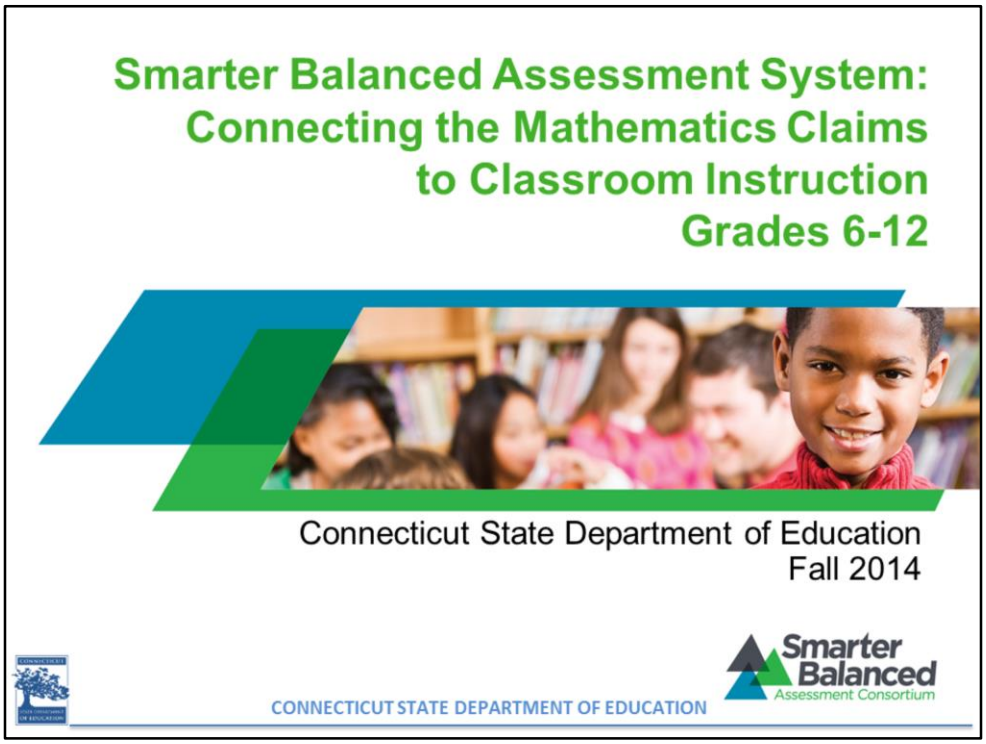


Principals to Actions e-books will be provided to each participant

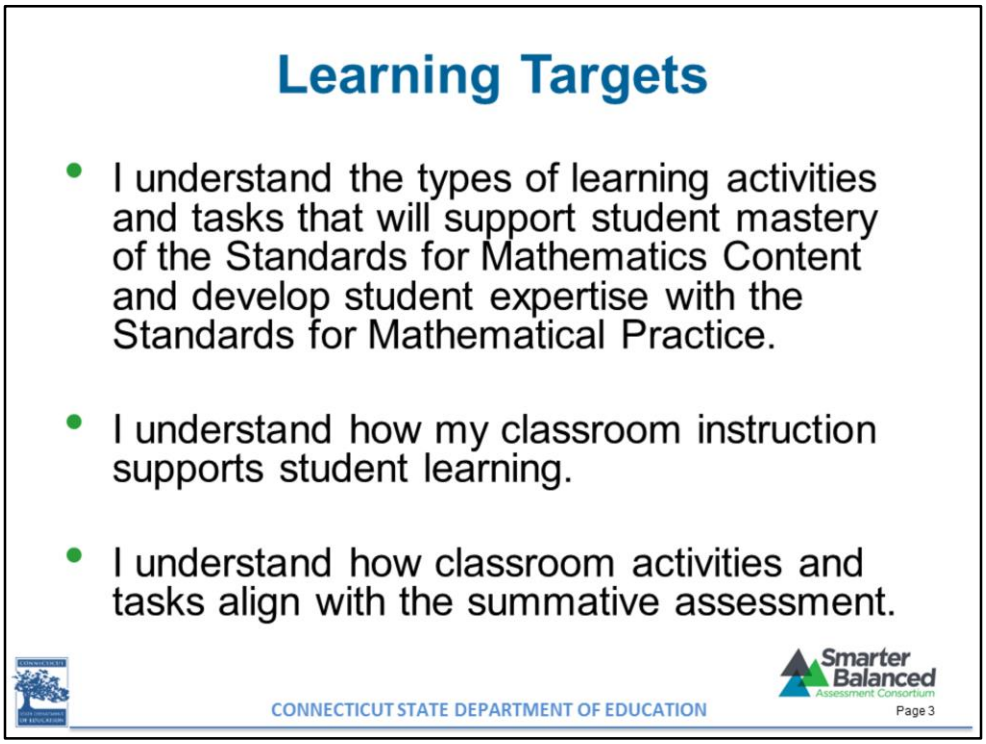
Note: Thirty *Common Core Standards* flip books will be provided to each RESC, and should be available at each participant table for reference purposes only. These books may not be distributed for participants to keep.

Show this presentation to groups that are attending the Math presentation prior to the ELA presentation. ELA will show the presentation to the earlier group too.

Let the video speak for itself.

http://www.ted.com/talks/adora_svitak?language=en

After video: Reinforce the notion that expectations need to be high. If you set a low expectation, students will "sink" to that level. Teachers need to have the mindset that students CAN achieve at high levels and meet the rigorous levels of the CCS.

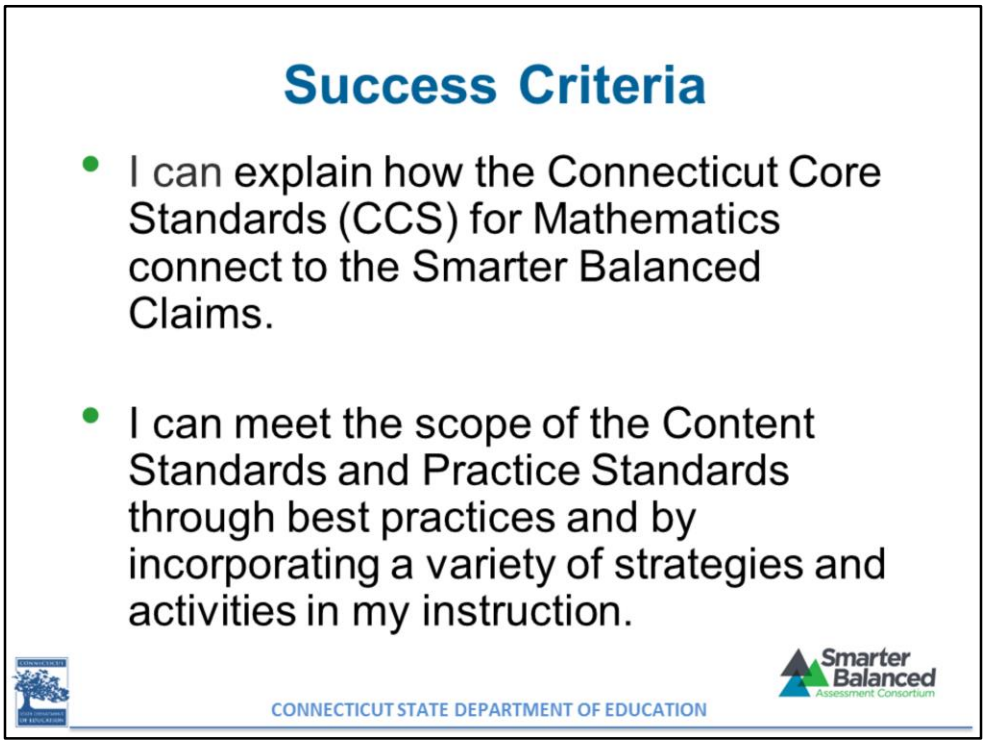


These learning targets should be posted on chart paper for the duration of the workshop.

