Claim 1 Script

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Hello and welcome to the OSPI video series on the Smarter Balanced assessment claims and their relationship to instruction.

This video focuses on Claim 1: Concepts and Procedures.

We hope this video increases your understanding of Claim 1 and its relationship to the Washington State K—12 Learning Standards for mathematics.

What is Claim 1?

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Claim 1 addresses students’ ability to explain and apply mathematical concepts. Knowing and explaining why mathematical procedures work the way they do is part of conceptual understanding. Included in conceptual understanding is how mathematical concepts connect to each other.

Claim 1 also addresses students’ ability to carry out mathematical procedures with precision and fluency. Procedural fluency includes accurately and efficiently carrying out computations and calculations. This includes the use of specific formulas and standard algorithms to reach a desired result.

Approximately one-half of the computer-adaptive portion of the Smarter Balanced summative test assesses Claim 1 concepts and procedures.

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More information about Claim 1 on the summative assessment is available online at this website. (http://www.smarterbalanced.org/assessments/development/)

Claim 1 is based on the Standards

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Many of the standards use language that describe conceptual understanding and procedural fluency.

Examples of standards that describe conceptual understanding include:

• A third grade standard about understanding the division operation
• A fifth grade standard about understanding the base-ten place value system
• An eighth grade standard about understanding functions, both as rules and as represented as graphs.

Every grade level has standards that address the conceptual understanding necessary to build or contribute to the mathematical foundation needed for further study.

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Examples of standards that describe procedural fluency include:

• A fourth grade standard about using the standard algorithm
• A sixth grade standard about writing and evaluating expressions
• A high school standard about solving linear equations and inequalities in one variable.

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Claim 1 items usually focus on individual standards. Claim 1 also uses the cluster organization of the standards. The clusters clearly show the focus and coherence structures of the standards by using words like “apply and extend previous understandings.” The Claim 1 documents are organized by cluster in order to maintain this important structure of the standards.

All the Claim 1 documents are available online at this website. (http://www.smarterbalanced.org/smarter-balanced-assessments/#item) Look under “Mathematics” in the Item/Task Specifications section.

Claim 1 is based on the Mathematical Practices

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Mathematical Practices 5 through 8 offer foundational support for Claim 1. These practices ask students to:

• use appropriate tools strategically;
• attend to precision;
• look for and make use of structure; and
• look for and express regularity in repeated reasoning.

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Examples of these practices in Claim 1 items include:

• using a formula to determine the volume of a figure in grade 8. The formula is the tool that students use to find the height of the cone.

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• In this Grade 3 item, students are identifying the correct use of the equal sign. They learn that the two expressions must have the same value in order for the equation to be true. They are attending to precision.

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• In this high school example, students identify a form of a function that shows specific characteristics of the function’s graph. Their attention to the form or structure in which the function is written helps them identify various characteristics indicated by a particular form.

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• Lastly this Grade 6 example of generating tables of values requires students to use repeated reasoning.

While many items may address more than one mathematical practice, these examples show how the practices are an integral part of Claim 1 items.
The Smarter Balanced Content Specifications, with additional information on how these practices inform Claim 1, is available online at this website. (http://www.smarterbalanced.org/smarter-balanced-assessments/#item)

Claim 1 supports a progression of learning

The Claim 1 documents give insight into the progression of learning embedded in the structure of the standards. This structure is based on the shift to “coherence” defined by the standards.

For example, students first perform operations with whole numbers in Kindergarten and continue these operations explicitly through Grade 6. They perform operations with fractions in Grade 3, then move to rational numbers in Grade 6, and real numbers in high school. The key ideas that define each operation, though, stay constant through this progression of number systems.

Certain standards describe fluency expectations with computations. These standards represent a culmination of skills that has been built on conceptual understanding from previous grades. It is critical that the progression of learning in each domain is clearly understood by the teacher so that the development of learning intended in the standards is taught with fidelity.

