DEPARTMENT

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Acknowledgments

The *Teacher Guide to the Smarter Balanced Summative Assessments: Mathematics, Grades Six, Seven, and Eight* was developed by California Department of Education staff, with support from the California Teachers Association, the California Federation of Teachers, the Smarter Balanced Assessment Consortium, and WestEd. It was designed and prepared for printing by San Joaquin County Office of Education.

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Introduction

The purpose of the Teacher Guide is to deepen teachers' understanding of the Smarter Balanced Summative Assessments, their alignment with the California Common Core State Standards (CA CCSS), and their intended connection to classroom learning. The guide for mathematics is grade-span specifc and synthesizes key information from a wide array of resources and resource sites, including:

- California Common Core State Standards
- *California Mathematics Framework for California Public Schools: Kindergarten through Grade Twelve (Mathematics Framework)*
- Content, item, task, and stimulus specifcations
- Smarter Balanced Test Blueprints
- Smarter Balanced Practice Test Scoring Guides
- Smarter Balanced Communication Tools
- Smarter Balanced Digital Library

The mathematics guides are organized by grade span to highlight the changes in expectations as students move through the grade levels. Within the guides there are examples from Smarter Balanced Item Specifcations that explain how student skills and knowledge are assessed and reported through collecting and scoring evidence. This grades three through fve guide has an example from Claim 1, Concepts and Procedures, Grade Five. The grades six through eight guide shows a specifcation for Claim 3, Communicating Reasoning, Grade Eight, and the high school guide shows an example from Claim 4, Modeling and Data Analysis. The guide also provides examples of the range and types of items that appear on the assessments and the multiple resources that are available to teachers, students, and parents to "de-mystify" the assessments.

The Smarter Balanced Summative Assessments are part of the California Assessment of Student Performance and Progress (CAASPP) System.

The new Smarter Balanced Summative Assessments are different from the previous tests included in the Standardized Testing and Reporting (STAR) Program in several ways including:

- Designed to measure the expectations embodied in the CA CCSS adopted by the California State Board of Education in August 2010
- Emphasize deeper knowledge of core concepts and ideas within and across the disciplines along with analysis, synthesis, problem solving, communication, and critical thinking
- Include a greater variety of item types
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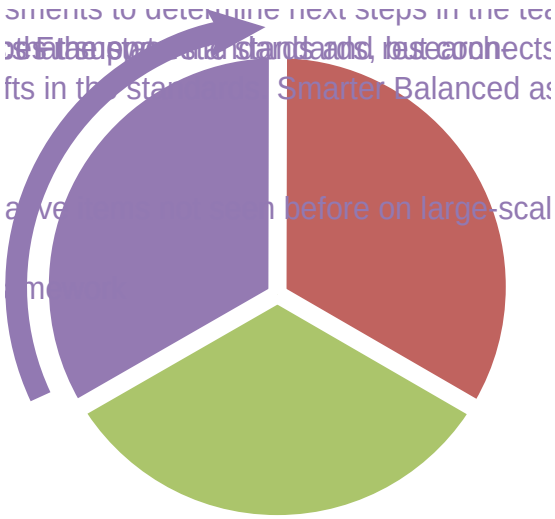
Section One: Purpose of the Guide—Resource for Planning Learning Events to Implement the Mathematics Framework for California Public Schools for Kindergarten through Grade Twelve Public Schools

These Teacher Guides are intended to be a resource for classroom teachers as they plan learning activities that fully implement the California *Mathematics Framework* using assessment feedback from the Smarter Balanced system of assessments.

Figure 1. Curriculum, Instruction, and Assessment Feedback Loop



Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve

The first stop for teachers in planning learning events is the *Mathematics Framework*. The guidance in this resource is research-based and includes practical examples to help all teachers.

Guiding Principles behind the development of the Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (2015):[1]

- Mathematical ideas should be explored in ways that stimulate curiosity, create enjoyment of mathematics, and develop depth of understanding.
- An effective mathematics program is based on a carefully designed set of content standards that are clear and specific, focused, and articulated over time as a coherent sequence.
- Technology is an essential tool that should be used strategically in mathematics education.
- All students should have a high-quality mathematics program that prepares them for college and careers.
- Assessment of student learning in mathematics should take many forms to inform instruction and learning.

Guiding Principle 1: Learning

Mathematical ideas should be explored in ways that stimulate curiosity, create enjoyment of mathematics, and develop depth of understanding.

For students to achieve mathematical understanding, instruction and learning must balance mathematical procedures and conceptual understanding. Students should be actively engaged in doing meaningful mathematics, discussing mathematical ideas, and applying mathematics in interesting, thought-provoking situations. Student understanding is further developed through ongoing reflection about cognitively demanding and worthwhile tasks.

1 Introduction of the *Mathematics Framework* (2015), California Department of Education, Sacramento, CA, page 3 (found on the CDE Mathematics Curriculum Frameworks Web page at http://www.cde.ca.gov/ci/ma/cf/).

