Acknowledgments

The Teacher Guide to the Smarter Balanced Summative Assessments: Mathematics, Grades Three, Four, and Five 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.

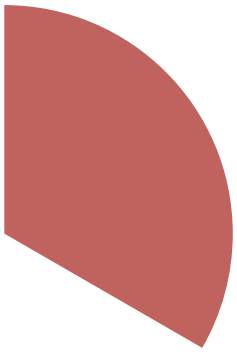
The new Smarter Balanced Summative Assessments are different from the previous tests included in the Standardized Testing and Reporting (STAR) Program in several ways including:

- 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
- Capitalize on the strengths of computer adaptive testing (CAT), such as efficient and precise measurement across the full range of achievement
- Provide greater opportunities for classroom teachers to influence the design and operation of the assessment system

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 [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.

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.

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]

Guiding Principle 2: Teaching

An effective mathematics program is based on a carefully designed set of content VWDQGDUGV WKDW DUH FOHDU DQG VSHFL¿F IRFXVHG DQ coherent sequence.

The sequence of topics and instruction should be based on what is known about how students' mathematical knowledge, skill, and understanding develop over time. What and how students are taught should re f ect not only the topics within mathematics but also the key ideas that determine how knowledge is organized and generated within mathematics.

Mathematical problem solving is the hallmark of an effective mathematics program. Skill in mathematical problem solving requires practice with a variety of mathematical

Mathematical problem solving calls for reflective thinking, persistence, learning from the ideas of others, and reviewing one's own work with a critical eye. Students should be able to construct viable arguments and critique the reasoning of others. They should analyze situations and justify their conclusions, communicate their conclusions to others, and respond to the arguments of others.[3]

Guiding Principle 3: Technology

Technology is an essential tool that should be used strategically in mathematics education.

Technology enhances the mathematics curriculum in many ways. Tools such as measuring instruments, manipulatives (such as base-ten blocks and fraction pieces), scientific and graphing calculators, and computers with appropriate software, if properly used, contribute to a rich learning environment for investigating, exploring, developing, and applying mathematical concepts. Appropriate use of calculators is essential; calculators should not be used as a replacement for basic understanding and skills. Elementary students should learn how to perform the basic arithmetic operations independent of the use of a calculator (National Center for Education Statistics 1995). The use of a graphing calculator can help middle school and secondary students visualize properties of functions and their graphs. Graphing calculators should be used to enhance—not replace—student understanding and skills.

Technology changes the mathematics to be learned, as well as when and how it is learned. For example, currently available technology provides a dynamic and exploration-driven approach to mathematical concepts such as functions, rates of change, geometry, and aionHCM

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- 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

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 Task Specification tab. You will be able to see exactly what instructions were given to clarify what was being tested and how to make sure there was tight alignment to the standards being assessed. The priority and supporting/additional domains and clusters tested in Claim 1 have statements describing evidence required to demonstrate deep understanding of the standards. In Claims 2, 3, and 4, the Standards for Mathematical Practice are being tested in the context of real-world problems. For these claims, the item specifications describe expectations for students to provide evidence of the ability to apply mathematical practices to solve problems.

When you open the link above, you will see a list of zip files. Choose the grade and claim you are interested in. For example, we have provided excerpts from Claim 1, Grade Five here. Once you open the zip file, look for the assessment target. In our example in Figure 4 we are using assessment target F. We chose F because on the test design for grade five, all students receive 4–5 questions on target F. No other target in Claim 1 has as many questions.

To illustrate the importance of evidence-centered design, Figure 3 displays the relationship among the overall claims, sub-domain assessment claims, assessment targets, and academic standards. This relationship is important, not only in the design and development of the Smarter Balanced items, but also in the interpretation and reporting of scores.

This claim/target/standard relationship is clearly articulated through the steps of the evidence-centered design model that Smarter Balanced assessments employ. The first step in the evidence-centered design approach is to define the content domains to be measured; in this case, the domains are English language arts/literacy and mathematics. The next step is to define the assessment claims that will be made about the domains. Claims are arguments derived from evidence about college and career readiness; Smarter Balanced claims are statements about what a student knows and is able to

corresponding to performance on the entire assessment of English language arts/literacy or mathematics, and four domain-specifc claims corresponding to performance in different areas in each of the assessments.

