	Section 3.1.1.2: Updated the attemptedness rule for the condition code “NO_RESPONSE” for AI scoring items.
6-16-2020	Section 12: Updated because Lexile and Quantile measures will be reported for interim ICA tests.
1-8-2021	Updated the section in “changes in 2020-21”. Section 3.1.3: Added an internal note for status of CAT component.
08-06-2021	Section 10: Made clarifying edits on summative hand-scored items’ scoring
10-22-2021	Updated section “changes in 2021-22”.
8-31-2022	CT ended the contract with MetaMetrics. Lexile and Quantile scores will no longer be reported. Removed Section 12 Lexile and Quantile Scores. For paper test, CT decided to use 2022-23 SB form6 non-PT in ELA.
6-2-2023	No changes (same as 2022-23)

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- Appendix B. List of Targets for Mathematics

1. INTRODUCTION

This document describes the scoring methods of the Smarter Balanced summative and interim assessments. Table 1 presents the equating mode and the scoring method used for the online and paper tests.

Table 1. Equating Mode and Scoring Method Used for the Smarter Balanced Assessments

Subject and Grade	Online Administration		Paper Administration	
	Equating Mode	Overall Scoring	Equating Mode	Overall Scoring
ELA/L 3–8, HS ^a	Pre-equated	MLE	Post-equated in 2015 ^b	MLE
Math 3–8, HS ^a	Pre-equated	MLE	Post-equated in 2015 ^b	MLE

Note: MLE = maximum likelihood estimation

^a HS tests are for the interim assessments only. Summative tests are administered in grades 3-8.

^b In 2015, Smarter Balanced post-equated the 2015 paper-pencil test forms. The post-equating was done for the 2015 paper forms only. If new items were added to the paper-pencil test forms, online item parameters were used for the new items.

Changes in 2015-16 summative tests:

- 1) Replaced the Smarter Balanced ELA/L and mathematics assessments in grade 11 with the SAT Reading, Writing and Language, and mathematics tests.
- 2) Removed the Smarter Balanced field-test items and off-grade items on the ELA/L and mathematics CAT test.
- 3) Removed performance tasks in ELA/L while keeping performance tasks in mathematics assessment. In ELA/L summative tests, scores are generated based only on the CAT component. For the paper tests, the test booklet will include both non-PT and PT components, but only the non-PT component will be scored for ELA/L.
- 4) Combined claim 2 (writing) and 4 (research/inquiry) in ELA/L reporting categories.

Changes in 2018-19 summative tests:

- 1) In 2018, Smarter Balanced updated the ELA/L summative blueprints. However, Connecticut has elected not to use the new ELA/L blueprint. Connecticut will use the existing ELA/L blueprint that has been used since 2016.
- 2) Connecticut will use the same math item pool used in other states but will continue to remove field test items and off grade items from the pool.
- 3) For the paper form, Connecticut will administer the new math paper/pencil tests but will continue to administer last year’s ELA/L paper/pencil test.
- 4) Connecticut will report Lexile and Quantile measures, both a reported measure and a lower/upper range, for all summative tests.

Change in 2019-20 ICA tests:

- 1) In 2019-20, Smarter Balanced updated the interim tests. The updated Smarter Balanced interim tests for grades 3-8 and 11 will be administered as is. For the ELA/L ICA tests, both non-PT and PT components will be scored.

Changes in 2020-21

- 1) For ICA tests in grades 3-8 and 11, Connecticut will report Lexile and Quantile measures, both a reported measure and a lower/upper range.

- 2) In 2020-21, Smarter Balanced added illustration glossary for mathematics. For mathematics Braille HAT, the CAT pool size gets smaller than the required CAT test length when both translated glossaries and illustration glossary are offered. For the students who take the mathematics Braille HAT with both translated glossary and illustration glossary, the test will end before reaching the required CAT test length. If the student responds to all administered items, the test will be considered complete. If the student does not respond to all administered items, the test will be considered incomplete and scored treating all unanswered items as incorrect. The number of unanswered items is determined based on the required CAT test length.

Changes in 2021-22

- 1) ELA/L paper forms used in 2020-21 will be used for 2021-22 except for grades 7 and 8 paper forms. For grades 7 and 8, the 2020-21 paper forms with two items swapped for grade 7 and one item swapped for grade 8 will be used.
- 2) Connecticut will include field test items in CAT for both ELA/L and mathematics.

Changes in 2022-23

- 1) CT ended the contract with MetaMetrics. Lexile and Quantile scores will no longer be reported.
- 2) For summative ELA/L paper forms, CT will use the 2022-23 Smarter Balanced paper forms (form 6), but keep only non-PT section.

Changes in 2023-24

No change as of 6/2/2023

2. RULES FOR ESTIMATING STUDENT ABILITY

2.1 Maximum Likelihood Estimation Theta Score

The maximum likelihood estimation (MLE) is used to construct the theta score. Indexing items by i , the likelihood function based on the j th person's score pattern for I items is

$$L_j(\theta_j | \mathbf{z}_j, \mathbf{a}, b_1, \dots, b_k) = \prod_{i=1}^I p_{ij}(z_{ij} | \theta_j, a_i, b_{i,1}, \dots, b_{i,m_i}),$$

where $\mathbf{b}'_i = (b_{i,1}, \dots, b_{i,m_i})$ for the i th item's step parameters, m_i is the maximum possible score of this item, a_i is the discrimination parameter for item i , z_{ij} is the observed item score for the person j , k indexes step of the item i , and $b_{i,k}$ is the k^{th} step parameter for item i with $m_i + 1$ total categories.

Depending on the item score points, the probability $p_{ij}(z_{ij} | \theta_j, a_i, b_{i,1}, \dots, b_{i,m_i})$ takes either the form of a two-parameter logistic (2PL) model for items with one point or the form based on the generalized partial credit model (GPCM) for items with two or more points.

In the case of items with one score point, we have $m_i = 1$,

$$p_{ij}(z_{ij} | \theta_j, a_i, b_{i,1}, \dots, b_{i,m_i}) = \left\{ \begin{array}{l} \frac{\exp(Da_i(\theta_j - b_{i,1}))}{1 + \exp(Da_i(\theta_j - b_{i,1}))} = p_{ij}, \text{ if } z_{ij} = 1 \\ \frac{1}{1 + \exp(Da_i(\theta_j - b_{i,1}))} = 1 - p_{ij}, \text{ if } z_{ij} = 0 \end{array} \right\};$$

in the case of items with two or more points,

$$p_{ij}(z_{ij}|\theta_j, a_i, b_{i,1}, \dots, b_{i,m_i}) = \left\{ \begin{array}{l} \frac{\exp(\sum_{k=1}^{z_{ij}} D a_i(\theta_j - b_{i,k}))}{s_{ij}(\theta_j, a_i, b_{i,1}, \dots, b_{i,m_i})}, \text{ if } z_{ij} > 0 \\ \frac{1}{s_{ij}(\theta_j, a_i, b_{i,1}, \dots, b_{i,m_i})}, \text{ if } z_{ij} = 0 \end{array} \right\},$$

where $s_{ij}(\theta_j, a_i, b_{i,1}, \dots, b_{i,m_i}) = 1 + \sum_{l=1}^{m_i} \exp(\sum_{k=1}^l D a_i(\theta_j - b_{i,k}))$, and $D = 1.7$.

2.2 Scoring All Correct and All Incorrect Cases

In item response theory (IRT) maximum likelihood (ML) ability estimation methods, zero and perfect scores are assigned the ability of minus and plus infinity. To handle such cases, the Cambium Assessment, Inc. (CAI) proposed several options. The method below has been agreed on by both Smarter Balanced and CAI.

For all correct and all incorrect cases, assign the highest obtainable scores (HOT and HOSS) or the lowest obtainable scores (LOT and LOSS) presented in Table 5.

3. SCORING TESTS

3.1 Overview

Sometimes students fail to complete their tests. This section covers three specifications:

1. When a test is considered attempted
2. When a test is scored
3. How incomplete tests are scored when they are scored

3.1.1 Attemptedness/Participation

3.1.1.1. Participation

For ELA/L summative assessment, if a student logged on to the CAT, the student is considered “participated,” even if no items are answered. For mathematics summative assessment, if a student logged onto both the CAT and the performance task (PT) parts of the test, the student is considered as participated, even if no items are answered.

These tests will be included in the data file, but no scores will be computed.

3.1.1.2. Attemptedness

For the ELA/L summative tests, all tests with at least one CAT item (or one non-PT item in a summative paper test) answered are considered “attempted.” For the summative mathematics assessment and interim comprehensive assessments (ICA), all tests with at least one CAT item (or a non-PT item in an ICA and a summative paper test) and one PT item answered (operational or field-test item) are considered “attempted.”