Tasks should be designed to challenge students in multiple ways. Short- and long-term investigations that connect procedures and skills with conceptual understanding are integral components of an effective mathematics program. Activities should build upon students' curiosity and prior knowledge and enable them to solve progressively deeper, broader, and more sophisticated problems.[2]

The Smarter Connection

Smarter Balanced math assessments use a variety of item types and performance assessment tasks to challenge students in multiple ways. The items and tasks are reviewed by teachers to make sure they will engage the student's curiosity and encourage them to dig deeper for innovative solutions to uncommon problems.

Guiding Principle 4: Equity

All students should have a high-quality mathematics program that prepares them for college and careers.

The standards provide clear signposts along the way to the goal of college and career readiness for all students; they also accommodate a broad range of students, from those requiring a signifcant amount of extra support in mathematics to others needing minimal support or enrichment opportunities. To promote achievement of these standards, teachers should plan for, instruct, model, and support classroom discourse, refection, use of multiple problem-solving strategies, and a positive disposition toward mathematics. They should have high expectations for all students. At every level of the education system, teachers should act on the belief that every child can and should learn challenging mathematics.

The Smarter Connection

Because mathematics is the cornerstone of many disciplines, a comprehensive curriculum should include applications to everyday life and modeling activities that demonstrate the connections among disciplines. Schools should also provide opportunities for communicating with experts in applied felds to enhance students' knowledge of these connections.[5]

Assessments take a variety of forms, require different amounts of time, and address various aspects of student learning. Gaps in knowledge and errors in reasoning can be identifed when students "think aloud" or talk through their reasoning. By observing and questioning students as they work, teachers can gain insight into students' abilities to apply appropriate mathematical concepts and skills, make conjectures, and draw conclusions.

The Smarter Connection

Smarter Balanced Interim Assessments and formative assessment resources in the Digital Library support teachers to identify gaps in student knowledge and gain insight into student thinking. Partnerships with mathematics teachers and researchers continue to enhance the professional learning and instructional resources that support effective classroom-based assessment.

Assessment should also be a major component of the learning process. As students help identify goals for lessons or investigations, they gain greater awareness of what they need to learn and how they will demonstrate that learning. Engaging students in this kind of goal setting can help them refect on their work, understand the standards to which they are held accountable, and take ownership of their learning.[6]

Learning in the 21st Century

In supporting 21st century learning, California is part of a growing national movement to teach students the problem-solving skills and critical thinking they need for college, careers, and civic life. The Partnership for 21st Century Skills (P21) developed a framework for 21st century learning comprising student outcomes and support systems. The student outcomes consist of the following elements:

- Core subjects and 21st century interdisciplinary themes, which include global awareness; fnancial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; and environmental literacy
- Life and career skills, which include fexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility

6 Ibid. page 7

- Learning and innovation skills, often referred to as the "4 Cs": creativity and innovation, critical thinking and problem solving, communication, and collaboration
- Information, media, and technology skills, which include information literacy, media literacy, and ICT (information, communications, and technology) literacy.

Support systems provided by P21 include standards and assessments, curriculum and instruction, professional development, and learning environments.[7]

The *Mathematics Framework* guiding principles are important to keep in mind when planning learning activities. Daily opportunities to engage in rich learning using 21st century skills keep students engaged and develop students as partners in their own learning.

The Smarter Connection

Smarter Balanced performance assessment tasks were designed to meet the requirements of 21st century learning. The topics are real-world examples of issues that engage students. The performance tasks (PTs) are designed to elicit evidence of critical thinking, creative thinking, and consideration of the local and global impact of the issues.

7 Ibid. page 7

Section Two: Understanding and Using Smarter Balanced Test Design Principles to Support Classroom Learning Events

This section describes the evidence-centered design of the Smarter Balanced assessments and the hierarchical approach to item development. There are examples of how the test developers and teachers use evidence to accurately assess the learning required by the CA CCSS. Connecting the use of evidence-centered design and classroom learning activities allows a strong connection between Smarter Balanced results and resources.

Understanding the Fundamentals of Smarter Balanced Design

Knowing how the Smarter Balanced assessment system is developed, particularly how items are developed, can be helpful in understanding how to make the best use of the assessment resources and results. This knowledge should facilitate increasing the intentional connection between curriculum, instruction, and assessment.

The CA CCSS in Mathematics include content standards and standards for mathematical practice. In order to fully align the assessment to all of these standards, the Smarter Balanced test design has grade-level priority and supporting content clusters as assessment targets for Claim 1. For Claims 2, 3, and 4, the standards for mathematical practice emphasized at each claim and grade level are the assessment targets. (See the Mathematics Summative Assessment Blueprint on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/, under the Summative Test Blueprints tab, for grade-by-grade assessment targets in all claims.) The performance task in each grade uses priority content to frame a multi-step task and collect evidence on the student's ability to use content knowledge and mathematical practices effectively to solve the problems and communicate the rationale with supporting evidence.

The diagram and charts on the following pages describe the structure of Smarter Balanced item specifications—how evidence-centered design is used to develop items. A mathematics, grade eight example is used here from claim 1. While it is certainly not necessary to memorize this information, having a working knowledge of item development can facilitate use of results to enhance learning events. This item specification information is available for all Smarter Balanced assessments in resources listed at the end of this document.