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

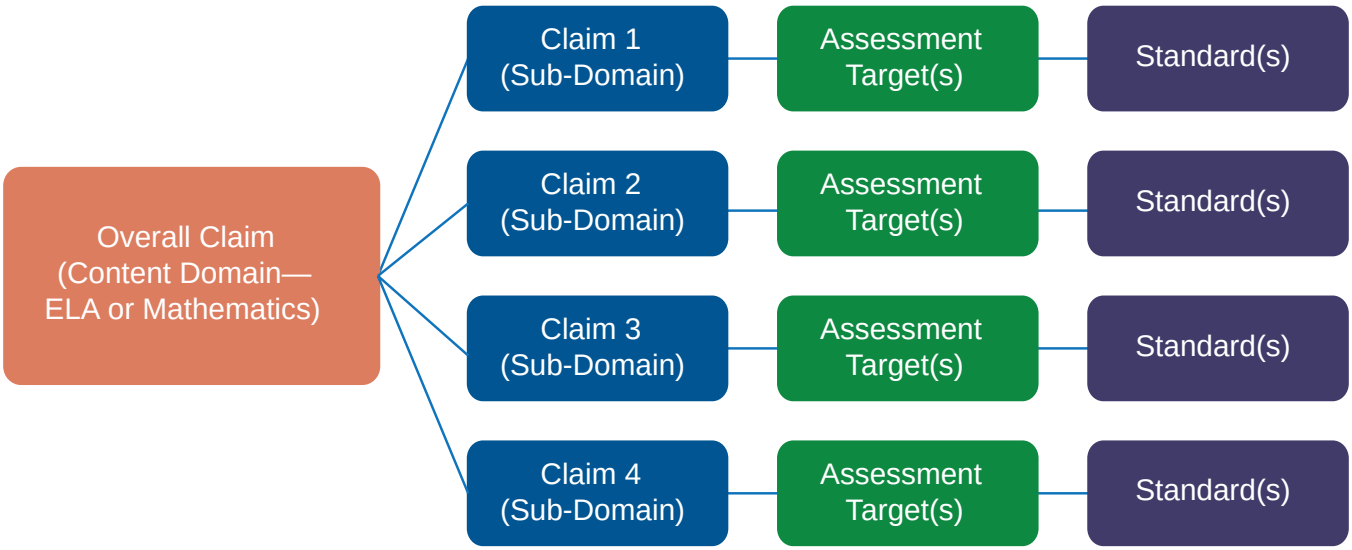
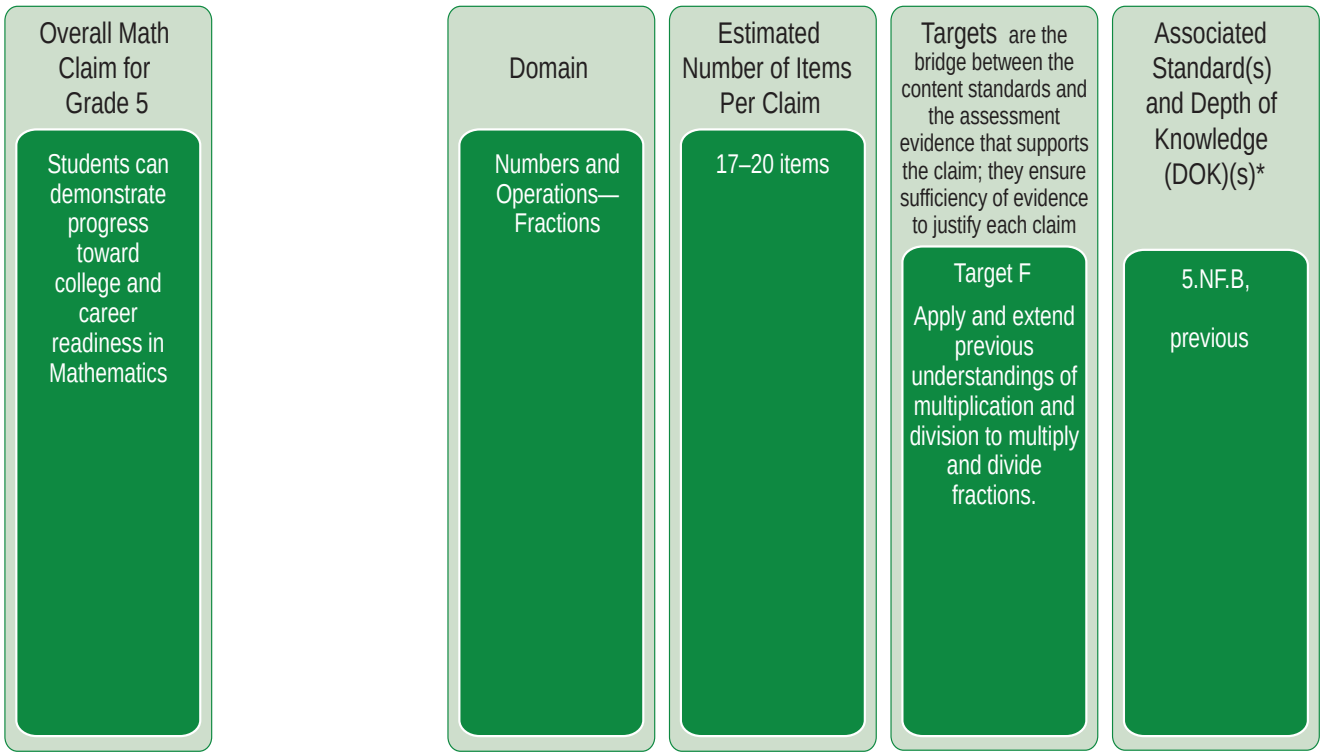