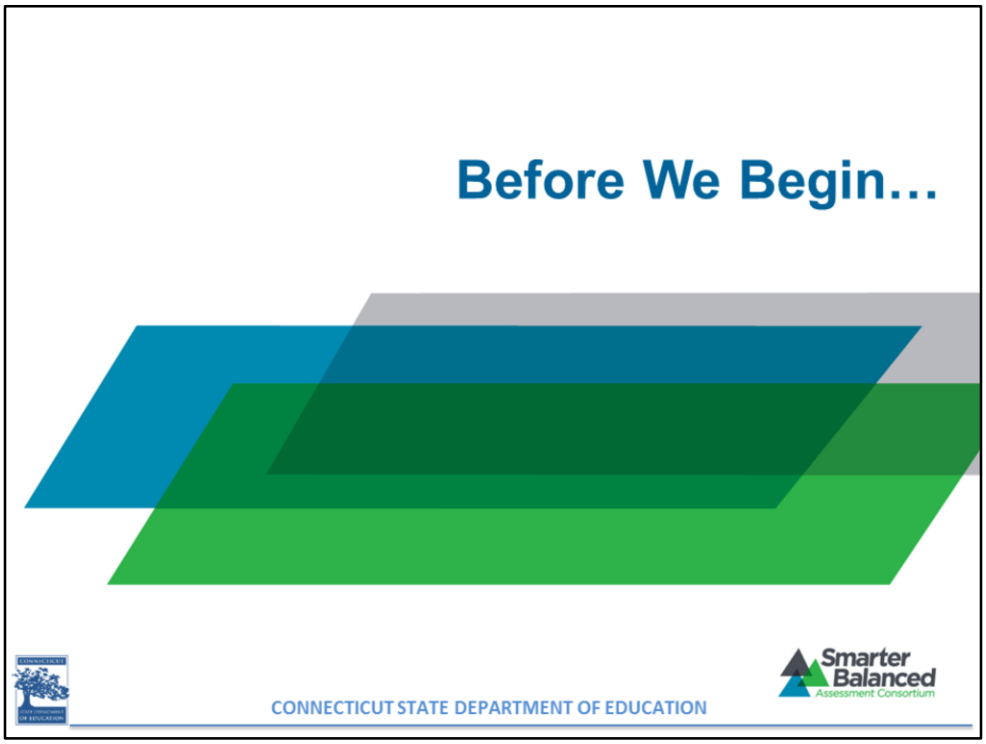
Unlike instructional objectives, which are about instruction, derived from content standards, written in teacher language, and used to guide teaching during a lesson or across a series of lessons, **learning targets** frame a lesson from the student point of view. A learning target helps students grasp the lesson's purpose--why it is crucial to learn this chunk of information, on this day, and in this way.

With this in mind, the three learning targets stated on this slide inform participants of the learning goals based on the scope of this full-day presentation.

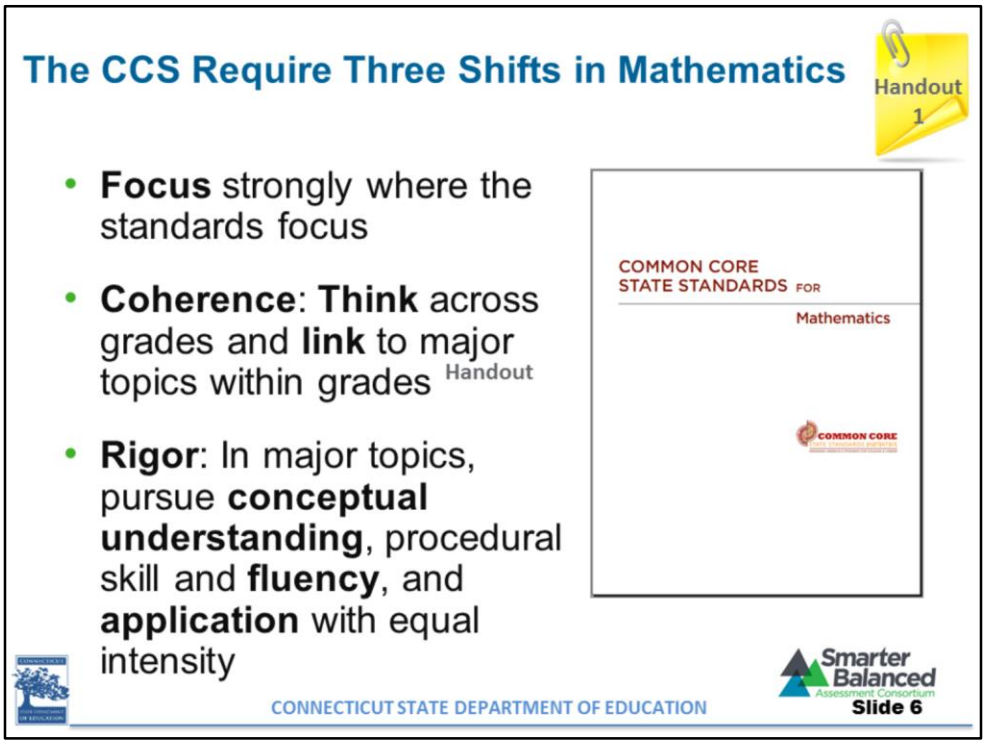
Facilitator, please note that the types of activities found within this presentation support different curricular needs, whether it be developing understanding of the mathematics content or developing expertise with the mathematical practices. They are not stand alone activities that should be done just to check off a standard, but should be a part of a larger unit of instruction.



When presenting this slide, inform participants that these two bullets point frame the scope of learning for this presentation. The success criteria are the Learning Targets written in a student-friendly way, often are posted beginning with the works "I CAN..." indicators that the teacher and the students can use to check their learning against as they work to meet the learning goals. After the completion of a lesson (or in this case, the presentation), students (participants) should revisit the success criteria and be able to tell whether they have met the criteria. Students (participants) should then be part of the development of next steps in planning how they continue to move their learning forward.



FYI – The Common Core State Standards (CCSS) and Connecticut Core Standards (CCS) are used interchangeably. In Connecticut, we have fully adopted the Common Core State Standards. In order to show our full support of these standards, in Connecticut we refer to them as the Connecticut Core Standards. Therefore, the Common Core State Standards ARE the Connecticut Core Standards.



Key Shifts of the Common Core State Standards:

Handout 1 from AchievetheCore.com provides an explanation of the shifts. It is not necessary to review the handout, but let participants know that this handout that addresses the key shifts is included in their folder. As facilitator, you should remind participants that the shifts do include the following:

1) Focus strongly where the Standards focus

- These standards are a move away from providing a mile-wide, inch-deep curriculum.
- We focus deeply on the **major work** of each grade so that students can gain strong foundations and develop:
    - solid conceptual understanding
    - a high degree of procedural skill and fluency
    - the ability to apply the math they know to solve problems inside and outside the math classroom

2) Coherence: think across grades, and link to major topics within grades

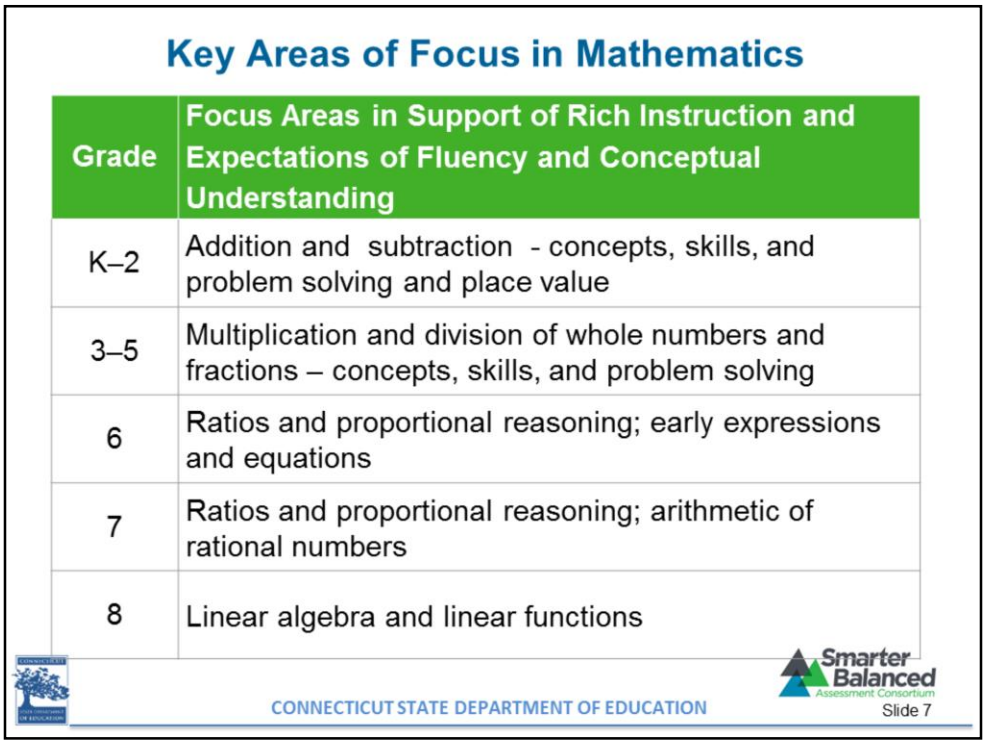
- **Thinking across grades:**
    - The Standards are designed around coherent progressions from grade to grade

- Learning is connected across grades
- Students can build new understanding onto foundations built in previous years
- Each standard is not a new event, but an extension of previous learning

- **Linking to major topics:**
  - Additional or supporting topics shouldn't detract from the focus of the grade but are incorporated within the grade level focus.