Smarter Balanced has provided a zip file for each Claim and Grade of the item specifications used by test item writers to develop questions which can be found on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/ under the Item and

After carefully analyzing the CA CCSS and thinking about what students must know and be able to do in order to be prepared for college and career paths, Smarter Balanced identifed four claims specifc to English language arts and four claims specifc to mathematics that focus on what students are expected to be able to do at each grade level.

Once the domains are defned and the claims are identifed, the third step is to clearly identify the knowledge, skills, and abilities (KSAs) that form the content domain. In

Figure 3. Relationship Among Overall Claims, Sub-Domain Assessment Claims, Assessment Targets and Standards

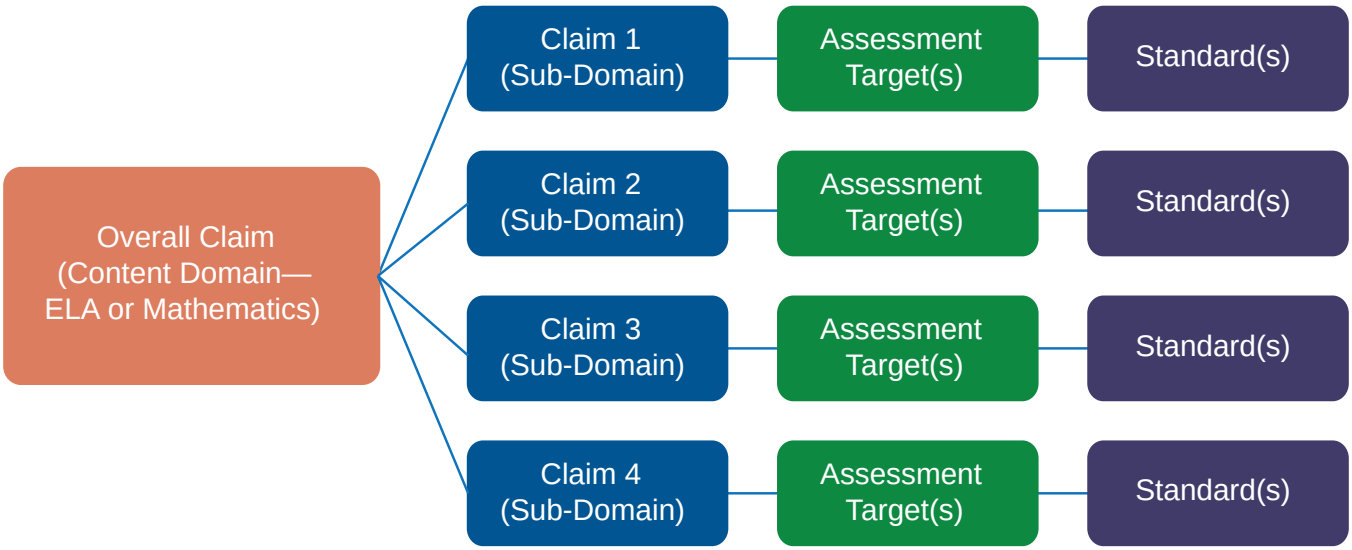
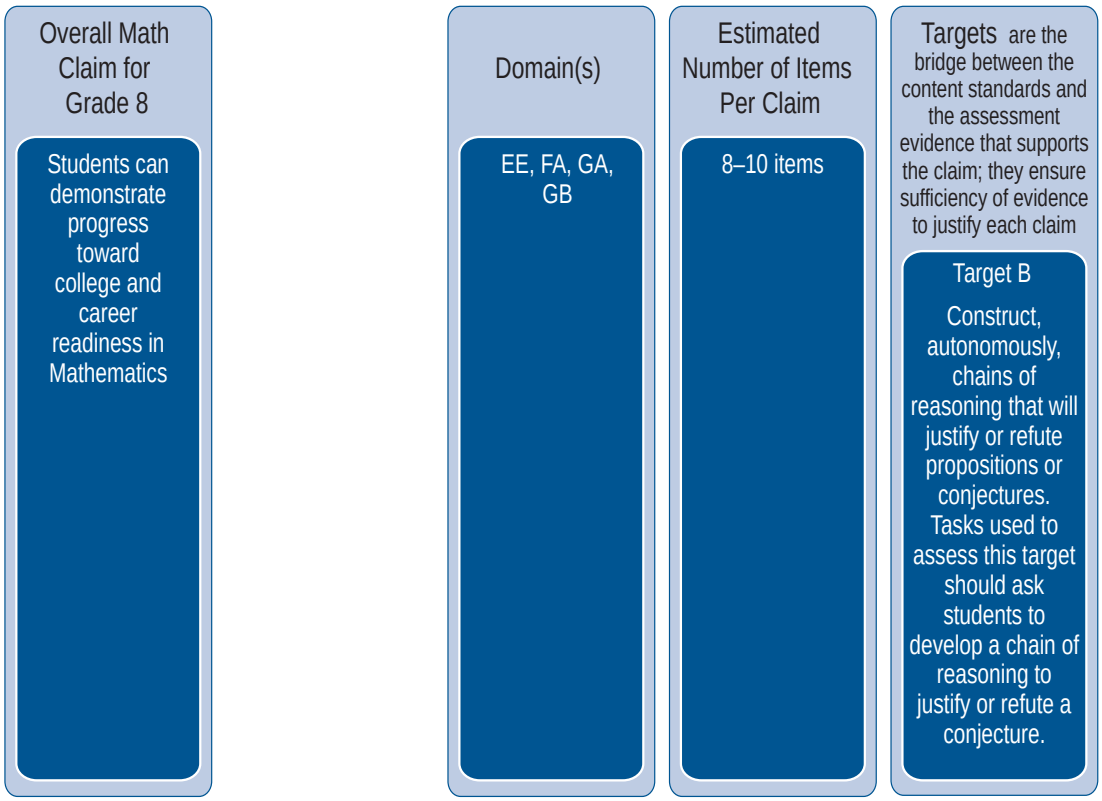