Very important information about the progressions of learning of each domain is available online at this website. (http://ime.math.arizona.edu/progressions/)

How Claim 1 informs assessment

Each cluster in the grades 3 through 8 standards has a Claim 1 specification document. Several clusters in the high school standards have Claim 1 specifications documents. Each document gives specific ways of assessing the cluster and standards through evidence statements. These “Evidence Required” statements are based on the standards. Educational experts from across the nation worked together to develop these evidence statements using the language of the standards. The statements describe the conceptual understanding and procedural fluency students should develop for each cluster. “Evidence Required” statements can be about part or all of a standard, multiple standards in a cluster, and even the cluster heading.

Each “Evidence Required” statement has Task Models that are used to write assessment items. Each model shows how the “Evidence Required” statement is assessed, including the type of item used.

An example of a Claim 1 task models assessing conceptual understanding would include:

- this Grade 3 example, recognizing ways to rewrite expressions. This task model uses a multiple choice format to assess understanding.

An example of a Claim 1 task models assessing conceptual understanding would include:

- In this Grade 6 example, a multiple choice, multiple select model is used to assess the mathematical language used to explain relationships.
• And, in this high school example, a table is used to generalize properties of operations on rational and irrational numbers.

These are only some ways that students are asked to demonstrate their conceptual understanding.

Claim 1 task models are also used to assess procedural fluency. Note that this is not about the speed with which a student answers a problem but the accuracy of the student’s work.

An example of a Claim 1 task model assessing procedural fluency include:
• this Grade 5 example, evaluating numeric expressions. Students work the problem and enter their solution in a space provided.

This Grade 7 example, determining the probability of simple events, is assessed in a similar manner. Students are given a drawing of a spinner and must determine the probability by providing a numeric answer.

This high school example asks students to graph a function in two variables. Students create the graph of the function and then plot a point to show the y-intercept.

How Claim 1 informs instruction

The “Evidence Required” statements and Task Models in the Claim 1 documents can help teachers develop an understanding of the conceptual understanding and procedural fluency students should learn at each grade level. Conceptual understanding should form the foundation on which students develop procedural fluency. Instruction should attend to conceptual understanding first and then procedural fluency as called for in the standards to ensure students have deep and complete learning.

Classroom instruction and assessment should not be limited by the Claim 1 documents; these documents show only some ways to assess conceptual understanding and procedural fluency. Instruction should focus on the mathematics described in the standards and practices, not on practicing task models or using “Evidence Required” statements as a checklist. What is most important is that students have rich and varied opportunities to learn mathematics.

Claim 1 skills should be one part of a rich educational experience. Students should have opportunities to solve problems, reason and communicate mathematically, and model using mathematics. Students should not be required to “master” the conceptual understanding and procedural fluency prior to problem solving, reasoning, or modeling. It is through working with mathematical content in a variety of ways that students truly learn mathematics concepts and procedures.

Smarter Balanced only assesses part of the high school standards in Claim 1. But all the high school content should be taught and assessed at the local level. Some standards are most appropriately assessed in Claim 1 while others are better fitted to Claims 2, 3, or 4. The high school Claim 1 documents can help guide local instruction and assessment of those standards not assessed in Claim 1 on the Smarter Balanced test.
The mathematical practices should guide classroom assessment and instruction. Tools, including technology, can help students develop their conceptual and procedural skills. Modeling with mathematics and looking for repeated reasoning are important for conceptual development. Making use of structure and attending to precision are key for procedural fluency. The grade level math content and the mathematical practices should be part of a student’s daily math experience.

Instruction should guide students through a progression of learning to develop deep conceptual understanding as well as procedural fluency. Without these connections, students may see new content as having new rules, unconnected to other learning. A connected, coherent approach ensures both conceptual understanding and procedural fluency support students’ growth with new, grade-level content.

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We hope this brief introduction to Claim 1 gives you greater insight into assessing students’ conceptual understanding and procedural fluency of the Washington State K—12 Learning Standards.

We encourage you to view the videos for Claims 2 through 4 to get a more complete picture of the skills and practices students should develop. Thank you.