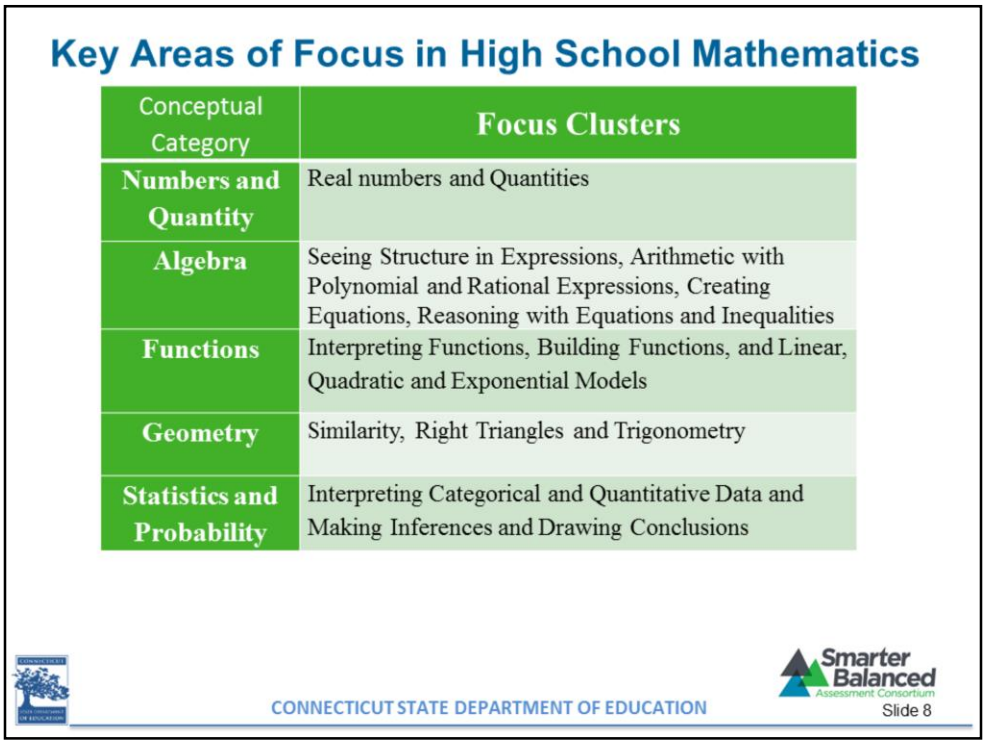
3) Rigor: in major topics pursue:

- **Conceptual understanding:**
  - The Standards call for conceptual understanding of key concepts
  - Students should see math as more than a set of mnemonics or discrete procedures
- **Procedural skill and fluency:**
  - The Standards call for speed and accuracy in calculation.
  - Providing instruction based on developing understanding of the underlying properties of operations and the relationships across operations will eventually lead to students committing core functions , such as single digit multiplication to memory.
  - **application** with equal intensity.
- **Application:**
  - The Standards call for students to use math flexibly for applications in problem-solving contexts both within and outside mathematics content.

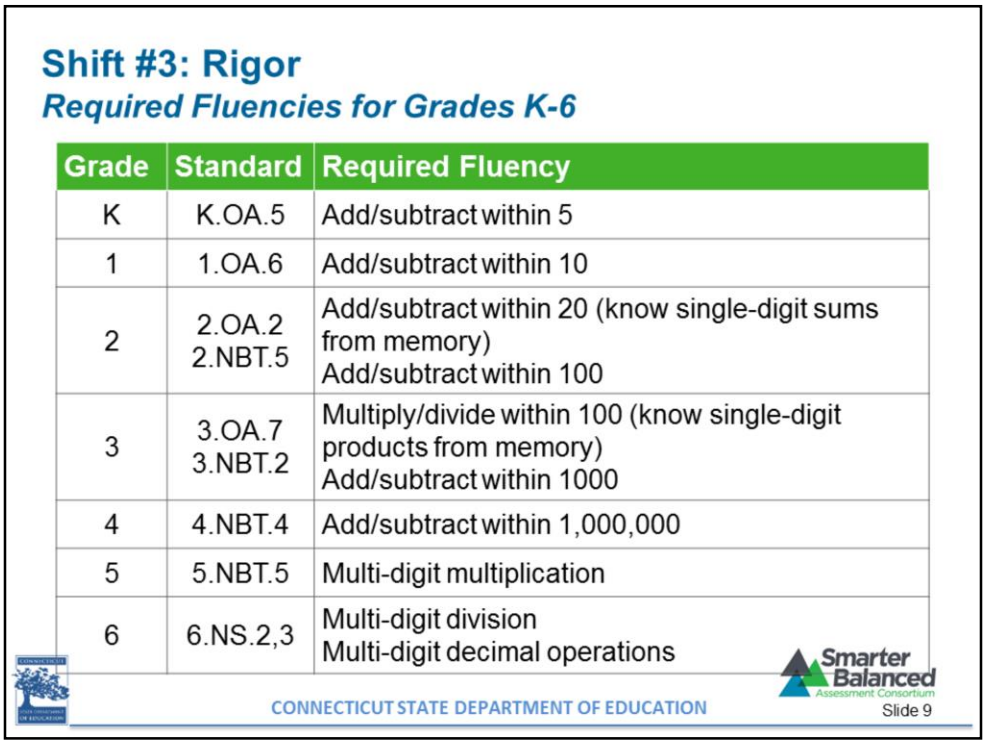


Shift #1 references "the major work'" of the grade. The key areas of focus in mathematics are described by grade band.

(Read the grade-band key areas of focus from slide)

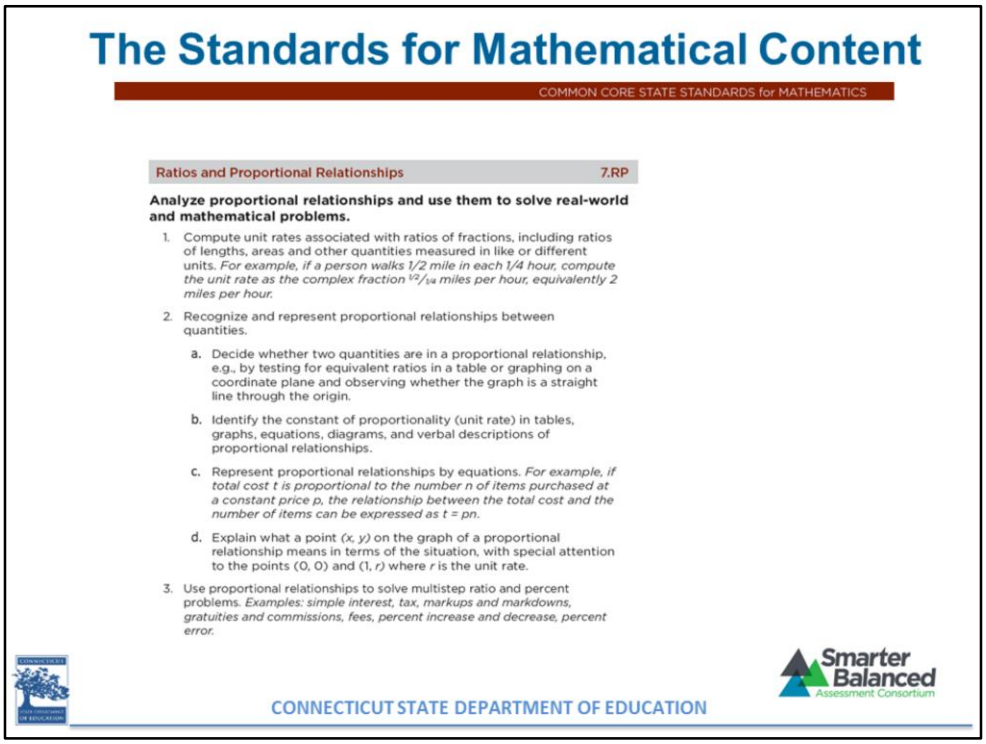


This is adapted from the High School Publishers Criteria for CCSS for Mathematics. The focus cluster under each conceptual category shows the content from CCSM that is widely applicable as prerequisites for a range of college majors, postsecondary programs and careers. This was informed by postsecondary survey data in Conley *et al.* (2011), "Reaching the Goal: The Applicability and Importance of the Common Core State Standards to College and Career Readiness."