Figure 3a provides a content-specifc example of the hierarchy of item development and illustrates how the domain overall claims, sub-domain assessment claims, assessment targets, and standards are connected, both in test development and reporting of scores. Recognizing the hierarchy makes the analysis of Smarter Balanced results easier to understand and emphasizes the importance of using the different levels of scores as contributors to a much larger picture.

Figure 3a. Anatomy of a Test—The Hierarchy of the Smarter Balanced Summative Assessment



standards in problems to test the application of mathematical practices in Claims 2, 3, and 4. For a complete picture of an integrated approach to learning events with multiple entry points and opportunities for students to demonstrate evidence of deep understanding, cross-reference all of the grade level item specifcations related to a domain and cluster in all of the Claims. (See Development Notes in Figure 4). The Smarter Balanced Item Specifcations are a complex but necessary guiding resource as educators begin to analyze results. The specifcations are a rich resource of information that includes the following:

- Intended claim (of what is being measured)
- Specifc CA CCSS standards that are measured and connections to related standards in the grade below and the grade above
- Task models with example problems
- Types of items allowed
- Types of accommodations allowed
- Depth of knowledge, and
- Statements of evidence required of students

Often teachers want to know, “How good is good enough?” To give guidance to item writers, Smarter Balanced developed Range Achievement Level Descriptors (ALDs) for each grade, claim, and assessment target. These descriptions of what students should be able to do at each level of performance may guide the development of classroom rubrics and operationalize the expectations from the assessments. See the example in Figure 4:

)LJXUH ,WHP 6SHFL¿FDWLRQ &RPPXQLFDWLQJ 5HDVR
Grades Six, Seven, and Eight
1RWH ,WHP 6SHFL¿FDWLRQV LQ &ODLPV DQG DSSO

Claim 3: Students clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others. Secondary Claim(s): Items/tasks written primarily to assess Claim 3 will necessarily involve Claim 1 content targets. Related Claim 1 targets should be listed below the Claim 3 targets in the item form. If Claim 2 or Claim 4 targets are also directly related to the item/task, list those following the Claim 1 targets in order of prominence. Primary Content Domain: Each item/task should be classifed as having a primary, or dominant, content focus. The content should draw upon the knowledge and skills articulated in the progression of standards leading up to and including the targeted grade within and across domains. Secondary Content Domain(s): While tasks developed to assess Claim 3 will have a primary content focus, components of these tasks will likely produce enough evidence for other content domains that a separate listing of these content domains needs to be included where appropriate. The standards in the NS domain in grades 6-8 can be used to construct higher diffculty items for the adaptive pool. The integration of the RP, EE, F, and G domains with NS allows for higher content limits within the grade level than might be allowed when staying within the primary content domain.
Target B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.

Standards	
8.EE.A.1 8.EE.B.5 8.EE.B.6 8.EE.C.a 8.EE.C.b 8.EE.C.a 8.F.A.1 8.F.A.2 8.F.A.3 8.G.A.1 8.G.A.2 8.G.A.4 8.G.A.5 8.G.B.6 8.G.B.8	Expressions and Equations (EE) (($ Work with radicals and integer exponents (($ Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, 32 × 3–5 = 3–3 = 1/33 = 1/27*. ((% Understand the connections between proportional relationships, lines, and linear equations. ((% Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.* ((% Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation *y = mx* for a line through the origin and the equation *y = mx + b* for a line intercepting the vertical axis at *b*. ((& Analyze and solve linear equations and pairs of simultaneous linear equations. ((& Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infnitely many solutions, or no solutions. Show which of these