Figure 3a provides a content-specifc example of the hierarchy of item development and illustrates how the domain overall claims, sub-domain assessment claims, assessment targets, and standards are connected, both in test development and reporting of scores. Recognizing the hierarchy makes the analysis 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
Example – Mathematics—Grade Five



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:

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Claim 1: Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fuency.	
Target F: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
&ODULFDWLRQ Tasks	Tasks for this target will ask students to multiply and divide fractions, including division of whole numbers where the answer is expressed by a fraction or mixed number. Division tasks should be limited to those that focus on dividing a unit fraction by a whole number or whole number by a unit fraction. Extended tasks posed as real-world problems related to this target will be assessed with targets from Claim 2 and Claim 4. Other tasks will ask students to fnd the area of a rectangle with fractional side lengths or use technology-enhanced items to build visual models of multiplication and/or division of fractions, where the student is able to partition and shade circles or rectangles as part of an explanation. Students' ability to interpret multiplication as scaling will be assessed with the targets for Claim 3.
Standards 5.NF.B, 5.NF.B.3, 5.NF.B.4, 5.NF.B.4a, 5.NF.B.4b, 5.NF.B.5, 5.NF.B.5a, 5.NF.B.5b, 5.NF.B.6, 5.NF.B.7, 5.NF.B.7a, 5.NF.B.7b, 5.NF.B.7c	1) % Apply and extend previous understandings of multiplication and division to multiply and divide fractions. 1) % Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? 1) % Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)

Related Grade Four Standards 4.NF.B, 4.NF.B.4, 4.NF.B.4a, 4.NF.B.4b, 4.NF.B.4c Related Grade Six Standards 6.NS.A, 6.NS.A.1	b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. 1) Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n×a)/(n×b) to the effect of multiplying a/b by 1.