Shift #3 references required fluencies for Grades K-6.

- Throughout the K-6 standards in CCSSM there are also individual content standards that set expectations for fluency in computation (e.g., fluent multiplication and division within the times tables in Grade 3).
- Such standards are culminations of progressions of learning, often spanning several grades, involving conceptual understanding, thoughtful practice, and extra support where necessary.

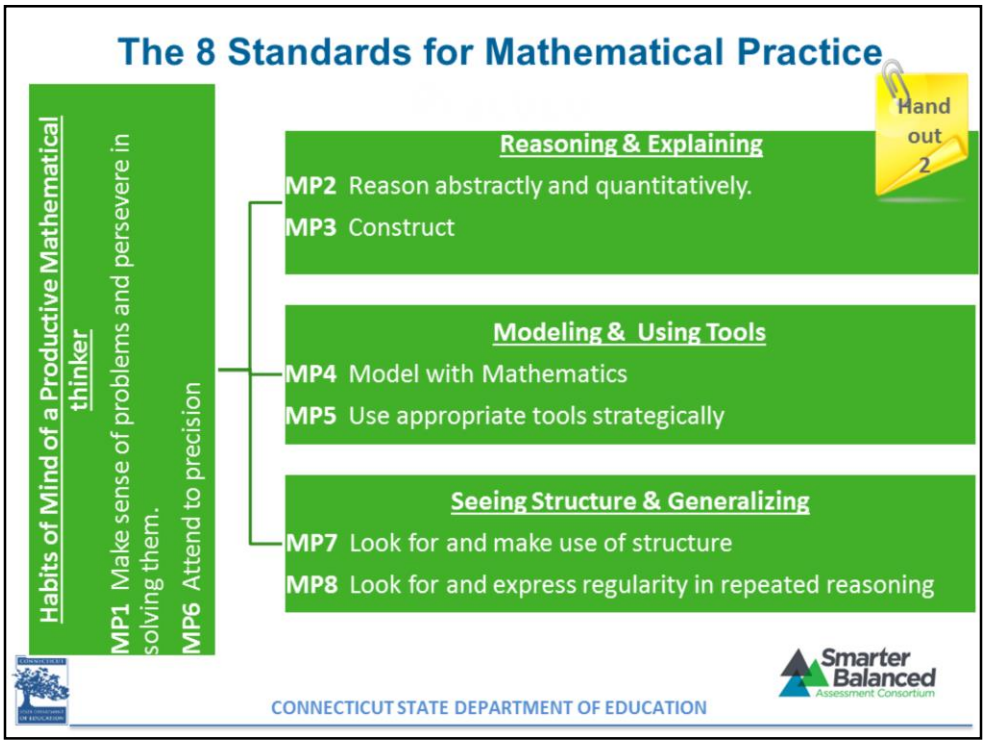


As you know, the CCS for Mathematics is comprised of two equally important components, the Standards for Mathematical Content and the Standards for Mathematical Practice.

The Standards for Mathematical Content specify the mathematics content that should be taught at each grade level, or in the case of high school, the mathematics that all students should study in order to be college and career ready upon graduation from high school.

The K-8 standards are listed by domain and the high school standards are listed in conceptual categories rather than by grade level domains:

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability



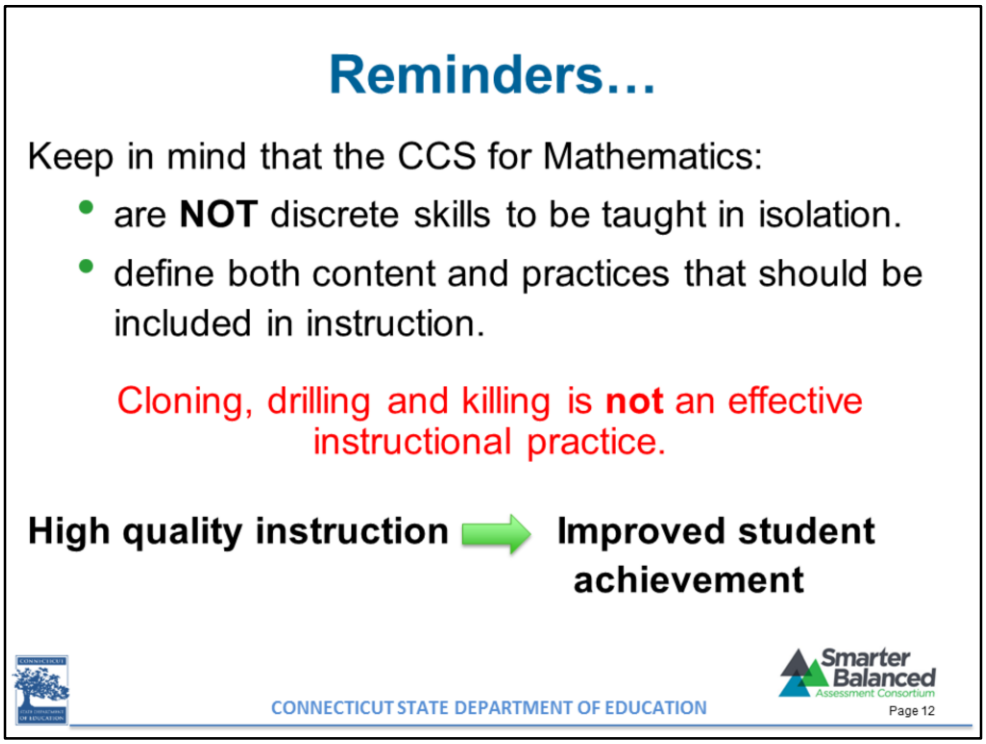
This is an overview of the 8 Standards for Mathematical Practice. This template was created by Dr. Bill McCallum, lead head writer of the CCSS mathematics.

These practice standards describe varieties of expertise that mathematics educators AT ALL LEVELS [Kindergarten through HS] should seek to develop in their students.

These "habits of mind" mathematical practices encompass NCTM'S Mathematical process standards and the National Research Council's mathematical proficiency strands. They carry across all grade levels.

The mathematically proficient student should have such a well-grounded understanding of how to employ the Standards for Mathematical Practice that they become Habits of Mind.

Handout 2 in your packet provides an overview of the 8 Practice Standards. This document describes the student behaviors for each Practice Standard. We will be looking for these required student behaviors as we engage in classroom activities and tasks.



This presentation is **not** about starting with a standardized test and trying to figure out how to prepare your students. Cloning, drilling and killing is **not** an effective instructional practice.
This presentation will focus on how the CCS Standards for Mathematical Content, Standards for Mathematical Practice and the 8 Mathematics Teaching Practices from NCTM's *Principles to Actions* are embodied in the Smarter Balanced Mathematics Claims.

High quality instruction focused on developing students' habits of mind with the Practice Standards is transferable to the Smarter Balanced assessments.

From this point forward we are asking **participants to be in the position of learners**. We will be modeling for you ways to support content, develop expertise with the Standards for Mathematical Practice and incorporate the 8 Mathematics Teaching Practices into your daily instruction.

Much of this may be validating. You may see many of the best practices you are already using in your classroom. We hope to show you multiple pathways to integrating the standards into your instruction. By the end of this presentation, we will specifically connect how these instructional practices connect to the claims of the Smarter Balanced assessment.

Remember, if you are teaching a curriculum aligned to the Connecticut Core Standards , you are preparing your students for college and career readiness. The Smarter Balanced resources such as the Digital Library and the Interim Assessments (addressed later on) can help teachers adjust and modify teaching and learning. The summative assessment will take care of itself.