For the online interim assessment blocks (IABs), a block with at least one item answered is considered “attempted.”

Condition codes B (blank) for the hand-scoring items and NO_RESPONSE for the AI scoring items indicates that the item is “not-attempted.”

[**Note:** For the summative paper tests, the attemptedness of each item is determined by the item response field for the machine-scored items with a key or keys (blank = not attempted); and by the RawResponse part of the scorerationale field for the machine-scored items with a rubric key (blank = not attempted).]

In regards to the data file, here are a couple more things to note regarding the attemptedness indicator:

- Attemptedness indicator and test status are determined independently of each other.
- Tests that are invalidated before scoring will have a Blank Attemptedness status.
- Tests that are invalidated after scoring will have an Attemptedness status based upon the existing attemptedness rules.

3.1.2 When to Score a Test

All attempted tests get scored if the tests meet the rules of attemptedness.

Attemptedness rules for a CAT component (or a non-PT a summative paper test):

- N (not attempted) = responded to zero item
- Y (attempted) = responded to one item or more

Attemptedness rules for a performance task component:

- N (not attempted) = responded to zero item
- Y (attempted) = responded to one item or more

For ELA/L summative assessment, report scores when the following occurs:

- CAT (or non-PT part in a paper test) attemptedness = Y

For math summative assessment, report scores when the following occurs:

- CAT (non-PT part) attemptedness = Y; and
- Performance task attemptedness = Y

For ICA, report scores when the following occurs:

- CAT (or non-PT part) attemptedness = Y; and
- PT attemptedness = Y

For IABs, report scores when the following occurs:

- Block attemptedness = Y

3.1.2.1. Summative Paper Tests

For the ELA/L summative paper tests, although a test booklet includes both non-PT and PT items, students need to take the non-PT component (Sessions 1 & 2) only, but not the PT component (Session 3). For

mathematics summative paper tests, students need to take both the non-PT component (Sessions 1 & 2) and the PT component (Session 3). Table 2 presents the item positions in each component.

Table 2. Performance Task Item Position in the Summative Paper Tests

Grade	ELA/L		Math			
	Sessions 1 & 2 (non-PT)		Sessions 1 & 2 (non-PT)		Session 3 (PT)	
	Start	End	Start	End	Start	End
3	1	36	1	31	32	36
4	1	36	1	34	35	38
5	1	36	1	34	35	39
6	1	36	1	33	34	39
7	1	36	1	34	35	40
8	1	38	1	34	35	39

3.1.2.2. Attemptedness Flag in the Student Data File

For summative tests, the attemptedness flag will include as follows:

For ELA/L summative assessment,

P = participant (a student who logged into the CAT but didn't respond to any items)

Y = attempted (a student who logged into the CAT and responded to at least one item)

For mathematics summative assessment,

N = non-participant (a student who only logged on a single part of the test—i.e., CAT (or non-PT) or PT, but not both)

P = participant (a student who logged on to both the CAT and PT but didn't respond to any items on at least one part of the test)

Y = attempted (a student who logged on to both the CAT and PT and responded to at least one CAT item and one PT item)

The following will be reported in the data files:

Test	Attempted Flag	Description
Smarter Balanced ELA/L	Y	Online: A student who logged into the CAT and responded to at least one item. Paper: Test booklet returned, responded to at least one item on non-PT.
	P	Online: A student who logged into the CAT but didn't respond to any items Paper: Not Applicable to paper tests
	N	Online: Not Applicable to Smarter Balanced ELA/L Paper: Test booklet returned with student label; responded to zero items.
Smarter Balanced Mathematics	Y	Online: A student who logged on to both the CAT and PT and responded to at least one CAT item and one PT item. Paper: Test booklet returned, responded to at least one item on the non-PT and one item on the PT
	P	Online: A student who logged on to both the CAT and PT but didn't respond to any items on at least one part of the test. Paper: Not applicable
	N	Online: A student who only logged on a single part of the test—i.e., CAT (or non-PT) or PT, but not both Paper: Test booklet(s) returned, responded to zero items in at least one segment of the test.

3.1.3 Assigning Scores to Incomplete Tests

For the attempted tests, ELA/L tests are considered “complete” if students respond to the minimum number of operational items specified in the CAT blueprint. Otherwise, the tests are “incomplete”. For mathematics, tests are considered “complete” if students respond to the minimum number of operational items specified in the CAT blueprint and all items in the PT component. Otherwise, the tests are “incomplete”.

[Internal note: Starting in 2020-21, the CAT test is complete if CAT_STATUS = completed.]

MLE is used to score the incomplete tests counting unanswered items as incorrect. If a student completes a test (responded to all required items) but does not submit the test, the Test Delivery System (TDS) marks the test as completed (force completes). If the TDS allows a student to submit his or her test, it will be considered “complete.”

3.1.3.1. Online Summative Tests

For ELA/L, online summative tests include the CAT part only. For mathematics, online summative tests include both CAT and PT parts.

For the CAT items, the identity of most of the unanswered items are unknown. If items have been lined up for administration (through the pre-fetch process), parameters are known and the unanswered items are scored as incorrect. That is, they are treated in the same manner as known items in fixed form tests (e.g., interim tests, paper/pencil tests and performance tasks). For the remainder of unanswered items, averaged discrimination and difficulty parameters are used in scoring those unanswered items. The averaged discrimination and difficulty parameters are generated with the following rules:

- Minimum of the CAT operational test length is used to determine the test length of the incomplete tests.
- It is assumed that all unanswered CAT operational items are one point items. The item parameters of all unanswered CAT operational items are equal to the average values of the discrimination and

difficulty parameters in the 2014-15 CAT summative item pool, respectively. See Table 3 for the average discrimination and difficulty parameters.

- All unanswered operational items are scored as “incorrect.”

Table 3. Average Discrimination (a) and Difficulty (b) Parameters of the 2014-15 CAT Operational Pool

Grade	ELA/L		Math	
	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>
3	0.67	-0.42	0.85	-0.81
4	0.59	0.13	0.81	-0.06
5	0.61	0.51	0.77	0.68
6	0.54	1.01	0.70	1.06
7	0.54	1.11	0.71	1.79
8	0.53	1.30	0.61	2.29

For the PT items in mathematics, unanswered items will be scored as incorrect.

For the summative online test, if the CAT part is incomplete, only a total score will be generated but not subscores because the claim information for the unanswered CAT items is unknown. If the CAT part is complete, but PT part is incomplete, both a total score and subscores will be generated.

3.1.3.2. Fixed-Form Tests

For fixed-form tests (e.g., summative fixed-form tests, ICAs, and IABs), unanswered items will be treated as incorrect. Both total and subscores will be computed for the summative fixed-form tests and ICAs while only total scores will be computed for IABs and FIABs.

3.2 Hand Scoring Rules

Scoring rules for hand scoring items:

- Any condition code will be recoded to zero.
- Evidence, purpose, and conventions are the scoring dimensions for the writing essays. Scores for evidence and purpose dimensions will be averaged, and the average will be rounded up.

[Note. The writing essays are not included in the CT summative ELA/L tests since 2015-16.]

3.3 Reporting Rules

Scores will be reported for all tests that meet the attemptedness rule in Section 3.1.2.

4. RULES FOR TRANSFORMING THETA TO VERTICAL SCALE SCORES

The IRT vertical scale is formed by linking across grades using common items in adjacent grades. The vertical scale score is the linear transformation of the post-vertically scaled IRT ability estimate.

$$SS = a * \theta + b$$

The scaling constants a and b are provided by Smarter Balanced.

Table 4 lists the scaling constants for each subject for the theta-to-scaled score linear transformation. Scale scores will be rounded to an integer.

Table 4. Vertical Scaling Constants on the Reporting Metric

Subject	Grade	Slope (a)	Intercept (b)
ELA/L	3-8, HS	85.8	2508.2
Math	3-8, HS	79.3	2514.9

4.1 Lowest/Highest Obtainable Scores

Extreme unreliable student ability estimates will be truncated to the lowest obtainable scores (LOSS/LOT) or the highest obtainable scores (HOSS/HOT). Estimated theta's lower than LOT or higher than HOT will be truncated to the LOT and HOT values, and assign LOSS and HOSS associated with the LOT and HOT. The truncation rules will be applied to all scores (total and subscores) in both summative and interim tests.

[Note: LOSS=lowest obtainable scale score, HOSS=highest obtainable scale score, LOT=lowest obtainable theta score, and HOT=highest obtainable theta score.]