Range Achievement Level ' H V F U L S W R U V $ / '	Level 1 Students should be able to apply their previous understandings of multiplication to multiply a fraction by a fraction; know the effect that whole number multiplication has on fractions; use or create visual models when multiplying a whole number by a fraction between 0 and 1; and interpret and perform division of a whole number by 1/2 or 1/3. Level 2 Students should be able to multiply a whole number by a mixed number; know the effect that a fraction greater than or less than 1 has on a whole number when multiplied; use or create visual models when multiplying two fractions between 0 and 1; extend their previous understandings of division to divide a unit fraction by a whole number; and understand that division of whole numbers can result in fractions. Level 3 Students should be able to multiply a mixed number by a mixed number; know the effect that a fraction has on another fraction when multiplied (proper and improper fractions); use or create visual models when multiplying two fractions, including when one fraction is larger than 1; and interpret and perform division of any unit fraction by a whole number. / H Y H O Students should be able to understand and use the fact that a fraction multiplied by 1 in the form of a/a is equivalent to the original fraction.
Evidence Required	1. The student interprets a fraction as division of the numerator by the denominator. 2. The student solves problems involving division of whole numbers leading to quotients in the form of fractions or mixed numbers, with or without fraction models. 3. The student multiplies a fraction or whole number by a fraction. 4. The student multiplies fractional side lengths to fnd areas of rectangles. 5. The student compares the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. 6. The student solves real-world problems involving multiplication of fractions and mixed numbers, with or without visual fraction models. 7. The student solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, with or without visual fraction models.
Allowable Response Types	Multiple Choice, single correct response; Equation/Numeric
Allowable Stimulus Materials	Visual fraction models (circles, rectangles, tape diagrams, number lines)

Construct-Relevant Vocabulary	Fraction, equivalent, denominator, numerator, sum, difference, product, mixed number
Allowable Tools	Fraction modeling tool
7 D U J H W 6 S H F L¿ F Attributes	Division tasks should be limited to those dividing a unit fraction (written 1/a, such that a is any non-zero whole number) by a whole number or a whole number by a unit fraction.
Accessibility Guidance	Item writers should consider the following Language and Visual Element/Design guidelines1 when developing items. Language Key Considerations: • Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context • Avoid sentences with multiple clauses • Use vocabulary that is at or below grade level • Avoid ambiguous or obscure words, idioms, jargon, unusual names and references Visual Elements/Design Key Considerations:

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 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

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5HTXLUHPHQWV)URP WKH 6PDUWHU %DODQFHG ,WHP 6

Step 1: Match the Mathematics Domain and Cluster with the Claim and corresponding Target.

Domain: Number and Operations—Fractions

Cluster: Apply and extend previous understandings of multiplication and division.

Grade Five, Claim 1: Concepts and Procedures
Target F. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Step 2: Find the Evidence Statements 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, and Scoring Guide for Selected Short-Text Mathematics Items under Guidelines at http://www.smarterbalanced.org/assessments/development/.

Statements of Required Evidence:

1. The student interprets a fraction as division of the numerator by the denominator.
2. The student solves problems involving division of whole numbers leading to quotients in the form of fractions or mixed numbers, with or without fraction models.
3. The student multiplies a fraction or whole number by a fraction.
4. The student multiplies fractional side lengths to fnd areas of rectangles.
5. The student compares the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
6. The student solves real-world problems involving multiplication of fractions and mixed numbers, with or without visual fraction models.
7. The student solves real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, with or without visual fraction models.

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.

Example: Task Model 6

Response Type: Equation/Numeric, DOK Level 2

Prompt Features: The student is prompted to solve real-world problems involving multiplication of a fraction and a mixed number, with or without visual fraction models.

Stimulus Guidelines: Items with models do not use a partition of 1 in the model, and all models must include the same number of shaded partitions.

, W H P G L I ¿ F X O W \ F D Q E H D G M X V W H G The product is a whole number, fraction, or mixed number

7 0 D

Stimulus: The student is presented with a real-world context multiplication problem involving a fraction and a mixed number.

Example Stem: Julie bikes 623 miles along the river trail on Saturday. Greg swims 34 of that distance. Enter the distance, in miles, that Greg swims.