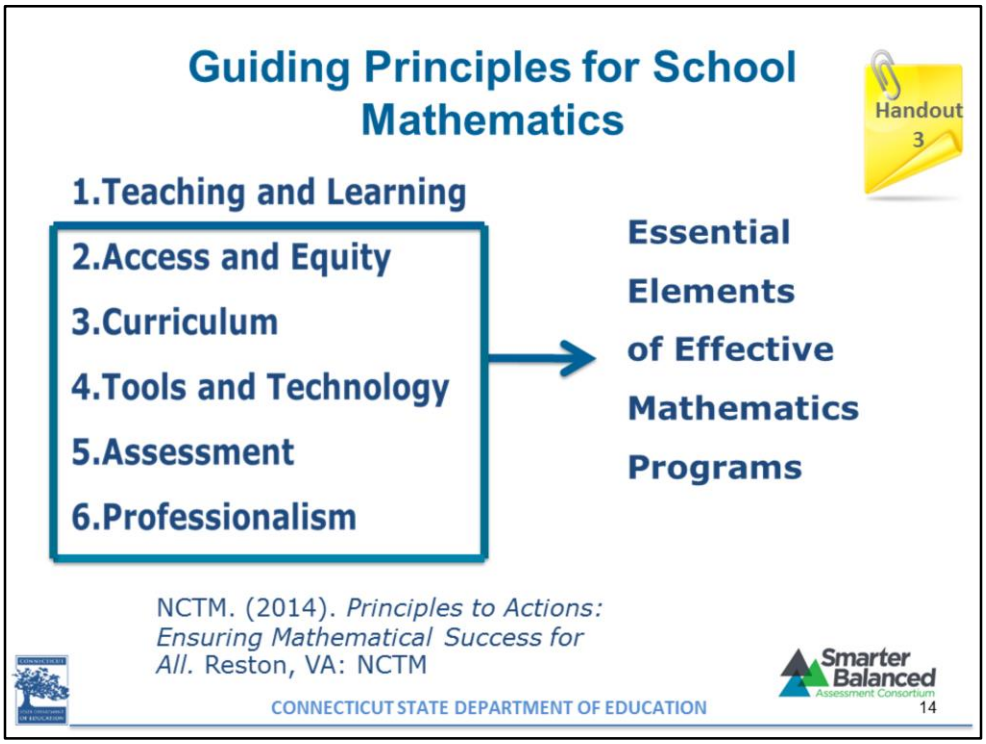
NCTM Principles to Actions: Ensuring Mathematical Success for All

The primary purpose of Principles to Actions is to fill the gap between the adoption of rigorous standards and the enactment of practices, policies, programs, and actions required for successful implementation of those standards.

NCTM. (2014). *Principles to Actions: Ensuring Mathematical Success for All.* Reston, VA: NCTM

The National Council of Teachers of Mathematics (NCTM) recently published *Principles to Actions: Ensuring Mathematical Success for All*.

(Read the slide for the primary purpose of Principles to Action)



NCTM's Principles to Actions addresses and documents the realities that exist in too many classrooms, schools, and districts across our nation, including:

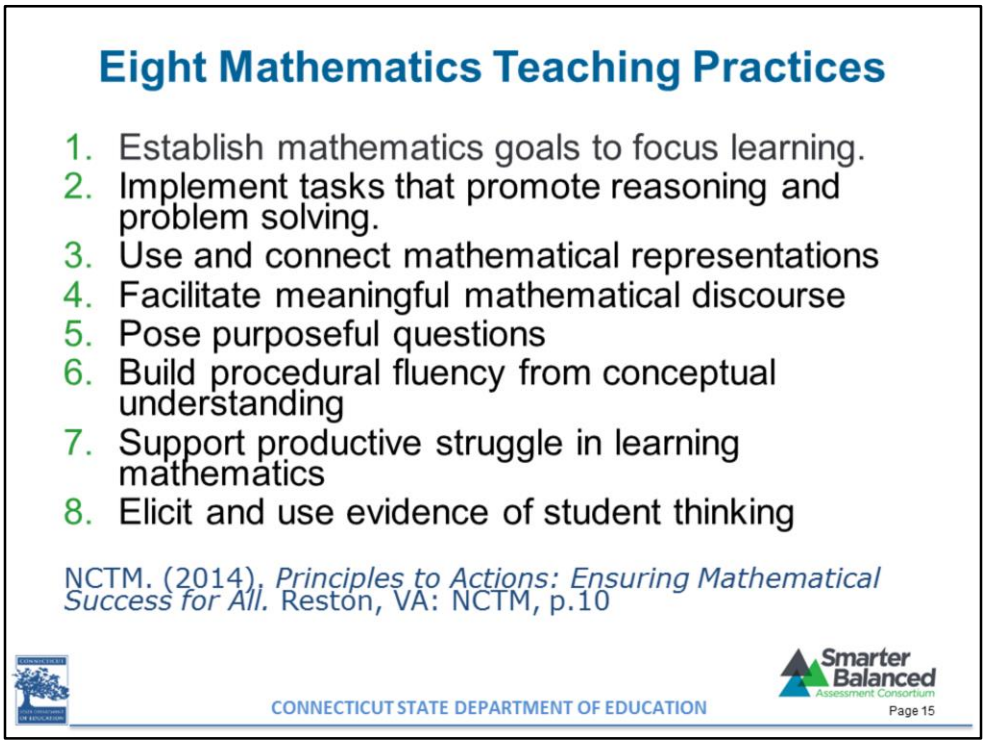
- Too much focus on learning procedures without any connection to meaning, understanding, or the applications that require these procedures.
- Too many students are limited by the lower expectations and narrower curricula of remedial tracks from which few ever emerge.
- Too many teachers have limited access to the instructional materials, tools, and technology that they need.

Three aspects of Principles to Actions are new, provocative, and important.

1. Principles to Actions devotes the largest section to Teaching and Learning, the first Guiding Principle, and describes and illustrates eight Mathematics Teaching Practices that research indicates need to be consistent components of every mathematics lesson. We will be connecting these Teaching Practices to the Standards for Mathematical Practice as we move through the tasks for today.

2. For each Guiding Principle, Principles to Actions offers commentary and a table that address productive and unproductive beliefs as part of a realistic appraisal of the obstacles that we face, as well as suggestions for overcoming these obstacles. You have all been given an e-version of the book and it is worth the time to look at these tables. A listing the productive and unproductive beliefs can be found on page 11 of the book.

3. Principles to Actions issues a forceful call to action, asserting that all of us who are stakeholders have a role to play and important actions to take if we are finally to recognize our critical need for a world where the mathematics education of our students draws from research, is informed by common sense and good judgment, and is driven by a nonnegotiable belief that we must develop mathematical understanding and self-confidence in **all** students.



Principles to Actions outlines eight Mathematics Teaching Practices that provide a framework for strengthening the teaching and learning of mathematics.

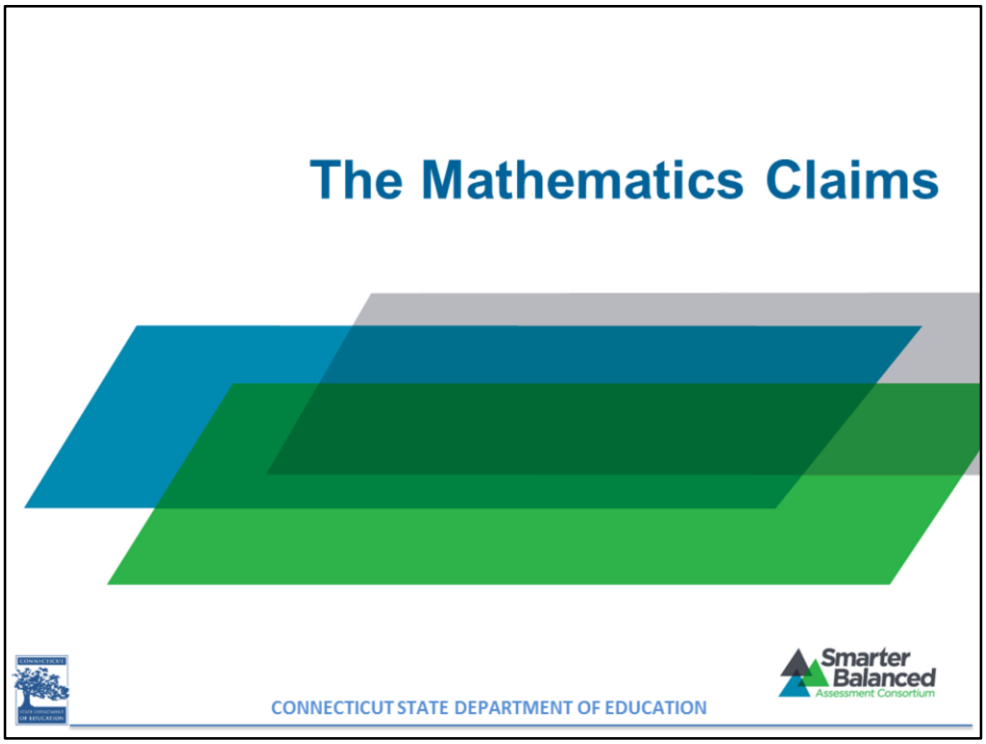
This research-informed framework reflects learning principles and knowledge of mathematics teaching that has accumulated over the last two decades.