The 2014-15 LOSS/LOT and HOSS/HOT are presented in Table 5.

The standard error for LOT and HOT will be computed using the LOT and HOT ability estimates given the administered items. For example, in the formula in Section 5.1, $\hat{\theta}$ =LOT or HOT, discriminations (a) and difficulties (b) are for the administered items.

Table 5. 2014-15 Lowest and Highest Obtainable Scores for Summative and Interim Tests

Subject	Grade	Theta Metric		Scale Score Metric	
		LOT	HOT	LOSS	HOSS
ELA/L	3	-4.5941	1.3374	2114	2623
ELA/L	4	-4.3962	1.8014	2131	2663
ELA/L	5	-3.5763	2.2498	2201	2701
ELA/L	6	-3.4785	2.5140	2210	2724
ELA/L	7	-2.9114	2.7547	2258	2745
ELA/L	8	-2.5677	3.0430	2288	2769
ELA/L	11 ^a	-2.4375	3.3392	2299	2795
Math	3	-4.1132	1.3335	2189	2621
Math	4	-3.9204	1.8191	2204	2659
Math	5	-3.7276	2.3290	2219	2700
Math	6	-3.5348	2.9455	2235	2748
Math	7	-3.3420	3.3238	2250	2778
Math	8	-3.1492	3.6254	2265	2802
Math	11 ^a	-2.9564	4.3804	2280	2862

^a Grade 11 tests are for the interim tests only, not for the summative tests.

5. CALCULATING MEASUREMENT ERROR

5.1 Standard Error of Measurement

With MLE, the standard error (SE) for student j is:

$$SE(\theta_j) = \frac{1}{\sqrt{I(\theta_j)}}$$

where $I(\theta_j)$ is the test information for student j , calculated as:

$$I(\theta_j) = \sum_{i=1}^I D^2 a_i^2 \left(\frac{\sum_{l=1}^{m_i} l^2 \text{Exp}(\sum_{k=1}^l D a_i(\theta_j - b_{ik}))}{1 + \sum_{l=1}^{m_i} \text{Exp}(\sum_{k=1}^l D a_i(\theta_j - b_{ik}))} - \left(\frac{\sum_{l=1}^{m_i} l \text{Exp}(\sum_{k=1}^l D a_i(\theta_j - b_{ik}))}{1 + \sum_{l=1}^{m_i} \text{Exp}(\sum_{k=1}^l D a_i(\theta_j - b_{ik}))} \right)^2 \right)$$

where m_i is the maximum possible score point (starting from 0) for the i th item, D is the scale factor, 1.7.

The SE is calculated based only on the answered item(s) for both complete and incomplete tests. The SE for LOT and HOT is also computed using the LOT and HOT ability estimates based on the answered item(s). The upper bound of the SE is set to 2.5 on theta metric. Any value larger than 2.5 is truncated at 2.5 on theta metric.

5.2 Standard Error Transformation

Standard errors of the MLEs are transformed to be placed onto the reporting scale. This transformation is:

$$SE_{ss} = a * SE_{\theta},$$

where SE_{ss} is the standard error of the ability estimate on the reporting scale, SE_{θ} is the standard error of the ability estimate on the θ scale, and a is the slope of the scaling constant that transforms θ to the reporting scale.

6. RULES FOR CALCULATING CLAIM SCORES (REPORTING CATEGORIES)

6.1 MLE Scoring for Claim Scores

Claim scores will be calculated using MLE, as described in Section 2.1, based on the item scores contained in a particular claim. Claim scores are produced if the CAT component is completed. The PT component can be either incomplete or complete. Claim scores are computed based on CAT component only in ELA/L and based on both CAT and PT components in mathematics.

Claim scores will be computed for Claim 1, Claim 2 and 4 combined, and Claim 3 in both ELA/L and math.

6.2 Scoring All Correct and All Incorrect Cases

Apply the rule in Section 2.2 to each Claim (reporting category).

6.3 Rules for Calculating Strengths and Weaknesses for Reporting Categories

For reporting categories, relative strengths and weaknesses are reported for each student at the reporting category (claim) level. The difference between the proficiency cut score and the claim score plus or minus 1.5 times standard error of the claim is used to determine the relative strengths and weaknesses.

For the reporting category scores in summative and ICA, and IAB block scores, the specific rules are as follows:

- Below Standard (Code = 1): if $round(SS_{rc} + 1.5 * SE(SS_{rc}),0) < SS_p$
- At/Near Standard (Code = 2): if $round(SS_{rc} + 1.5 * SE(SS_{rc}),0) \geq SS_p$ and $round(SS_{rc} - 1.5 * SE(SS_{rc}),0) < SS_p$, a strength or weakness is indeterminable
- Above Standard (Code = 3): if $round(SS_{rc} - 1.5 * SE(SS_{rc}),0) \geq SS_p$

where SS_{rc} is the unrounded student's scale score on a reporting category; SS_p is the proficiency scale score cut (Level 3 cut); and $SE(SS_{rc})$ is the unrounded standard error of the student's scale score on the reporting category. Assign *Above Standard* (code=3) to HOSS and assign *Below Standard* (code=1) to LOSS.

7. RULES FOR CALCULATING TARGET SCORES

The target scores are produced for the online summative tests only. Target scores are computed for attempted tests based on the responded items. If a test (either in CAT or PT) has unanswered items, unanswered items are ignored.

Target scores are computed within each claim in ELA/L, but in Claim 1 only in mathematics. The list of targets in each reporting category is presented in Appendix A and B.

Target scores will be computed in two ways: (1) target scores relative to a student's overall estimated ability (θ), and (2) target scores relative to the proficiency standard (Level 3 cut).

7.1 Target Scores Relative to Student's Overall Estimated Ability

By defining $p_{ij} = p(z_{ij} = 1)$, representing the probability that student j responds correctly to item i (z_{ij} represents the j th student's score on the i th item). For items with one score point we use the 2PL IRT model to calculate the expected score on item i for student j with estimated ability $\hat{\theta}_j$ as:

$$E(z_{ij}) = \frac{\exp(Da_i(\hat{\theta}_j - b_i))}{1 + \exp(Da_i(\hat{\theta}_j - b_i))}$$

For items with two or more score points, using the generalized partial credit model, the expected score for student j with estimated ability $\hat{\theta}_j$ on an item i with a maximum possible score of m_i is calculated as:

$$E(z_{ij}) = \sum_{l=1}^{m_i} \frac{\exp(\sum_{k=1}^l Da_i(\hat{\theta}_j - b_{i,k}))}{1 + \sum_{l=1}^{m_i} \exp(\sum_{k=1}^l Da_i(\hat{\theta}_j - b_{i,k}))}$$

For each item i , the residual between observed and expected score for each student is defined as:

$$\delta_{ij} = z_{ij} - E(z_{ij})$$

Residuals are summed for items within a target. The sum of residuals is divided by the total number of points possible for items within the target, T .

$$\delta_{jT} = \frac{\sum_{i \in T} \delta_{ji}}{\sum_{i \in T} m_i}$$

For an aggregate unit, a target score is computed by averaging individual student target scores for the target, across students of different abilities receiving different items measuring the same target at different levels of difficulty,

$$\bar{\delta}_{Tg} = \frac{1}{n_g} \sum_{j \in g} \delta_{jT},$$

$$\text{and } se(\bar{\delta}_{Tg}) = \sqrt{\frac{1}{n_g(n_g-1)} \sum_{j \in g} (\delta_{jT} - \bar{\delta}_{Tg})^2},$$

where n_g is the number of students who responded to any of the items that belong to the target T for an aggregate unit g . If a student did not happen to see any items on a particular target, the student is NOT included in the n_g count for the aggregate.

A statistically significant difference from zero in these aggregates is evidence that a class, teacher, school, or district is more effective (if $\bar{\delta}_{Tg}$ is positive) or less effective (negative $\bar{\delta}_{Tg}$) in teaching a given target.

We do not suggest direct reporting of the statistic $\bar{\delta}_{Tg}$; instead, we recommend reporting whether, in the aggregate, a group of students performs better, worse, or as expected on this target. In some cases, insufficient information will be available and that will be indicated as well.

For target level strengths/weakness, we will report the following:

- If $\bar{\delta}_{Tg} - se(\bar{\delta}_{Tg}) \geq 0.07$, then performance is better than on the overall test.
- If $\bar{\delta}_{Tg} + se(\bar{\delta}_{Tg}) \leq -0.07$, then performance is worse than on the overall test.
- Otherwise, performance is similar to performance on the overall test.
- If $se(\bar{\delta}_{Tg}) > 0.2$, data are insufficient.