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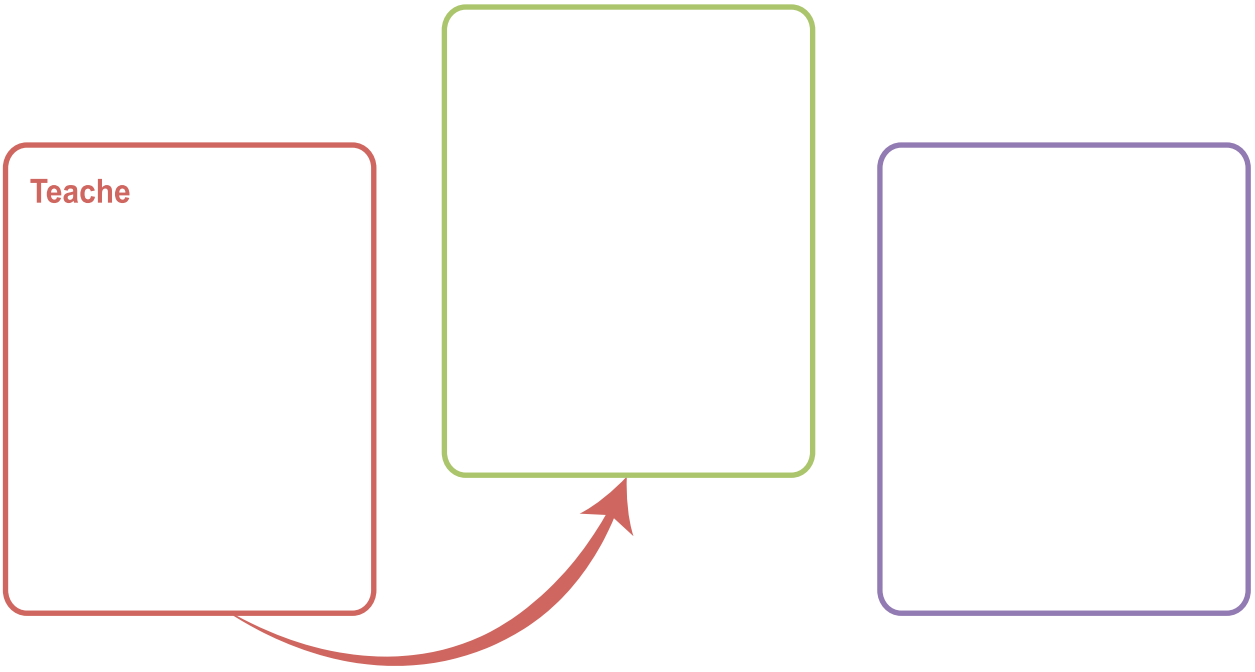
Evidence Statements to Design a Lesson or Activity



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

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

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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	The item specifcations link the related standards from the grade below, grade at, and grade above to show the coherence of the content across grades.
California Common Core State Standards in Mathematics Rigor	**Smarter Balanced Test Design Rigor**
In major topics, pursue with equal intensity: • Conceptual understanding • Procedural skill and fuency • Application	Key aspects of the grade level focus standards are tested in Claims 2, 3, and 4 to demonstrate student understanding of the application of knowledge, problem-solving, and mathematical practices. The targets in Claims 2, 3, and 4 are Standards for Mathematical Practice.

9 Overview of the Standards Chapters of the Mathematics Framework for the California Public Schools: Kindergarten through Grade Twelve (2015), California Department of Education, Sacramento, CA, page10 (found on the CDE Mathematics Curriculum Frameworks Web http://www.cde.ca.gov/ci/ma/cf/).

10 Overview of the Standards Chapters of the Mathematics Framework for the California Public Schools: Kindergarten through Grade Twelve (2015), California Department of Education, Sacramento, CA, page10 (found on the CDE Mathematics Curriculum Frameworks Web http://www.cde.ca.gov/ci/ma/cf/).

