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

This video focuses on:
- understanding what an assessment claim is;
- the development of the claims, based on the content standards and the Standards for Mathematical Practices; and
- how these claims inform both instruction and assessment.

We hope this video increases your understanding of the claim structure used by Smarter Balanced and the claims’ relationships to the Washington State K–12 Learning Standards for mathematics.

What is a Claim?

A claim is simply a statement of critical mathematical learning outcomes for students. Each claim focuses on particular knowledge and skills students should learn and develop, both from the content standards and from the practices. These statements are very broad and apply to all grade levels, including high school.

Each claim requires that students produce evidence that supports whether certain learnings have been achieved. The items a student sees on the summative assessment provide this evidence. A single item may provide evidence for one or more claims. Student reports given to students, parents, and educators are based on this evidence. These reports will describe each student’s proficiency related to the claims.

What are the Claims?

Smarter Balanced has five claims: one overall claim and four specific claims. The overall claim is based on the evidence provided by the four other claims. This overall claim implies whether a student is learning and developing the mathematical abilities necessary for success in college and a career. Those career- and college-ready abilities are described in the four specific claims.

These four claims are:
- Claim 1, which is about developing conceptual understanding and procedural fluency
- Claim 2, which is about solving well-posed problems in pure and applied mathematics
- Claim 3, which is about clearly and precisely constructing arguments and critiquing the reasoning of others
- Claim 4, which is about analyzing complex, real-world scenarios to interpret and solve problems

In other words, Claim 1 is part mathematical procedures that, historically, have been the major focus of classroom instruction. This first claim also assesses students’ conceptual understanding of why mathematics works the ways it does. Claims 2, 3, and 4 ask students to use the mathematics from Claim 1 in a variety of ways. Claim 2 is about using mathematics to solve well-defined problems. Claim 3 asks students to reason with and about mathematics using precise language and notation. Working with mathematics in these two ways has typically been limited in a mathematics classroom. Claim 4, applying mathematical content and reasoning to real-world, “messy” situations, has typically been the most
under-developed ability. Developing students’ abilities related to Claim 4 will need the most attention to authentically include this claim in instruction.

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Further information about each claim is in the claim-specific videos and the Content Specifications, online at this website. (http://www.smarterbalanced.org/wordpress/wp-content/uploads/2011/12/Mathematics-Content-Specifications_July-2015.pdf)

Claims are based on the Standards
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The standards were developed to elicit a variety of mathematical abilities from students. The language and structure of the standards guided the creation of the claims. Examples of standards that informed each claim include:
- For Claim 1, the concept and procedure of rounding multi-digit whole numbers to any place.
- For Claim 2, solving problems involving unit rate, including unit pricing and constant speed.
- For Claim 3, using precise language and notation to explain a proof of the Pythagorean Theorem and its converse.
- For Claim 4, defining appropriate quantities for the purpose of descriptive modeling.

All clusters in grade 3 through 8, and several clusters in high school, are assessed in Claim 1. Many clusters and some specific standards make up the major focus of Claims 2, 3, and 4 at each grade.

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More information about the focus clusters and standards for Claims 2, 3, and 4 is in claim-specific documents online at this website. (http://www.smarterbalanced.org/smarter-balanced-assessments/#item)

Claims are based on the Mathematical Practices
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The claims also build from the Standards for Mathematical Practices. The foundation of each claim is evident in these eight practices. These practices describe the variety of abilities and habits of mind teachers should work to develop in their students.

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In developing conceptual understanding and procedural fluency, students need to be aware of how concepts link together, and why mathematical procedures work in the way that they do. This relates to the structural nature of mathematics. Students should be able to carry out procedures, describe concepts, and communicate results. The tools that are appropriate for a particular grade level should be used strategically. Many content standards ask student to explain why a procedure works and to perform some procedures with fluency.

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Problems are well-posed in claim 2 but the solution path is not immediately obvious. Students construct their own pathway, rather than having to follow a provided path. Claim 2 is less structured than those under Claim 1. Students who are proficient start by explaining the meaning of the problem to themselves and then look for an entry point. They plan a solution pathway rather than just jumping into a solution attempt. Problem solving sits at the core of doing mathematics. They develop skills such as oversight of the problem solving process and evaluating the reasonableness of their answers. They use tools strategically.

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The content and practice standards often describe opportunities for students to construct and present a clear, logical, convincing argument. Rigor in reasoning is about the precision and logical progression of
an argument. Students should have the ability to analyze a provided explanation, identify any flaws in the explanation, and then present, if needed, a logical sequence of proof or a complete, correct argument. Communicating in precise language and symbols increases the strength of the argument. 

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Real-world problems do not come neatly “packaged.” They often are complex and contain too little or too much information. Students often have to model the problem to better understand how to solve it. As students use this abstract model to work through a solution, they must interpret the results and check them for reasonableness in the context of the original problem.

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Items assessing each claim, therefore, provide evidence about students’ ability with the practices as well as with the standards. More specific information about how these practices inform each claim is given in the videos for Claims 1 through 4.


How Claims inform assessment

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The claims are the areas of student learning the summative assessment seeks to measure. These claims guide a large part of item development. It is very important that each item is carefully designed to elicit the correct evidence from the student. The strong connections between the claims, standards, and practices ensure that students are assessed on the concepts, procedures, and applications they should develop at that grade-level.

How Claims inform instruction

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Instruction aligned to the standards and practices must provide multiple, varied opportunities to engage with the mathematics at that grade level.

Students should have opportunities to develop grade-level appropriate conceptual understanding and procedural fluency as called for in the shifts of the standards. Instructional time must be explicit to organize and connect current learning to previous learning.

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Students should use mathematics to solve a variety of well-defined, grade-appropriate problems. These problems should support the use of a variety of strategies that students choose to find a solution, and not follow a pre-determined path. Teachers should monitor student progress and allow opportunities to compare solution methods.

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Discourse, both verbally and written, around meaningful mathematical situations should be part of every student’s experience. Teachers need to guide students to use precise mathematical language and symbols when constructing and evaluating arguments.

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Applying mathematics to real-world situations, both to analyze and solve problems, teaches students that mathematics is a useful human endeavor. They begin to see mathematics as something that has a place in their everyday lives, not just in a classroom. Students should develop skills at formalizing a problem that is not fully formed. They can then develop ways to approach and solve the problem.
Teachers should allow students to engage in “productive struggle” when working with these types of problems.

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This example shows how the concept of multiplying fractions can look across the claims. Students need to have strong conceptual understanding of both fractions and multiplication to carry out the procedure shown under Claim 1. They need to apply that understanding and procedure to solve the problem under Claim 2, evaluate the reasoning under Claim 3, and create a model under Claim 4. These are the skills described in the standards and practices. The claim structure can help ensure all these skills are part of instruction and assessment. *(Pause to let them read the problem.)*

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The Illustrative Mathematics website, online at this website, ([https://www.illustrativemathematics.org/](https://www.illustrativemathematics.org/)) provides activities that engage students across the learning outcomes described in these claims. The Smarter Balanced Digital Library, online at this website, also provides many ideas of how to engage students with the skills described in all four claims, through a formative assessment process.

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We hope this brief introduction to the claims gives you greater insight into teaching and assessing students’ learning related to the Washington State K–12 Learning Standards and the Standards for Mathematical Practice.

We encourage you to view the videos for Claims 1 through 4 to get a more complete picture of each claim. Thank you.