7.2 Target Scores Relative to Proficiency Standard (Level 3 cut)

By defining $p_{ij} = p(z_{ij} = 1)$, representing the probability that student j responds correctly to item i (z_{ij} represents the j th student's score on the i th item). For items with one score point we use the 2PL IRT model to calculate the expected score on item i for student j with $\theta_{Level\ 3\ cut}$ as:

$$E(z_{ij}) = \frac{\exp(Da_i(\theta_{Level\ 3\ cut} - b_i))}{1 + \exp(Da_i(\theta_{Level\ 3\ cut} - b_i))}$$

For items with two or more score points, using the generalized partial credit model, the expected score for student j with *Level 3 cut* on an item i with a maximum possible score of m_i is calculated as:

$$E(z_{ij}) = \sum_{l=1}^{m_i} \frac{\exp(\sum_{k=1}^l D a_i (\theta_{Level\ 3\ cut} - b_{i,k}))}{1 + \sum_{l=1}^{m_i} \exp(\sum_{k=1}^l D a_i (\theta_{Level\ 3\ cut} - b_{i,k}))}$$

For each item i , the residual between observed and expected score for each student is defined as:

$$\delta_{ij} = z_{ij} - E(z_{ij})$$

Residuals are summed for items within a target. The sum of residuals is divided by the total number of points possible for items within the target, T .

$$\delta_{jT} = \frac{\sum_{i \in T} \delta_{ji}}{\sum_{i \in T} m_i}$$

For an aggregate unit, a target score is computed by averaging individual student target scores for the target, across students of different abilities receiving different items measuring the same target at different levels of difficulty,

$$\bar{\delta}_{Tg} = \frac{1}{n_g} \sum_{j \in g} \delta_{jT},$$

$$\text{and } se(\bar{\delta}_{Tg}) = \sqrt{\frac{1}{n_g(n_g-1)} \sum_{j \in g} (\delta_{jT} - \bar{\delta}_{Tg})^2},$$

where n_g is the number of students who responded to any of the items that belong to the target T for an aggregate unit g . If a student did not happen to see any items on a particular target, the student is NOT included in the n_g count for the aggregate.

A statistically significant difference from zero in these aggregates is evidence that a class, teacher, school, or district is more effective (if $\bar{\delta}_{Tg}$ is positive) or less effective (negative $\bar{\delta}_{Tg}$) in teaching a given target.

We do not suggest direct reporting of the statistic $\bar{\delta}_{Tg}$; instead, we recommend reporting whether, in the aggregate, a group of students performs better, worse, or as expected on this target. In some cases, insufficient information will be available and that will be indicated as well.

For target level strengths/weakness, we will report the following:

- If $\bar{\delta}_{Tg} - se(\bar{\delta}_{Tg}) \geq 0.07$ then performance is *above* the Proficiency Standard.
- If $\bar{\delta}_{Tg} + se(\bar{\delta}_{Tg}) \leq -0.07$, then performance is *below* the Proficiency Standard.
- Otherwise, performance is *near* the Proficiency Standard.
- If $se(\bar{\delta}_{Tg}) > 0.2$, data are insufficient.

8. RULES FOR CALCULATING ACHIEVEMENT LEVELS

Overall scale scores for Smarter Balanced are mapped into four performance levels per grade/course. The performance level designations are level 1, level 2, level 3, and level 4. The definition of these levels is defined after standard setting.

8.1 Threshold Scale Scores for Four Achievement Levels

Table 6 and 7 show the theta cut scores and reported scaled scores (SS) for the ELA/L assessments and the mathematics assessments, respectively.

Table 6. ELA/L Cut Scores in Theta and Scale Scores

Grade	Theta Cut between Levels 1 and 2	SS Cut between Levels 1 and 2	Theta Cut between Levels 2 and 3	SS Cut between Levels 2 and 3	Theta Cut between Levels 3 and 4	SS Cut between Levels 3 and 4
3	-1.646	2367	-0.888	2432	-0.212	2490
4	-1.075	2416	-0.410	2473	0.289	2533
5	-0.772	2442	-0.072	2502	0.860	2582
6	-0.597	2457	0.266	2531	1.280	2618
7	-0.340	2479	0.510	2552	1.641	2649
8	-0.247	2487	0.685	2567	1.862	2668
11 ^a	-0.177	2493	0.872	2583	2.026	2682

^a Grade 11 cuts are for the interim tests only, not for the summative tests.

Table 7. Mathematics Cut Scores in Theta and Scale Scores

Grade	Theta Cut between Levels 1 and 2	SS Cut between Levels 1 and 2	Theta Cut between Levels 2 and 3	SS Cut between Levels 2 and 3	Theta Cut between Levels 3 and 4	SS Cut between Levels 3 and 4
3	-1.689	2381	-0.995	2436	-0.175	2501
4	-1.310	2411	-0.377	2485	0.430	2549
5	-0.755	2455	0.165	2528	0.808	2579
6	-0.528	2473	0.468	2552	1.199	2610
7	-0.390	2484	0.657	2567	1.515	2635
8	-0.137	2504	0.897	2586	1.741	2653
11 ^a	0.354	2543	1.426	2628	2.561	2718

^a Grade 11 cuts are for the interim tests only, not for the summative tests.

9. INTERIM TESTS

9.1 Rules for Scoring Interim Tests

Interim assessments (ICA and IABs) are fixed-form tests and administered online. For the online interim comprehensive assessments (ICAs), all tests with at least one non-PT item and one PT item answered (operational or field-test item) are considered “attempted.” For the online interim assessment blocks (IABs), a block with at least one item answered is considered “attempted.” For the hand scoring or AI scoring items, a condition code B (blank) indicates “not-attempted.”

For ICA, report scores when the following occurs:

- non-PT part attemptedness = Y; and
- PT attemptedness = Y

For IABs, report scores when the following occurs:

- Block attemptedness = Y

Interim ICAs are scored in the same way as the summative assessments. For IABs, the overall block (IAB) scores on each IAB test (attemptedness, scale score, and proficiency level) are computed using the same calculation as the reporting category scores in the summative or ICA. Students can take multiple IABs.

9.2 Item reports

For the interim assessments (ICAs and IABs), item reports will be generated for individual students as well as for aggregates (e.g., class, school, district, and state).

- Item reports will be generated for all attempted tests (or Blocks) with Overall_Attempted=Y for ICA, and Attempted_flag=Y for IAB.
- Item reports will be generated for the items used to estimate the overall theta scores.
- Unanswered items will be scored as zero.
- For human-scored and/or AI- scored items:
 - Condition codes will be recoded to zero.
 - For three dimension scores (evidence, purpose, and conventions) for a writing essay, scores for evidence and purpose dimensions will be averaged, and the average will be rounded up.

10. CONDITION CODES USED IN SCORING

For the summative tests, hand-scored items are scored by human-raters. MI's Project Essay Grade (PEG™) automated scoring technology is not used. Smarter Balanced has defined special cases of student responses to hand-scored items, and the following condition codes are used for the summative hand-scored items.

- B: Blank
- I: Insufficient
- L: Non-scorable language
- T: Off topic (essay only)
- M: Off purpose (essay only)

For the interim tests, the full-write and short answer items are scored by CAI's AI scoring engine. The condition codes used in AI scoring are presented in Table 8.

Table 8. Interim Assessments: Condition Codes Used in AI Scoring

Condition Codes in AI Scoring	Description of Condition Codes	ELA/L Full Write	ELA/L Short Answer (Brief Write)	ELA/L Short Answer (No Brief Write)	Math Short Answer
NO_RESPONSE	The response is empty or consists only of white space (space characters, tab characters, return characters)	x	x	x	x
NOT_ENOUGH_DATA	The response has too few words to be considered a valid attempt.	x			
COMMON_REFUSALS	The response is a refusal to respond, of a form such as "idk", "I don't know."		x	x	x
NON_SCORABLE_LANGUAGE*	Response is in Spanish. In math, teachers should be able to review these and score as appropriate.		x	x	x
OUT_OF_VOCAB	Response consists primarily of words that do not overlap with those used in typical responses such as those used to train the engine. We recommend teachers review responses receiving this code.	x			
DUPLICATE_TEXT	The response contains a significant amount of duplicate or repeated text.	x	x		
PROMPT_COPY_MATCH	The response consists primarily of text from the passage or prompt for essays, or consists only of text from the passages for brief writes.	x	x		
NONSPECIFIC	The response displays characteristics of condition codes assigned by humans that are do not fall under the other AI condition code categories. Unlike the other condition code functions which use algorithmic functions that are independent of the training sample, the non-specific condition code is assigned using statistical features modeled on the features of the training sample.	x	x	x	x

* Flags Spanish only for now, but will add other languages as the data in other languages increase.