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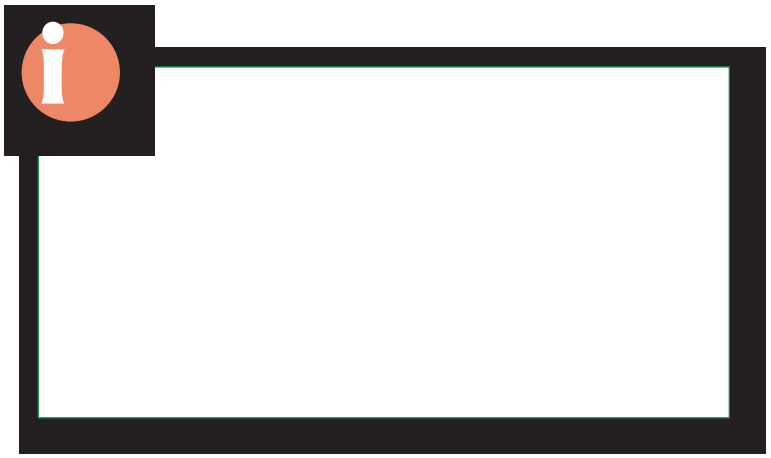
The Smarter Connection

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

California's previous state tests



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

The third step in the feedback loop is to analyze the student data trends to evaluate the

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

Overall Score and Achievement Level—
6KRZV 6WXGHQW 3HUIRUPDQFH RQ WKH 'LI¿FXOW\ 6FDO

Students receive an overall scale score for Mathematics. On the mathematics assessment, Claim 1, Concepts and Procedures, is 50% of the overall score; Claims 2 and 4, Problem-solving, Modeling, and Data Analysis, are reported together for 25% of the score; and Claim 3, Communicating Reasoning is the remaining 25% of the overall score. The score falls along a continuous vertical scale (from approximately 2,000 to

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 the claims measured on the assessment. Figure 8 identifies the claims for Mathematics.

Figure 8. Mathematics Claim Areas

Mathematics Claims For Grades Three, Four, and Five	
Concepts & Procedures	Applying mathematical concepts and procedures
Problem Solving & Modeling/Data Analysis	Using appropriate tools and strategies to solve real world and mathematical problems
Communicating Reasoning	Demonstrating ability to support mathematical conclusions

Student performance for each claim is reported as "Above Standard," "Near Standard," or "Below Standard." These are designed to be general indicators of the strengths or needs of the student or a group

Recommended Resource

Sample score reports for other grade levels are available on the CDE's CAASPP Student Score Report Information Web page at www.cde.ca.gov/ta/tg/ca/caasppssrinfo.asp.

of students in each claim area. The number of items making up the claim performance varies based on the specifications of the test blueprint so caution must be used in the interpretations of these scores. It is recommended that other evidence be considered along with the claim score as decisions are made about curriculum and instruction.

Use Group-Level Data to Identify Trends in Curriculum Strengths and Gaps

At the end of the school year it is time to take stock of the successes in student learning. The tight alignment of the Smarter Balanced assessments to the Mathematics Framework makes the assessment results a valuable resource to begin an inquiry, a thoughtful deliberate discussion about how we can maximize the appropriate use of these results. The questions on page 36 can help guide a discussion of what the results show about student and group performance and the implications for building on student strengths and meeting student needs with curriculum resources.

Assessment Target Reports

Assessment Target Reports are a new resource for administrators and teachers. These reports show the relative performance of groups of students on assessment targets within a Concepts and Procedures, Claim 1, as long as there are sufficient responses (at least 10) for a particular target. The reports show how a group of students performed on a target compared to the overall performance on the test, which includes the performance on the other claims on the CAT and the performance assessment task. Mathematics is intended to be learned as an integrated content area. Using the formative assessment process, specific evidence for each target may be collected in multiple parts of an integrated task. By reflecting on students' time-on-task and their opportunities for mastery throughout the year in each target area, teachers are able to compare the intended learning of groups of students with the evidence of learning on the Smarter Balanced assessments.

Assessment target score reports should serve as a starting point in an overall investigation of students' strengths and weaknesses and constitute only one of many sources of evidence that should be used in evaluating student performance. Assessment target scores based on fewer than 50 students may be less reliable and will have fewer unique items contributing to the overall target summary. Target score reports are not appropriate for individual students.

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)
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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

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- 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

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- Understanding Profciency

  Located on the WestEd Understanding Profciency Web page at http://understandingprofciency.wested.org

- Raising the Bar on Instruction

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

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- 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