Range Achievement Level Descriptors (ALD)	**Level 1** Students should be able to base arguments on concrete referents such as objects, drawings, diagrams, and actions and identify obvious flawed arguments in familiar contexts. **Level 2** Students should be able to find and identify the flaw in an argument by using examples or particular cases. Students should be able to break a familiar argument given in a highly scaffolded situation into cases to determine when the argument does or does not hold. **Level 3** Students should be able to use stated assumptions, definitions, and previously established results and examples to test and support their reasoning or to identify, explain, and repair the flaw in an argument. Students should be able to break an argument into cases to determine when the argument does or does not hold. **Level 4** Students should be able to use stated assumptions, definitions, and previously established results to support their reasoning or repair and explain the flaw in an argument. They should be able to construct a chain of logic to justify or refute a proposition or conjecture and to determine the conditions under which an argument does or does not apply.
General Task Model Expectations for Target 3B	Items for this target should focus on the core mathematical work that students are doing around ratios and proportional relationships, the rational number system, and equations and expressions in grades six and seven and equations, functions, and geometry in grade eight with mathematical content from other domains playing a supporting role in setting up the reasoning contexts. Items for this target can probe a key mathematical structure such as that found in expressions and equations, ratios and proportional relationships, and the rational number system. Items for this target can require students to solve a multi-step, well-posed problem involving the application of mathematics to a real-world context. The difference between items for Claim 2A and Claim 3B is that the focus in 3B is on communicating the reasoning process in addition to getting the correct answer. Note that in grades six through eight, items provide less structure than items for earlier grades to focus on justifying or refuting a proposition or conjecture. Many machine-scorable items for these task models can be adapted to increase the autonomy of student's reasoning process but would require hand-scoring
Allowable Response Types	Multiple-Choice, single correct response(MC); Multiple Choice, multiple correct response (MS); Equation/Numeric (EQ); Drag and Drop, Hot Spot, and Graphing (GI); Matching Tables (MA); Fill-in Table (TI) No more than six choices in MS and MA items.

Development Notes	Items and task assessing Claim 3 may involve application of more than one standard. The focus is on communicating reasoning rather than demonstrating mathematical concepts or simple applications of mathematical procedures. Targeted content standards for Claim 3 should belong to the major work of the grade (reference table of standards shown below).

Smarter Balanced Assessment Evidence Statements Describe Learning Expectations

The Smarter Balanced assessments are designed to gather evidence from students that shows what they know about the standards. To keep the assessment consistent with the standards and classroom learning, teachers were actively engaged in the review and revision of the evidence statements to accurately describe what performance would meet the standard at a particular grade level. For the purposes of the assessments, the standards are organized into assessment target groups. As illustrated in Figure 3, the assessment targets provide a bridge between the content standards and the evidence that supports the claims.

The Smarter Connection

The evidence statements are directly aligned to the standard(s) being tested. Teachers may consider the evidence statements while planning classroom learning events, as well as success criteria for those events, so the classroom learning and the assessment expectations will be consistent.

The Smarter Balanced evidence statements aligned to domain and cluster standards are provided in the Smarter Balanced Item Specifcations for Claim 1, Concepts and Procedures. For an example of a Claim 1 Item Specifcations with evidence statements, see this grades three through fve teacher guide, Figure 4 or all Claim 1 Item Specifcations. In the grades six through eight teacher guide, Figure 4 provides an example of a grade eight mathematics item specifcation. In that example, there is a description of the expectations for students using mathematical practices in the context of problems using content knowledge of the priority standards as articulated in the Development Notes. In the high school guide, there is an example of item specifcations for Claim 4, Modeling and Data Analysis in Figure 4.

Figure 5 describes how the Smarter Balanced expectations statements may be used in conjunction with classroom evidence to maximize opportunities for demonstrations of student learning in applying mathematical practices.

Figure 6 graphically displays the use of the Item Specifcations in helping craft a classroom learning event consistent with the Smarter Balanced expectations statements in Claim 3 specifcations.

Figure 5. Suggested process to Identify Expectations Requirements
IURP WKH 6PDUWHU %DODQFHG ,WHP 6SHFL¿FDWLRQV IRU &OD

Step 1: Match the Standards for Mathematical Practice with the Claim and corresponding Target on the Task Model.

Standard of Mathematical Practice 3: Construct viable arguments and critique the reasoning of others.

*UDGH &ODLP &RPPXQLFDWLQJ &RQFOXVLRQV

Target B. Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.

Step 2: Find the expectation statements in the task model used to write items for the test on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/ under the Item and Task Specifcation Tab then under Math Item Specifcation. Also fnd the Mathematics General Rubrics, and Mathematics Item Specs All Grades under Math Specifcation and Calculator Availability by Grade Level, Mathematics Audio Guidelines, Scoring Guide for Selected Short-Text Mathematics Items, and Mathematics PT Items Specs All Grades under Guidelines at http://www.smarterbalanced.org/assessments/development/.

Expectations Rubric:

(2 points) The student includes the correct numeric value in the response (80) and provides a coherent, complete explanation or sequence of computations that shows where this comes from (see Examples).

(1 point) The student enters the correct numeric value but does not provide a coherent explanation OR the student provides an incorrect speed and includes an explanation that shows an understanding of how the answer could be found, but with some computational errors or a small misstep in reasoning.

Step 3: Become familiar with the task models and example questions used in developing the items so that students also gain familiarity with the vocabulary and phrasing of these task models before the test.

Primary Target 3B (Content Domain RP), Secondary Target 1A (CCSS 7.RP.A), Tertiary Target 4F (Note: The content standard is from grade seven)

A car is traveling at a constant speed and drove 75 miles in 1.5 hours. One mile is approximately 1.6 kilometers. Approximately how fast is the car traveling in kilometers per hour?

Explain or show clear steps for how you determined your answer.

Example 1

Going 75 miles in 1.5 hours is the same as going 50 miles per hour.

50 miles is 50*1.6=80 km.

A car driving 50 miles per hour is driving 80 kilometers per hour.

Example 2

75 miles in 1.5 hours is 75/1.5 = 50 mi/hr.