11. OPERATIONAL ITEMS USED IN SCORES (OVERALL, SUBSCORES, OR ITEM SCORES)

For the completed tests, operational items with the fields below are included in computing scores:

- isFieldTest=0 (or Operational_flag=1)
- isSelected=1
- dropped=0
- NotForScoring=0 [A list of items that were not included in scoring is provided by the Smarter Balanced.]

isFieldTest	0 = the item is not a field test item; 1 = the item is a field test item
isSelected	0 = the student did not respond to the item; 1 = the student respond to the item
dropped	0 = individual student response is included for scoring; 1 = individual student response is dropped from scoring.
NotForScoring	0 = item is used for scoring on all student's test; 1 = item is not used for scoring on any student's test

Appendix A: List of Targets for ELA/L

Grade	Reporting Categories	Online Reporting Label	Item Bank Strand Key (internal use)
3	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-3
3	Reading	(Informational Text) CENTRAL IDEAS: Identify or determine a main idea and the key details that support it.	1-IT 9-3
3	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words, including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary) with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-IT 10-3
3	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., events, ideas, concepts, procedures; point of view; use of information from illustrations; compare and contrast points or key details) and use supporting evidence as justification/explanation.	1-IT 11-3
3	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Describe information within or across texts (e.g., events, ideas, concepts, procedures, sequence or cause/effect) or distinguish the author's point of view.	1-IT 12-3
3	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text features (e.g., maps, photographs) to demonstrate understanding of the text.	1-IT 13-3
3	Reading	(Informational Text) LANGUAGE USE: Demonstrate understanding of word relationships and nuances, literal and non-literal words and phrases used in context, or identify connections between words and their uses.	1-IT 14-3
3	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-3
3	Reading	(Literary Text) CENTRAL IDEAS: Identify or determine a central message, lesson or moral and explain how it is conveyed in the text through key details, key events, or the sequence of events.	1-LT 2-3
3	Reading	(Literary Text) WORD MEANINGS: Determine intended meanings of words, including words with multiple meanings (academic/tier 2 words), based on context, word relationships, word structure (e.g., common roots, affixes), or use of reference materials (e.g., beginning dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-3
3	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., characters, point of view, themes, setting, plot) and use supporting evidence as justification/explanation.	1-LT 4-3
3	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Describe and explain relationships among literary elements	1-LT 5-3

		(e.g., characters) within or across texts or distinguish the narrator or characters' point of view within or across texts.	
3	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Relate knowledge of text structures (building upon earlier sections) or text features (e.g., illustrations) to explain information within the text.	1-LT 6-3
3	Reading	(Literary Text) LANGUAGE USE: Determine use of language by distinguishing literal from nonliteral meanings of words and phrases used in context, or demonstrate understanding of nuances in word meanings used in context.	1-LT 7-3
3	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating specific narrative techniques (use of dialogue, description), chronology, appropriate transitional strategies for coherence, or authors' craft appropriate to purpose (closure, detailing characters, plot, setting, or an event).	2-W 1-3
3	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more informational paragraphs demonstrating ability to organize ideas by stating a focus (main idea), including appropriate transitional strategies for coherence, or supporting details, or an appropriate conclusion.	2-W 3-3
3	Writing	USE TEXT FEATURES: Use text features (illustrations) in informational texts to enhance meaning. Not assessed in summative assessment.	2-W 5-3
3	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating ability to state opinions about topics or sources; set a context, organize ideas, develop supporting reasons, or provide an appropriate conclusion.	2-W 6-3
3	Writing	LANGUAGE & VOCABULARY USE: Accurately use language and vocabulary (including academic and domain-specific vocabulary) appropriate to the purpose and audience when revising or composing texts.	2-W 8-3
3	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, informational, and opinion texts.	2-W 9-3
3	Writing	TECHNOLOGY: Use tools of technology to produce texts. Not assessed in summative assessment.	2-W 10-3
3	Listening	LISTEN/INTERPRET: Interpret and use information delivered orally.	3-L 4-3
3	Research/Inquiry	INTERPRET & INTEGRATE INFORMATION: Locate information to support central ideas and key details that are provided; select information from data or print and non-print text sources for a given purpose.	4-CR 2-3
3	Research/Inquiry	ANALYZE INFORMATION/SOURCES: Distinguish relevant/irrelevant information.	4-CR 3-3
3	Research/Inquiry	USE EVIDENCE: Cite evidence to support opinions and ideas.	4-CR 4-3
4	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-4
4	Reading	(Informational Text) CENTRAL IDEAS: Identify or determine a main idea and the key details that support it, or summarize key details using evidence from the text.	1-IT 9-4
4	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words, including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships	1-IT 10-4

		(e.g., synonyms, antonyms), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary) with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	
4	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., events, procedures, ideas, or concepts; firsthand and secondhand accounts of events or topics; use of information presented in charts/graphs/diagrams/timelines/animations; reasoning and evidence to support points) and use supporting evidence as justification/explanation.	1-IT 11-4
4	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Interpret and explain how information is presented within or across texts (e.g., events, procedures, ideas, concepts) or compare/contrast the author's point of view within or across texts.	1-IT 12-4
4	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text structures (e.g., chronology, comparison, cause/effect, problem/solution) or text features (e.g., charts, graphs, diagrams, time lines, animations) to interpret or explain information.	1-IT 13-4
4	Reading	(Informational Text) LANGUAGE USE: Demonstrate understanding of figurative language, word relationships, and nuances of words and phrases used in context (e.g., similes, metaphors, idioms, adages, proverbs).	1-IT 14-4
4	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-4
4	Reading	(Literary Text) CENTRAL IDEAS: Identify or determine a theme or central idea from details in the text, or summarize the text.	1-LT 2-4
4	Reading	(Literary Text) WORD MEANINGS: Determine intended meanings of words, including words with multiple meanings (academic/tier 2 words), based on context, word relationships (e.g., antonyms, synonyms), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-4
4	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., characters, setting, events, point of view, themes, topics) and use supporting evidence as justification/explanation.	1-LT 4-4
4	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Describe and explain relationships among literary elements (e.g., character, setting, event) within or across texts or compare/contrast the narrator or characters' point of view within or across texts.	1-LT 5-4
4	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Relate knowledge of text structures (e.g., differences between poem, drama, prose) to explain information within the text.	1-LT 6-4
4	Reading	(Literary Text) LANGUAGE USE: Determine the meaning of words and phrases by demonstrating understanding of	1-LT 7-4

		figurative language and nuances in word meanings used in context.	
4	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating specific narrative techniques (use of dialogue, sensory or concrete details, description), chronology, appropriate transitional strategies for coherence, or authors' craft appropriate to purpose (closure, detailing characters, plot, setting, or an event).	2-W 1-4
4	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more informational paragraphs demonstrating ability to organize ideas by stating a focus (main idea), including appropriate transitional strategies for coherence, or supporting evidence and elaboration, or writing body paragraphs, or a conclusion that is appropriate to purpose and audience and related to the information or explanation presented.	2-W 3-4
4	Writing	USE TEXT FEATURES: Use text features (headings, bold text, captions, etc.) in informational texts to enhance meaning. Not assessed in summative assessment.	2-W 5-4
4	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating ability to state an opinion about topics or sources; set a context, organize ideas, develop supporting evidence/reasons and elaboration, or develop a conclusion that is appropriate to purpose and audience and related to the opinion presented.	2-W 6-4
4	Writing	LANGUAGE & VOCABULARY USE: Strategically use language and vocabulary (including academic or domain-specific vocabulary) appropriate to the purpose and audience when revising or composing texts.	2-W 8-4
4	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, informational, and opinion texts.	2-W 9-4
4	Writing	TECHNOLOGY: Use tools of technology to gather information, make revisions, or produce texts. Not assessed in summative assessment.	2-W 10-4
4	Listening	LISTEN/INTERPRET: Interpret and use information delivered orally.	3-L 4-4
4	Research/Inquiry	INTERPRET & INTEGRATE INFORMATION: Locate information to support central ideas and subtopics that are provided; select and integrate information from data or print and non-print text sources for a given purpose.	4-CR 2-4
4	Research/Inquiry	ANALYZE INFORMATION/SOURCES: Distinguish relevant/irrelevant information.	4-CR 3-4
4	Research/Inquiry	USE EVIDENCE: Cite evidence to support opinions, ideas, or analyses.	4-CR 4-4
5	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-5
5	Reading	(Informational Text) CENTRAL IDEAS: Identify or determine a main idea and the key details that support it, or summarize key details using evidence from the text.	1-IT 9-5
5	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., synonyms, antonyms), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning	1-IT 10-5