The eight Mathematics Teaching Practices represent a core set of high-leverage practices and essential teaching skills necessary to promote deep learning of mathematics.

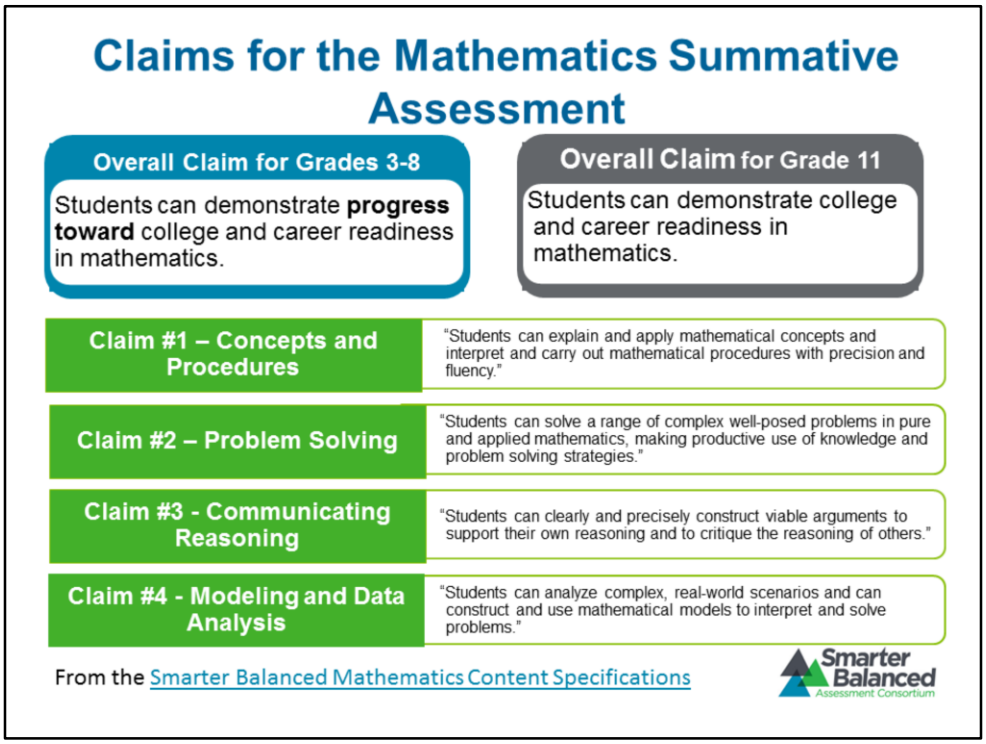
Turn to page 3 in Handout 3 (Principles to Action Executive Summary)

The eight practices are… (read from slide).

We will incorporate these teaching practices into our discussion about the relationship between the CCS Standards for Mathematical Content, the Standards for Mathematical Practice and the Smarter Balanced Claims.



The Smarter Balanced Claims are summary statements about the knowledge and skills students will be expected to demonstrate on the assessment related to a particular aspect of the CCS for Mathematics.



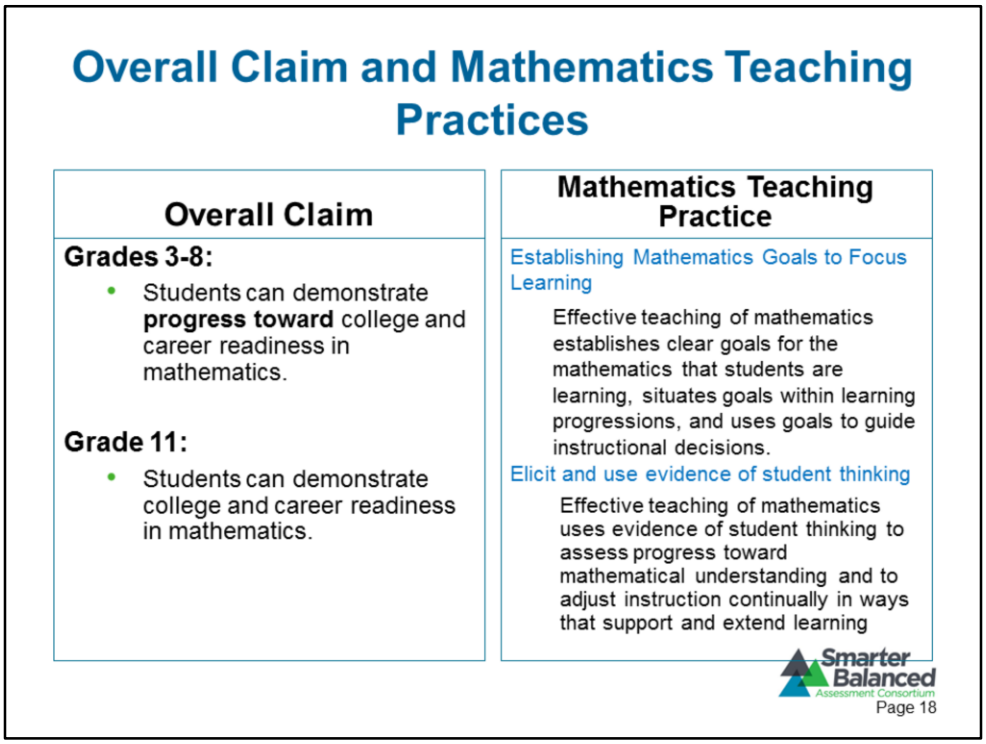
The Overall Claims are specific to grades 3-8 (progressing towards college and career readiness) and grade 11 (demonstrate college and career readiness). The claims are summary statements about the knowledge and skills students will be expected to demonstrate on the assessment related to a particular aspect of the CT Core Standards for Mathematics. **The Overall Claim scale score will be reported along with an associated achievement level (1,2,3,4)**

The four Mathematics Claims under the Overall Claim across grades 3-8 and 11 are:

- Claim 1 – Concepts and Procedures. Claim 1 items measure the extent to which students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
- Claim 2 – Problem Solving. Claim 2 items measure the extent to which students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.
- Claim 3 – Communicating Reasoning. Claim 3 items measure the extent to which students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
- Claim 4 – Modeling and Data Analysis. Claim 4 items measure the extent to which students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Claims 2 and 4 will be reported as one score.

For additional information about the Smarter Balanced Claims, refer to the Smarter Balanced Mathematics Content Specifications available on the Smarter Balanced Web site.



Just as the Overall Claim is a summary statement about what students know and can do by the end of the school year, the Mathematics Teaching Practices, Establishing Mathematics Goals to Focus Learning and Elicit and use evidence of student thinking, are practices that have overarching implications for instruction throughout the year.

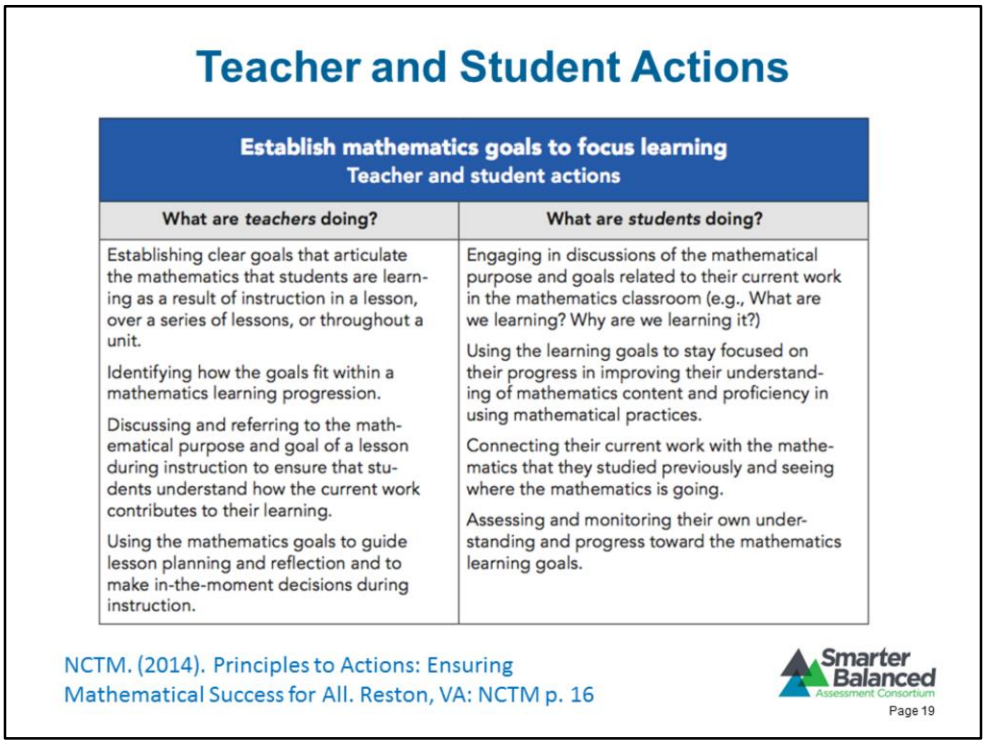
By engaging in a shared understanding among teachers of the mathematics that students are learning and how this mathematics develops along the learning progressions, both prior learning and where it is going, teachers are better able to make decisions to guide instruction .