50 mi/hr * 1.6 km/mi =80 km/hr.

The car is traveling at 80 kilometers per hour.

Response Type: Short Text (hand scored)

Section Three: Instruction with Planned Evidence Collection and Feedback Helps Teachers and Students Improve Student Learning

How can teachers use the Smarter Balanced Tools to enhance the teaching and learning experience?

One of the many challenges for teachers in planning effective learning events for students is to know the specifc needs of each student. Planned evidence collection during daily instruction using the formative assessment process, after a unit of instruction on a key topic using interim assessments, and at the end of the year with summative assessments provides a balanced view of the student's learning progress. The summative assessments can affrm the evidence collected from other sources in the classroom during the school year.

The Smarter Connection

To accurately measure student progress in learning the content standards and standards for mathematical practice, the Smarter Balanced Content Specifcations describe how to develop questions across the claims that bring coherence to the body of mathematics learned at the grade level that builds from what was learned before and supports what will be learned next.

The *Mathematics Framework* emphasizes the integrated nature of mathematics domains and clusters. No standard should be taught in isolation. Students respond to high quality, real-world tasks that apply content knowledge using standards of mathematical practice.

Performance assessment tasks based on the Smarter Balanced model give students the opportunity to demonstrate a deep understanding of the problem-solving process, using modeling and data analysis, and communicating reasoning. Teachers and students can build evidence for a solution using real-world source materials and engaging, age-appropriate questions. Examples of student responses to performance tasks on the Practice Tests as well as the Range ALD descriptions are resources for teachers and students to use to develop classroom rubrics to guide the evaluation of classroom learning.

Assessment for Learning

The exemplar assessment refects the classroom learning environment and experience of the student and collects evidence that can be interpreted to evaluate the student's level of understanding of the standard being assessed. This is true for classroom

assessment as well as large-scale statewide assessment. The *Mathematics Framework* distinguishes between assessment for learning and assessment of learning.[8] An annual summative assessment, like the Smarter Balanced Summative Assessment, is an assessment *of* learning; while it does not provide teachers with immediate, actionable feedback on student learning, it can provide educators with valuable information to enhance the teaching and learning process, as well as provide a valid and reliable measure of achievement at the student, school, district, and state levels.

In contrast, assessment for learning, or formative assessment, occurs during instruction, allowing teachers to adapt instruction as needed. Teaching with the formative assessment process includes challenging students with rigorous tasks. Lessons with formative assessments clarify the student learning goals and success criteria and elicit evidence of student understanding. As teachers interpret this evidence, instruction may be adjusted to optimize learning. Learning is accomplished when students demonstrate and apply the knowledge and skills of the standards. Students take an active role in their learning by using rubrics for self-assessment and peer assessment. Students collaborate with teachers to plan next steps to move up the learning progression and apply what they know to new situations to solve real-world problems. Using the formative assessment process, in conjunction with the Smarter Balanced resources, tools and results can maximize the use of assessments and assessment data in the teaching and learning cycle. Below are additional Smarter Balanced resources that can support and enhance teaching and learning.

The Smarter Balanced Assessment System offers a suite of tools and resources that support classroom-based formative assessment practices. These tools are located on the the Smarter Balanced Digital Library Web page at http://www.cde.ca.gov/ta/tg/sa/diglib.asp. The Digital Library has been built by and for educators within the Smarter Balanced Consortium. (All subscribers must provide a user name and password in order to log on to the Digital Library.)

Steps Toward Creating a More Authentic Assessment

Teachers from Smarter Balanced states, including California, participated in all phases of the test development process to push toward the delivery of an authentic assessment in a statewide system.

8 See Chapter 8 of the *2014 English Language Arts/English Language Development Framework,* which is posted on the CDE's SBE-Adopted *ELA/ELD Framework* Chapters Web page at http://www.cde.ca.gov/ci/rl/cf/elaeldfrmwrksbeadopted.asp.

As part of the test development process, Smarter Balanced held cognitive labs in participating states (including California). Students were asked to talk about what they were thinking when they answered trial test questions. This way, test developers could determine if the students were actually thinking about what the question writers intended when students answered the question. Using results from the cognitive labs, the student responses confirmed that the sample questions were at the correct level of rigor and deep understanding of the standard being tested. The labs also validated the usefulness of the technology tools for students with special needs, the ability of early elementary students to use the keyboard to manipulate the technology tools, and other critical concerns addressed by the computer-based delivery of the test.

Teachers are able to make use of the Smarter Balanced CAT items and performance tasks presented on the Practice Test to see how the collection of evidence from each question adds evidence to support all the claims in an integrated and coherent approach. These Practice Tests may be used in a whole group setting, or even used as starting points for creating classroom items or performance tasks. Teachers can gain an understanding of how the combination of evidence adds to the overall evaluation of student understanding of the math domains and clusters as a whole. With this understanding, teachers may construct their own classroom models for collecting evidence that align pieces of evidence to each standard being assessed.