		based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	
5	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., relationships or interactions between individuals, events, ideas, or concepts; points of view; use of information from multiple print; reasoning and evidence to support points) and use supporting evidence as justification/explanation.	1-IT 11-5
5	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Interpret and explain how information is presented within or across texts (e.g. individuals, events, ideas, concepts) or how information reveals author's point of view.	1-IT 12-5
5	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text structures (e.g., chronology, comparison, cause/effect, problem/solution) to interpret or explain information.	1-IT 13-5
5	Reading	(Informational Text) LANGUAGE USE: Interpret understanding of figurative language, word relationships, and nuances of words and phrases used in context (e.g., similes, metaphors, idioms, adages, proverbs) and the impact of those word choices on meaning.	1-IT 14-5
5	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-5
5	Reading	(Literary Text) CENTRAL IDEAS: Identify or determine a theme or central idea from details in the text, or summarize the text.	1-LT 2-5
5	Reading	(Literary Text) WORD MEANINGS: Determine intended or precise meanings of words, including words with multiple meanings (academic/tier 2 words), based on context, figurative language such as metaphors and similes, word relationships (e.g., antonyms, synonyms), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-5
5	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., characters, setting, events, point of view, themes, topics) and use supporting evidence as justification/explanation.	1-LT 4-5
5	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Compare and explain relationships among literary elements (e.g., characters, setting, events) within or across texts or describe the narrator or speakers' point of view within or across texts.	1-LT 5-5
5	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Analyze text structures to explain information within the text.	1-LT 6-5
5	Reading	(Literary Text) LANGUAGE USE: Determine the meaning of words and phrases including figurative language (e.g., metaphors, similes) or demonstrate understanding of nuances in word meanings used in context.	1-LT 7-5
5	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating specific narrative techniques (use	2-W 1-5

		of dialogue, sensory or concrete details, description), chronology, appropriate transitional strategies for coherence, or authors' craft appropriate to purpose (closure, detailing characters, plot, setting, or an event).	
5	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more informational paragraphs demonstrating ability to organize ideas by stating a focus (main idea), including appropriate transitional strategies for coherence, or supporting evidence and elaboration, or writing body paragraphs, or a conclusion that is appropriate to purpose and audience and related to the information or explanation presented.	2-W 3-5
5	Writing	USE TEXT FEATURES: Use text features (headings, bold text, captions, etc.) in informational texts to enhance meaning. Not assessed in summative assessment.	2-W 5-5
5	Writing	WRITE/REVISE BRIEF TEXTS: Write/Revise one or more paragraphs demonstrating ability to state an opinion about topics or sources; set a context, organize ideas, develop supporting evidence/reasons and elaboration, or develop a conclusion that is appropriate to purpose and audience and related to the opinion presented.	2-W 6-5
5	Writing	LANGUAGE & VOCABULARY USE: Strategically use language and vocabulary (including academic or domain-specific vocabulary) appropriate to the purpose and audience when revising or composing texts.	2-W 8-5
5	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, informational, and opinion texts.	2-W 9-5
5	Writing	TECHNOLOGY: Use tools of technology to gather information, make revisions, or produce texts. Not assessed in summative assessment.	2-W 10-5
5	Listening	LISTEN/INTERPRET: Interpret and use information delivered orally.	3-L 4-5
5	Research/Inquiry	INTERPRET & INTEGRATE INFORMATION: Locate information to support central ideas and subtopics that are provided; select and integrate information from data or print and non-print text source for a given purpose.	4-CR 2-5
5	Research/Inquiry	ANALYZE INFORMATION/SOURCES: Distinguish relevant/irrelevant information.	4-CR 3-5
5	Research/Inquiry	USE EVIDENCE: Cite evidence to support opinions, ideas, or analyses.	4-CR 4-5
6	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-6
6	Reading	(Informational Text) CENTRAL IDEAS: Determine a central idea and the key details that support it, or provide a summary of the text distinct from personal opinions or judgement.	1-IT 9-6
6	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., connotations, denotations), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary) with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-IT 10-6
6	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make	1-IT 11-6

		inferences or draw conclusions in order to compare texts (e.g., how a key individual, event, or idea is introduced, illustrated, and elaborated in a text; author's point of view/purpose; use of media or formats; trace and evaluate the argument and specific claims) and use supporting evidence as justification/explanation.	
6	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Analyze or compare how information is presented within or across texts (e.g. individuals, events, or ideas) or how information within or across texts reveals author's point of view or purpose.	1-IT 12-6
6	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text structures (e.g. sentence, paragraph) or text features to analyze or integrate the impact of those choices on meaning or presentation.	1-IT 13-6
6	Reading	(Informational Text) LANGUAGE USE: Interpret understanding of figurative language, word relationships, nuances of words and phrases, or figures of speech (e.g., personification) used in context and the impact of those word choices on meaning.	1-IT 14-6
6	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-6
6	Reading	(Literary Text) CENTRAL IDEAS: Identify or determine a theme or central idea from details in the text, or summarize the text.	1-LT 2-6
6	Reading	(Literary Text) WORD MEANINGS: Determine intended or precise meanings of words, including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., connotations, denotations), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary) with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-6
6	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., character development, plot, point of view, themes, topics) and use supporting evidence as justification/explanation.	1-LT 4-6
6	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Describe and explain relationships among literary elements (e.g., plot, character, resolution) within or across texts or explain how the author develops the narrator or speakers' point of view within or across texts.	1-LT 5-6
6	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Analyze text structures and the impact of those choices on meaning or presentation.	1-LT 6-6
6	Reading	(Literary Text) LANGUAGE USE: Interpret and analyze figurative language use (e.g., figurative, connotative meanings) or demonstrate understanding of nuances in word meanings used in context and the impact of those word choices on meaning and tone.	1-LT 7-6
6	Writing	WRITE/REVISE BRIEF TEXTS: Apply narrative techniques (e.g., dialogue, description) and appropriate text structures and transitional strategies for coherence when	2-W 1-6

		writing/revising one or more paragraphs of narrative text (e.g., closure, introduce narrator or use dialogue when describing an event).	
6	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of explanatory text: organizing ideas by stating and maintaining a focus (thesis)/tone, providing appropriate transitional strategies for coherence, developing a topic including relevant supporting evidence/vocabulary and elaboration, or providing a conclusion that is appropriate to purpose and audience and follows from the information or explanation presented.	2-W 3-6
6	Writing	USE TEXT FEATURES: Employ text features and visual components appropriate to purpose and style. Not assessed in summative assessment.	2-W 5-6
6	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of text that express arguments about topics or sources: establishing and supporting a claim, organizing and citing supporting evidence using credible sources, providing appropriate transitional strategies for coherence, appropriate vocabulary, or providing a conclusion that is appropriate to purpose and audience and follows from the argument(s) presented.	2-W 6-6
6	Writing	LANGUAGE & VOCABULARY USE: Strategically use precise language and vocabulary (including academic words, domain-specific vocabulary and figurative language) and style appropriate to the purpose and audience when revising or composing texts.	2-W 8-6
6	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, explanatory, and argumentative texts.	2-W 9-6
6	Writing	TECHNOLOGY: Use tools of technology to gather information, make revisions, or to produce texts. Not assessed in summative assessment.	2-W 10-6
6	Listening	LISTEN/INTERPRET: Analyze, interpret, and use information delivered orally.	3-L 4-6
6	Research/Inquiry	ANALYZE/INTEGRATE INFORMATION: Analyze information within and among sources of information (print and non-print texts, data sets, conducting procedures, etc.).	4-CR 2-6
6	Research/Inquiry	EVALUATE INFORMATION/SOURCES: Use reasoning, evaluation, and evidence to assess the credibility and accuracy of each source in order to gather and select information to support analysis, reflection, and research.	4-CR 3-6
6	Research/Inquiry	USE EVIDENCE: Cite evidence to support arguments, ideas, or analyses.	4-CR 4-6
7	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-7
7	Reading	(Informational Text) CENTRAL IDEAS: Determine a central idea and the key details that support it, or provide an objective summary of the text.	1-IT 9-7
7	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., synonym, antonym, analogy, connotations, denotations),	1-IT 10-7