The establishment of clear goals not only guides teachers' decision making during a lesson, but also focuses students' attention on monitoring their own progress toward the intended learning outcomes.

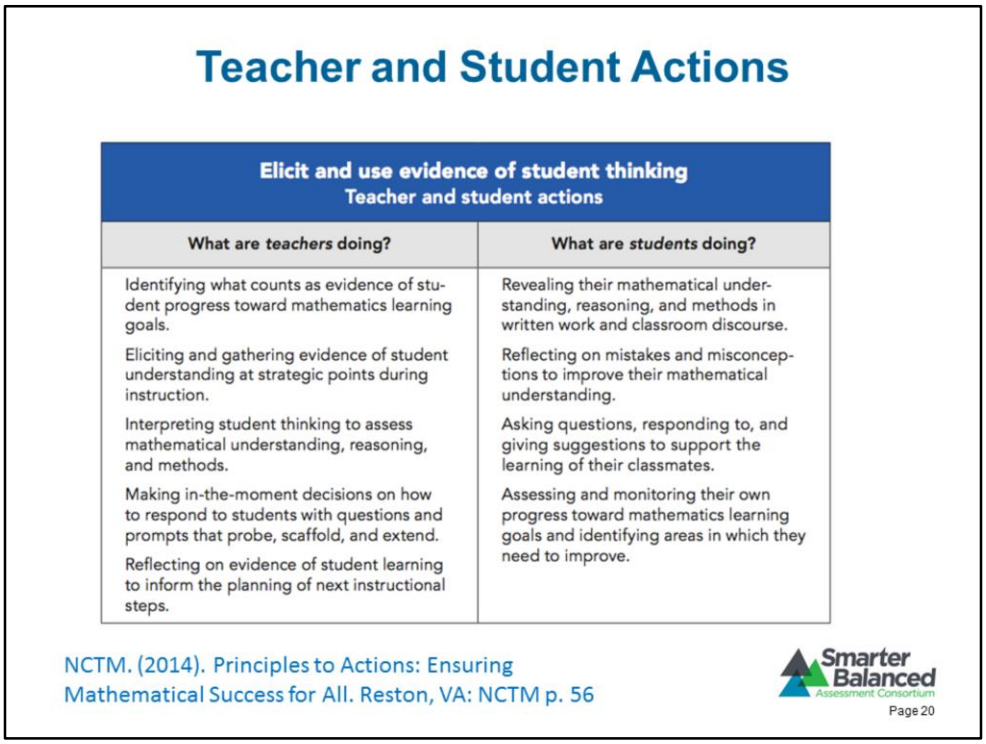
Learning goals situated within mathematics learning progressions and connected to the "big ideas" of mathematics provide a stronger bases for teachers' instructional decisions.

From Principles to Action, page 53:
"The gathering of evidence of student thinking should neither be left to chance nor occur sporadically. Preparation of each lesson needs to include intentional and systematic plans to elicit evidence that will provide "a constant steam of information

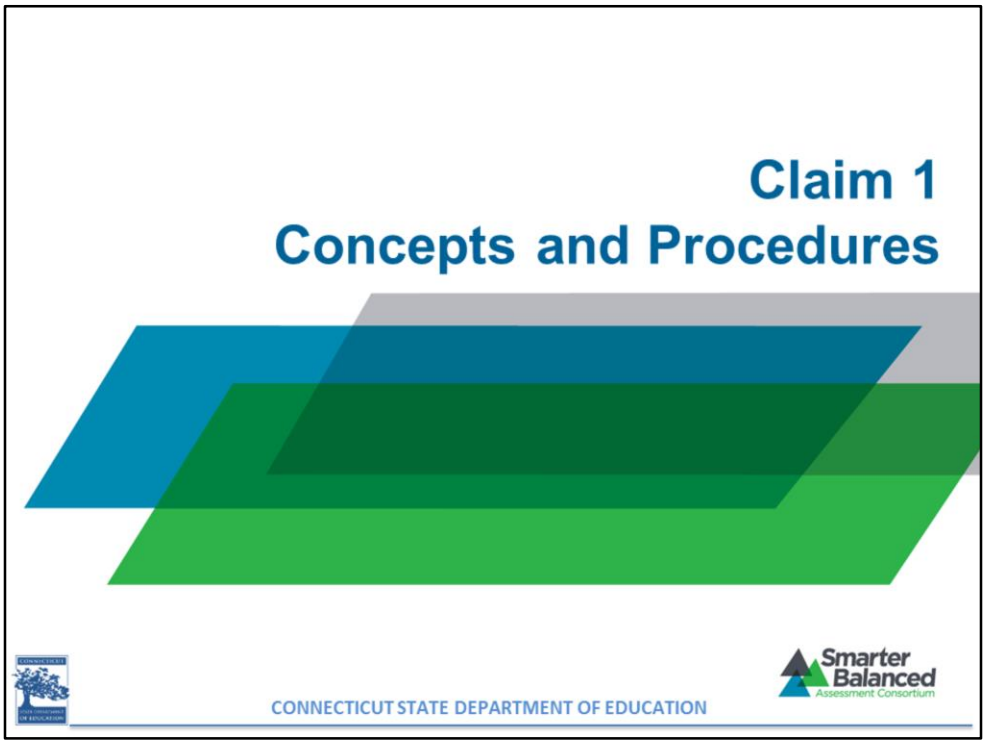
about how student learning is evolving toward the desired goal" (Heritage 2008, p.6).



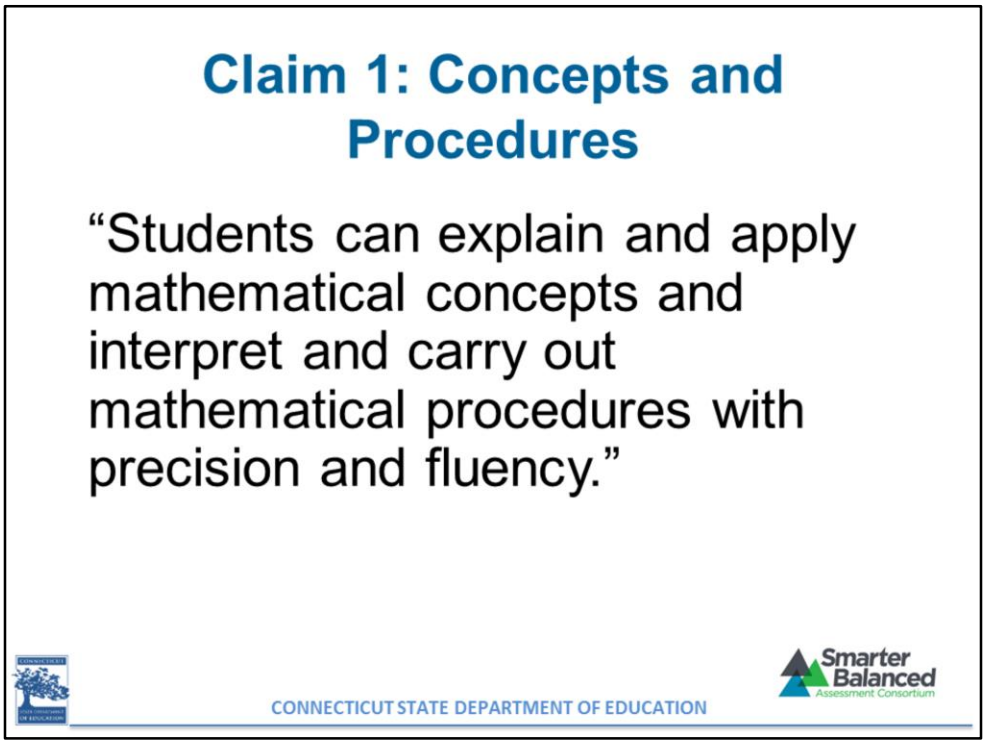
The actions listed in this table summarize what teachers and students are doing in mathematics classrooms that establish goals to focus learning.