The Smarter Connection

Figure 7 provides a side-by-side comparison between the Major Principles of the California Common Core State Standards in Mathematics and the elements of the Smarter Balanced test design that support these shifts

)LJXUH 6LGH E\ 6LGH &RPSDULVRQ RI WKH 0DMRU 3ULQFLSOH

State Standards in Mathematics [9] and Smarter Balanced Test Design [10]

California Common Core State Standards in Mathematics Focus	Smarter Balanced Test Design Focus
Place strong emphasis where the standards focus	There are grade-level specifc blueprints that detail the priority clusters and the additional and supporting clusters in Concepts and Procedures (Claim 1) which comprise 50% of the assessment. Each cluster is assigned a number of questions consistent with the grade level focus. Performance assessment tasks are developed using designated priority standards at each grade level.
California Common Core State Standards in Mathematics Coherence	**Smarter Balanced Test Design Coherence**
Think across grades, and link to major topics in each grade	

Item and Task Types Collect Evidence in New Ways

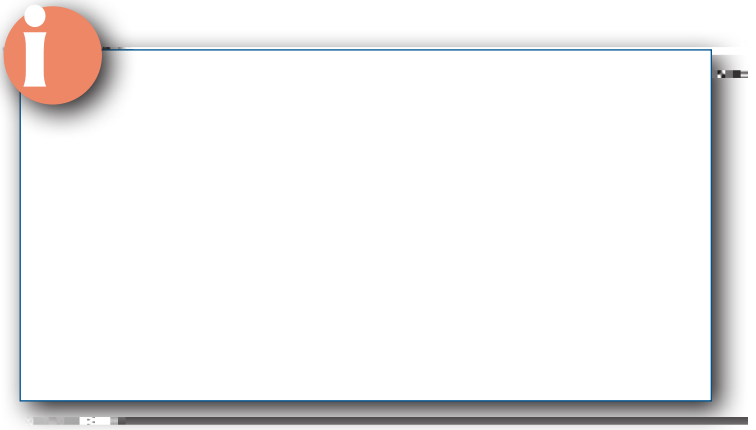
The Smarter Connection

The new Smarter Balanced Summative Assessments elicit greater, more precise evidence of a student's knowledge, reasoning, and understanding.

California's previous state tests relied almost exclusively on multiple-choice questions, which are easy to score, but somewhat limited in their ability to assess higher-order thinking skills.

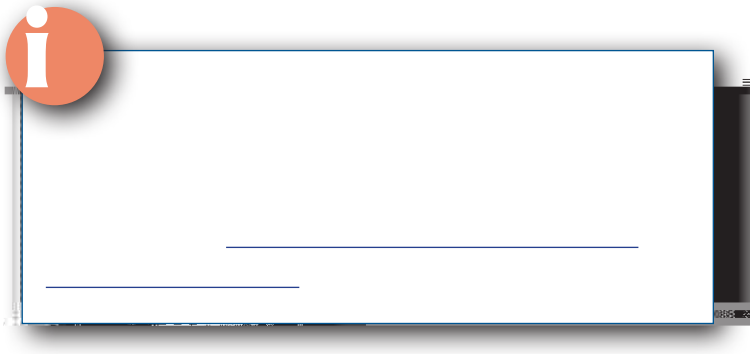
Item types and tasks include, but are not limited to:

- Multi-part questions that require students to use evidence from text
- Constructed-response items, which address skills of greater complexity and require students to demonstrate their thinking
- Technology-enhanced items, which require students to manipulate information
- A performance task (PT), which is an extended activity that measures students' ability to integrate knowledge and skills across multiple standards



Three major types of supports and accommodations that are available on the Smarter Balanced Summative Assessments are as follows:

- Universal tools, such as highlighting, digital notepads, zooming in/out, embedded glossary, writing tools for the ELA full writes, and calculators for some mathematics items—available to all students
- Designated supports, such as color contrast or masking, as well as bilingual glossaries and translated test directions—available to any student who has been identified with a special need, as determined by an educator or support team
- Accommodations, such as text-to-speech, closed captioning and on-screen American Sign Language translation—available to students with an individualized education plan (IEP) or Section 504 plan



Section Four: Using Smarter Balanced Score Reports to Analyze Data and Improve Learning

Practice Tests and Training Tests Available for Teachers, Students, and Parents

Teachers are able to use sample student responses and the Smarter Balanced Practice Test Scoring Guides to find comparisons to student work in their own classes or from students within the grade span. Once teachers recognize the difficulty and quality of "at standard" and "above standard" responses, they are able to plan learning progressions for students to help them move from "where they are" to "where they need to be" to improve their performance.

Recommended Resource

For more information, see the Smarter Balanced Web page at http://www.smarterbalanced.org/assessments/practice-and-training-tests/.

Note: It is important that all students gain familiarity with the keyboard and are able to type text of short-to-medium length (for constructed-response items) as well as a full-length essay (for the ELA PT).

How Student Performance Is Reported on the Smarter Balanced Assessments

Recommended Resource

For an explanation of the CAT of the Smarter Balanced Summative Assessments, view the video *What Is Computer Adaptive Testing (CAT)?* posted on the CAASP Current Administration of the CAASPP System Tests—Training Videos and Resources Web page at http://www.brainshark.com/ets/vu?pi=zHazEIbwozJ0cZz0&intk=189905388.