		word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	
7	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., interaction between individuals, events and ideas; author's point of view/purpose; use of media or formats; trace and evaluate the argument and specific claims) and use supporting evidence as justification/explanation.	1-IT 11-7
7	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Analyze or compare how information is presented within or across texts (e.g. interactions between individuals, events, or ideas) or how information within or across texts reveals author's point of view or purpose.	1-IT 12-7
7	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text structures (e.g. organization of a text) or text features to analyze or compare the impact of those choices on meaning or presentation.	1-IT 13-7
7	Reading	(Informational Text) LANGUAGE USE: Interpret understanding of figurative language, word relationships, nuances of words and phrases, or figures of speech (e.g., literary, mythological allusions) used in context and the impact of those word choices on meaning.	1-IT 14-7
7	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-7
7	Reading	(Literary Text) CENTRAL IDEAS: Determine a theme or central idea from evidence in the text, or provide an objective summary of the text.	1-LT 2-7
7	Reading	(Literary Text) WORD MEANINGS: Determine intended or precise meanings of words, including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., synonyms, antonyms, analogy, connotations, denotations), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-7
7	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., character development, setting, plot, point of view, or fictional portrayal of time, place or character) and use supporting evidence as justification/explanation.	1-LT 4-7
7	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Analyze relationships among literary elements (e.g., setting, characters, plot) within or across texts or analyze how an author develops the narrator or characters' point of view within or across texts.	1-LT 5-7
7	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Analyze text structures and the impact of those choices on meaning or presentation.	1-LT 6-7

7	Reading	(Literary Text) LANGUAGE USE: Interpret and analyze figurative language use (e.g., figurative, connotative meanings) or demonstrate understanding of nuances in word meanings used in context and the impact of those word choices on meaning and tone.	1-LT 7-7
7	Writing	WRITE/REVISE BRIEF TEXTS: Apply narrative techniques (e.g., dialogue, description) and appropriate text structures and transitional strategies for coherence when writing/revising one or more paragraphs of narrative text (e.g., closure, introduce narrator or use dialogue when describing an event).	2-W 1-7
7	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of explanatory text: organizing ideas by stating and maintaining a focus (thesis)/tone, providing appropriate transitional strategies for coherence, developing a topic including relevant supporting evidence/vocabulary and elaboration, or providing a conclusion that is appropriate to purpose and audience and follows from and supports the information or explanation presented.	2-W 3-7
7	Writing	USE TEXT FEATURES: Employ text features and visual components appropriate to purpose and style. Not assessed in summative assessment.	2-W 5-7
7	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of text that express arguments about topics or sources: establishing and supporting a claim, organizing and citing supporting evidence using credible sources, providing appropriate transitional strategies for coherence, appropriate vocabulary, or providing a conclusion that is appropriate to purpose and audience and follows from and supports the argument(s) presented.	2-W 6-7
7	Writing	LANGUAGE & VOCABULARY USE: Strategically use precise language and vocabulary (including academic words, domain-specific vocabulary and figurative language) and style appropriate to the purpose and audience when revising or composing texts.	2-W 8-7
7	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, explanatory, and argumentative texts.	2-W 9-7
7	Writing	TECHNOLOGY: Use tools of technology to gather information, make revisions, or produce texts. Not assessed in summative assessment.	2-W 10-7
7	Listening	LISTEN/INTERPRET: Analyze, interpret, and use information delivered orally.	3-L 4-7
7	Research/Inquiry	ANALYZE/INTEGRATE INFORMATION: Analyze information within and among sources of information (print and non-print texts, data sets, conducting procedures, etc.).	4-CR 2-7
7	Research/Inquiry	EVALUATE INFORMATION/SOURCES: Use reasoning, evaluation, and evidence to assess the credibility and accuracy of each source in order to gather and select information to support analysis, reflection, and research.	4-CR 3-7
7	Research/Inquiry	USE EVIDENCE: Cite evidence to support arguments, ideas, or analyses.	4-CR 4-7
8	Reading	(Informational Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-IT 8-8

8	Reading	(Informational Text) CENTRAL IDEAS: Determine a central idea and the key details that support it, or provide an objective summary of the text.	1-IT 9-8
8	Reading	(Informational Text) WORD MEANINGS: Determine intended meanings of words including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., connotation, denotation), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-IT 10-8
8	Reading	(Informational Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., connections or distinctions between individuals, ideas, or events; author's point of view/purpose/conflicting viewpoints; evaluate multiple sources of information presented in different media or formats; delineate and evaluate the argument and specific claims) and use supporting evidence as justification/explanation.	1-IT 11-8
8	Reading	(Informational Text) ANALYSIS WITHIN OR ACROSS TEXTS: Analyze or compare connections within or across texts (e.g. individuals, ideas, or events), or how information within or across texts reveals author's point of view or purpose.	1-IT 12-8
8	Reading	(Informational Text) TEXT STRUCTURES OR TEXT FEATURES: Relate knowledge of text structures (e.g. organization of a paragraph) or text features to analyze the impact (advantages/disadvantages) of those choices on meaning or presentation.	1-IT 13-8
8	Reading	(Informational Text) LANGUAGE USE: Interpret understanding of figurative language, word relationships, nuances of words and phrases, or figures of speech (e.g., verbal irony, puns) used in context and the impact of those word choices on meaning.	1-IT 14-8
8	Reading	(Literary Text) KEY DETAILS: Given an inference or conclusion, use explicit details and implicit information from the text to support the inference or conclusion provided.	1-LT 1-8
8	Reading	(Literary Text) CENTRAL IDEAS: Determine a theme or central idea from evidence in the text, or provide an objective summary of the text.	1-LT 2-8
8	Reading	(Literary Text) WORD MEANINGS: Determine intended or precise meanings of words, including academic/tier 2 words, domain-specific (tier 3) words, and words with multiple meanings, based on context, word relationships (e.g., connotations, denotations), word structure (e.g., common Greek or Latin roots, affixes), or use of reference materials (e.g., dictionary), with primary focus on determining meaning based on context and the academic (tier 2) vocabulary common to complex texts in all disciplines.	1-LT 3-8
8	Reading	(Literary Text) REASONING & EVIDENCE: Make an inference or draw a conclusion about a text OR make inferences or draw conclusions in order to compare texts (e.g., dialogue, plot, character development, points of view, themes) and use supporting evidence as justification/explanation.	1-LT 4-8

8	Reading	(Literary Text) ANALYSIS WITHIN OR ACROSS TEXTS: Analyze relationships among literary elements (e.g., dialogue, advancing action, character actions/interactions) within or across texts or analyze differences in point of view within or across texts.	1-LT 5-8
8	Reading	(Literary Text) TEXT STRUCTURES & FEATURES: Analyze text structures and the impact of those choices on meaning or presentation.	1-LT 6-8
8	Reading	(Literary Text) LANGUAGE USE: Interpret and analyze figurative language use (e.g., figurative, connotative meanings) or demonstrate understanding of nuances in word meanings used in context and the impact of those word choices on meaning and tone.	1-LT 7-8
8	Writing	WRITE/REVISE BRIEF TEXTS: Apply narrative techniques (e.g., dialogue, description, pacing) and appropriate text structures and transitional strategies for coherence when writing/revising one or more paragraphs of narrative text (e.g., closure, introduce narrator or use dialogue when describing an event).	2-W 1-8
8	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of explanatory text: organizing ideas by stating and maintaining a focus (thesis) tone, providing appropriate transitional strategies for coherence, developing a topic including relevant supporting evidence/vocabulary and elaboration, or providing a conclusion that is appropriate to purpose and audience and follows from and supports the information or explanation presented.	2-W 3-8
8	Writing	USE TEXT FEATURES: Employ text features and visual components appropriate to purpose and style. Not assessed in summative assessment.	2-W 5-8
8	Writing	WRITE/REVISE BRIEF TEXTS: Apply a variety of strategies when writing/revising one or more paragraphs of text that express arguments about topics or sources: establishing and supporting a claim, organizing and citing supporting evidence using credible sources, providing appropriate transitional strategies for coherence, appropriate vocabulary, or providing a conclusion that is appropriate to purpose and audience and follows from and supports the argument(s) presented.	2-W 6-8
8	Writing	LANGUAGE & VOCABULARY USE: Strategically use precise language and vocabulary (including academic words, domain-specific vocabulary and figurative language) and style appropriate to the purpose and audience when revising or composing texts.	2-W 8-8
8	Writing	EDIT: Apply or edit grade-appropriate grammar usage, capitalization, punctuation, and spelling to clarify a message and edit narrative, explanatory, and argumentative texts.	2-W 9-8
8	Writing	TECHNOLOGY: Use tools of technology to gather information, make revisions, or produce texts. Not assessed in summative assessment.	2-W 10-8
8	Listening	LISTEN/INTERPRET: Analyze, interpret, and use information delivered orally.	3-L 4-8
8	Research/Inquiry	ANALYZE/INTEGRATE INFORMATION: Analyze information within and among sources of information (print and non-print texts, data sets, conducting procedures, etc.).	4-CR 2-8

8	Research/Inquiry	EVALUATE INFORMATION/SOURCES: Use reasoning, evaluation, and evidence to assess the credibility and accuracy of each source in order to gather and select information to support analysis, reflection, and research.	4-CR 3-8
8	Research/Inquiry	USE EVIDENCE: Cite evidence to support arguments, ideas, or analyses.	4-CR 4-8

Appendix B: List of Targets for Mathematics

Grade	Reporting Categories	Online Reporting Label	Item Bank Strand Key (internal use)
3	Concepts and Procedures	Operations and Algebraic Thinking: Represent and solve problems involving multiplication and division.	1 P TS03 A-3
3	Concepts and Procedures	Operations and Algebraic Thinking: Understand properties of multiplication and the relationship between multiplication and division.	1 P TS01 B-3
3	Concepts and Procedures	Operations and Algebraic Thinking: Multiply and divide within 100.	1 P TS01 C-3
3	Concepts and Procedures	Operations and Algebraic Thinking: Solve problems involving the four operations, and identify and explain patterns in arithmetic.	1 P TS02 D-3
3	Concepts and Procedures	Numbers and Operations —Base Ten: Use place value understanding and properties of arithmetic to perform multi-digit arithmetic.	1 S TS04 E-3
3	Concepts and Procedures	Numbers and Operations —Fractions: Develop understanding of fractions as numbers.	1 P TS02 F-3
3	Concepts and Procedures	Measurement and Data: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	1 P TS01 G-3
3	Concepts and Procedures	Measurement and Data: Represent and interpret data.	1 S TS05 H-3
3	Concepts and Procedures	Measurement and Data: Geometric measurement: Understand concepts of area and relate area to multiplication and to addition.	1 P TS01 I-3
3	Concepts and Procedures	Measurement and Data: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	1 S TS04 J-3
3	Concepts and Procedures	Geometry: Reason with shapes and their attributes.	1 S TS04 K-3
4	Concepts and Procedures	Operations and Algebraic Thinking: Use the four operations with whole numbers to solve problems.	1 P TS01 A-4
4	Concepts and Procedures	Operations and Algebraic Thinking: Gain familiarity with factors and multiples.	1 S TS06 B-4
4	Concepts and Procedures	Operations and Algebraic Thinking: Generate and analyze patterns.	1 S TS06 C-4
4	Concepts and Procedures	Numbers and Operations —Base Ten: Generalize place value understanding for multi-digit whole numbers.	1 P TS03 D-4
4	Concepts and Procedures	Numbers and Operations —Base Ten: Use place value understanding and properties of operations to perform multi-digit arithmetic.	1 P TS01 E-4
4	Concepts and Procedures	Numbers and Operations —Fractions: Extend understanding of fraction equivalence and ordering.	1 P TS01 F-4
4	Concepts and Procedures	Numbers and Operations —Fractions: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	1 P TS02 G-4

4	Concepts and Procedures	Numbers and Operations —Fractions: Understand decimal notation for fractions, and compare decimal fractions.	1 P TS04 H-4
4	Concepts and Procedures	Measurement and Data: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	1 S TS05 I-4
4	Concepts and Procedures	Measurement and Data: Represent and interpret data.	1 S TS06 J-4
4	Concepts and Procedures	Measurement and Data: Geometric measurement: understand concepts of angle and measure angles.	1 S TS05 K-4
4	Concepts and Procedures	Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	1 S TS07 L-4
5	Concepts and Procedures	Operations and Algebraic Thinking: Write and interpret numerical expressions.	1 S TS05 A-5
5	Concepts and Procedures	Operations and Algebraic Thinking: Analyze patterns and relationships.	1 S TS05 B-5
5	Concepts and Procedures	Numbers and Operations —Base Ten: Understand the place value system.	1 P TS03 C-5
5	Concepts and Procedures	Numbers and Operations —Base Ten: Perform operations with multi-digit whole numbers and with decimals to hundredths.	1 P TS03 D-5
5	Concepts and Procedures	Numbers and Operations —Fractions: Use equivalent fractions as a strategy to add and subtract fractions.	1 P TS01 E-5
5	Concepts and Procedures	Numbers and Operations —Fractions: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	1 P TS02 F-5
5	Concepts and Procedures	Measurement and Data: Convert like measurement units within a given measurement system.	1 S TS05 G-5
5	Concepts and Procedures	Measurement and Data: Represent and interpret data.	1 S TS05 H-5
5	Concepts and Procedures	Measurement and Data: Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.	1 P TS01 I-5
5	Concepts and Procedures	Geometry: Graph points on the coordinate plane to solve real-world and mathematical problems.	1 S TS04 J-5
5	Concepts and Procedures	Geometry: Classify two-dimensional figures into categories based on their properties.	1 S TS04 K-5
6	Concepts and Procedures	Ratios and Proportional Relationships: Understand ratio concepts and use ratio reasoning to solve problems.	1 P TS02 A-6
6	Concepts and Procedures	The Number System: Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	1 P TS03 B-6
6	Concepts and Procedures	The Number System: Compute fluently with multi-digit numbers and find common factors and multiples.	1 S TS05 C-6
6	Concepts and Procedures	The Number System: Apply and extend previous understandings of numbers to the system of rational numbers.	1 P TS04 D-6

6	Concepts and Procedures	Expressions and Equations: Apply and extend previous understandings of arithmetic to algebraic expressions.	1 P TS01 E-6
6	Concepts and Procedures	Expressions and Equations: Reason about and solve one-variable equations and inequalities.	1 P TS01 F-6
6	Concepts and Procedures	Expressions and Equations: Represent and analyze quantitative relationships between dependent and independent variables.	1 P TS03 G-6
6	Concepts and Procedures	Geometry: Solve real-world and mathematical problems involving area, surface area, and volume.	1 S TS05 H-6
6	Concepts and Procedures	Statistics and Probability: Develop understanding of statistical variability.	1 S TS05 I-6
6	Concepts and Procedures	Statistics and Probability: Summarize and describe distributions.	1 S TS05 J-6
7	Concepts and Procedures	Ratios and Proportional Relationships: Analyze proportional relationships and use them to solve real-world and mathematical problems.	1 P TS01 A-7
7	Concepts and Procedures	The Number System: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	1 P TS02 B-7
7	Concepts and Procedures	Expressions and Equations: Use properties of operations to generate equivalent expressions.	1 P TS02 C-7
7	Concepts and Procedures	Expressions and Equations: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	1 P TS01 D-7
7	Concepts and Procedures	Geometry: Draw, construct and describe geometrical figures and describe the relationships between them.	1 S TS03 E-7
7	Concepts and Procedures	Geometry: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	1 S TS03 F-7
7	Concepts and Procedures	Statistics and Probability: Use random sampling to draw inferences about a population.	1 S TS04 G-7
7	Concepts and Procedures	Statistics and Probability: Draw informal comparative inferences about two populations.	1 S TS04 H-7
7	Concepts and Procedures	Statistics and Probability: Investigate chance processes and develop, use, and evaluate probability models.	1 S TS04 I-7
8	Concepts and Procedures	The Number System: Know that there are numbers that are not rational, and approximate them by rational numbers.	1 S TS04 A-8
8	Concepts and Procedures	Expressions and Equations: Work with radicals and integer exponents.	1 P TS02 B-8
8	Concepts and Procedures	Expressions and Equations: Understand the connections between proportional relationships, lines, and linear equations.	1 P TS01 C-8
8	Concepts and Procedures	Expressions and Equations: Analyze and solve linear equations and pairs of simultaneous linear equations.	1 P TS01 D-8
8	Concepts and Procedures	Functions: Define, evaluate, and compare functions.	1 P TS02 E-8
8	Concepts and Procedures	Functions: Use functions to model relationships between quantities.	1 P TS03 F-8

8	Concepts and Procedures	Geometry: Understand congruence and similarity using physical models, transparencies, or geometry software.	1 P TS02 G-8
8	Concepts and Procedures	Geometry: Understand and apply the Pythagorean theorem.	1 P TS03 H-8
8	Concepts and Procedures	Geometry: Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.	1 S TS04 I-8
8	Concepts and Procedures	Statistics and Probability: Investigate patterns of association in bivariate data.	1 S TS04 J-8