Recall how the Smarter Balance Summative Assessment scores are provided in different grain sizes—that is, different scores provide varying levels of detail that, taken together, can offer a productive way to examine scores. The Smarter Balanced Summative Assessment is intended to be an accurate measure of student performance at a point in time that is aligned to the state standards. Overall performance on mathematics is reported for students and for subgroups of students and provides a general description of achievement. These overall scores are particularly useful in an accountability system and can be helpful in developing the Local Control Accountability Plans required of all California districts. Claim performance may be used to help teachers understand student's strengths and needs as well as the strengths of groups, e.g., grades programs, subgroups. The following is an explanation of the overall mathematics score and each content claim score.

Recommended Resource

The tables for Smarter Balanced scale score ranges, which include the scale score ranges for ELA and mathematics by content area, grade level, and achievement level, are posted on the CDE's Smarter Balanced Scale Score Ranges Web page at http://www.cde.ca.gov/ta/tg/ca/sbscalerange.asp.

data to observe the trends of students toward each end of the difficulty continuum. If groups of students, on average, have met or exceeded the standards, there is evidence that the classroom learning events helped students practice applying deep understandings of the standards. If groups of students, on average, have not met or nearly met the standards, then teachers may consider the types of learning events, practice, and opportunities available for students to apply those deep understandings.

Claim Level Achievement—Shows General Student Performance in Content Areas

The test reports will also highlight a student's performance on each claim for Mathematics. A claim is a broad statement that identifies what is measured on the assessment. Figure 8 identifies the claims for Mathematics.

Figure 8 Mathematics Claims

of students in each claim area. The number of items making up the claim performance

Guiding Questions to Analyze Group-Level Data [11]

- What is the trend for this group of students related to being "on track" for college readiness? (Overall scores)
- What is the range of overall performance for my class or other groups of students? (Overall scores)
- Which claims appear to be areas of strength for my students? (Claim Achievement Levels)
- Which claims might be areas of need? (Claim Achievement Levels)
- Which targets show a variance from the whole test performance? (Assessment Target Report)
- Which curriculum resources might help me address student needs for the coming year? (Curriculum Resources)
- How do I find examples of student work that meet the goals for being "on track" for college readiness? (Practice Test Scoring Guides)
- What evidence do I need during classroom instruction to know that my students are making progress toward meeting the learning goals for each claim? (Evidence Statements from Item Specifications)
- Where might I find examples of evidence to meet the learning expectations for each claim? (Item Specifications and Practice Test Scoring Guides)
- How can I help my students gain familiarity with the types of questions that they will encounter on the Smarter Balanced Summative Assessments? (Item Specifications: See Appropriate Stems for Writing Items for a Target, Practice Test)
- How might I use the Smarter Balanced resources (Item Specifications, Achievement Level Descriptors, etc.) to increase my students' awareness of performance expectations?

11 Planning Curriculum for My Students Using Smarter Balanced Score Reports and Resources (2015), located on the Smarter Balanced Digital Library Web page at https://www.smarterbalancedlibrary.org/content/planning-curriculum-my-students-using-smarter-balanced-score-reports-and-resources.

Section Five: Conclusion—Putting It All Together

Formative Assessment Process

Teaching includes the formative assessment process with rigorous tasks. Lessons with formative assessments clarify the student learning goals and success criteria and elicit evidence of student understanding. As teachers interpret this evidence, instruction may be adjusted to optimize learning. Learning is accomplished when students demonstrate and apply the knowledge and skills of the standards. Students take an active role in their learning by using rubrics for self-assessment and peer assessment. Students collaborate with teachers to plan next steps to move up the learning progression and apply what they know to new situations to solve real-world problems.

Using the formative assessment process in conjunction with the Smarter Balanced resources, tools, and results, can maximize the use of assessments and assessment data in the teaching and learning cycle.

Below are additional Smarter Balanced resources that can support and enhance teaching and learning.

Digital Library

- Assessment Literacy Module: Understanding the Formative Assessment Process https://www.smarterbalancedlibrary.org/content/understanding-formative-assessment-process

Smarter Balanced Web Site

- *Smarter Balanced Assessment Consortium: Signing Guidelines*

  Located on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/ under the Item and Task Specifcations Tab then under Guidelines

- *Smarter Balanced Assessment Consortium: Tactile Accessibility Guidelines*

  Located on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/ under the Item and Task Specifcations Tab then under Guidelines

- *Smarter Balanced Assessment Consortium: Bias and Sensitivity Guidelines*

  Located on the Smarter Balanced Development and Design Web page at http://www.smarterbalanced.org/assessments/development/ under the Item and Task Specifcations Tab then under Guidelines

WestEd Web Site

- Understanding Proficiency

  Located on the WestEd Understanding Proficiency Web page at http://understandingproficiency.wested.org

- Raising the Bar on Instruction

  Located on the WestEd Research-based tools, resources, and services Web page at http://raisingthebar.wested.org

California Assessment of Student Performance and Progress (CAASPP)

- Information about the CAASPP System of assessments is available at http://www.cde.ca.gov/ta/tg/ca/
- Access to the Formative Assessment in Action Video Series is available at http://www.cde.ca.gov/ta/tg/sa/diglib.asp
- The Digital Library Professional Development Series is available at http://www.cde.ca.gov/ta/tg/sa/instructlearning.asp