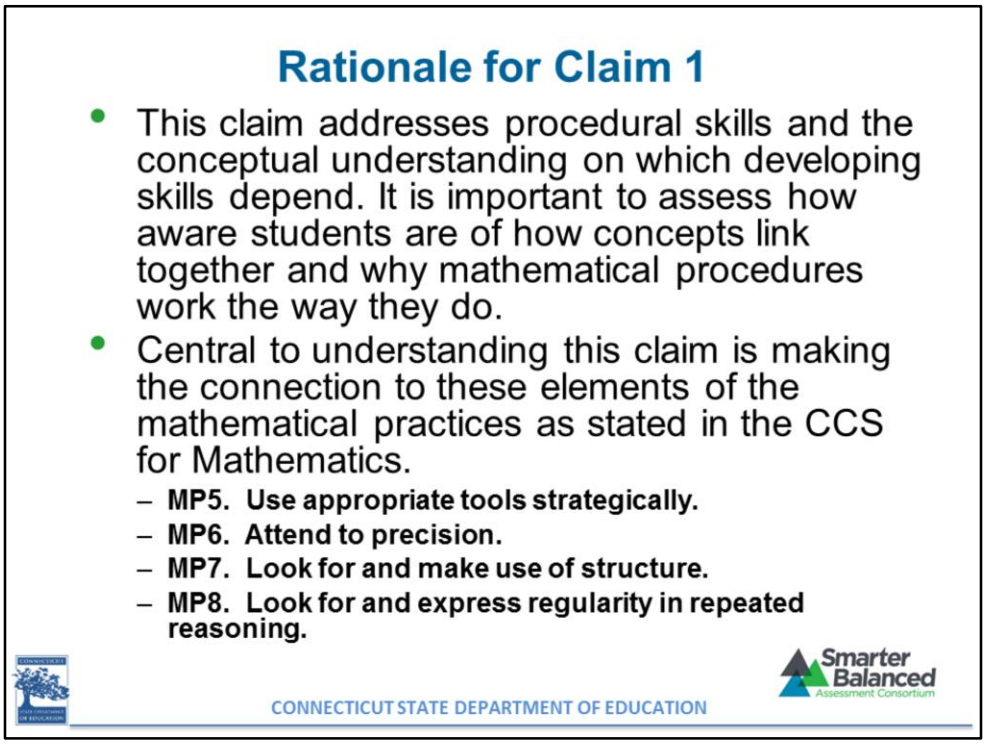
The actions listed in this table provide guidance on what teachers and students do in eliciting and using evidence of student thinking in the Mathematics Classroom.



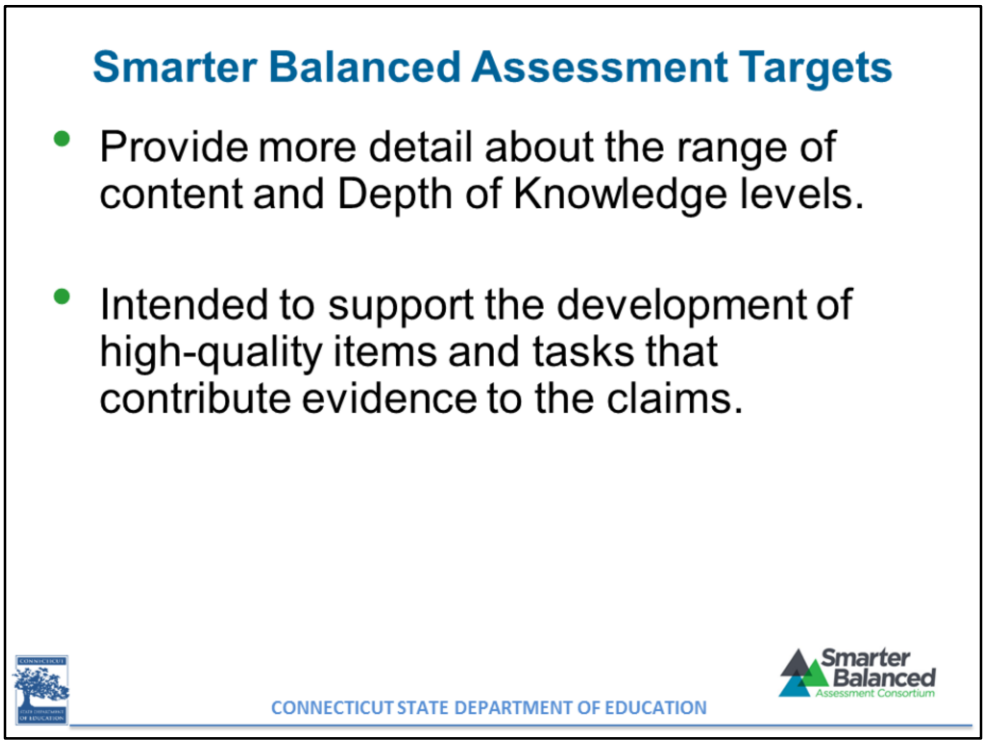
We will now take a closer look at each of the Mathematics Claims and how the Connecticut Core Standards (CCS) for Mathematics connect to the Smarter Balanced Claims for Mathematics.



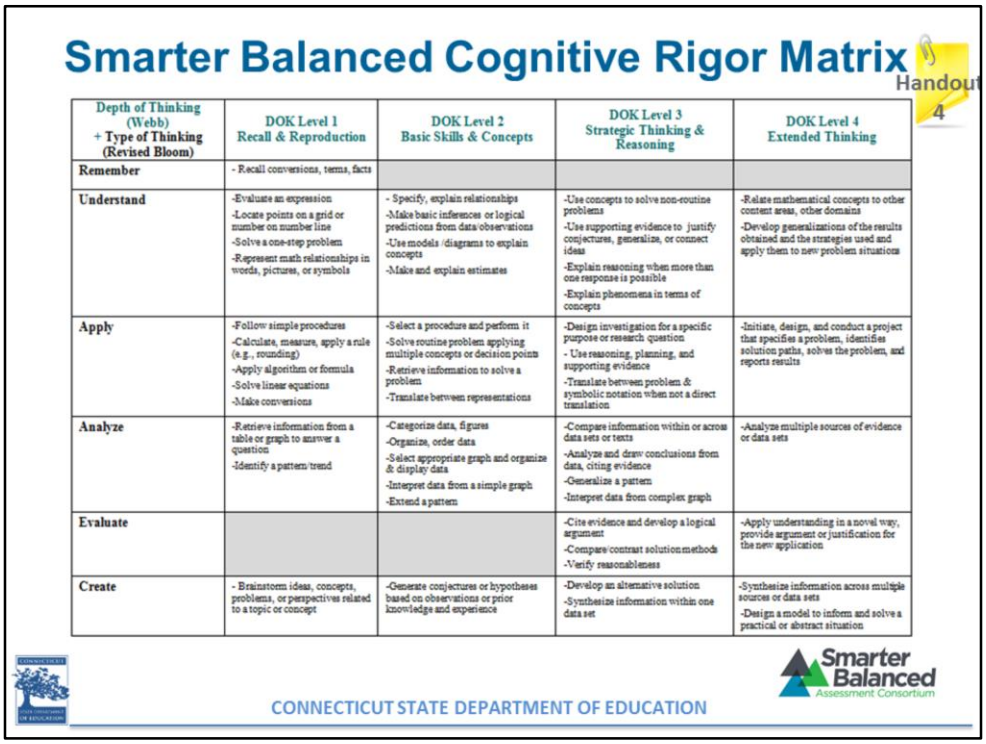
Claim 1 items measure the extent to which students are able to explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.



Read the slide. Tell participants to refer to Handout 2 that describes the student behaviors for each Practice Standard noted on the slide. Give a couple of minutes for them to read those behaviors and then explain that we will be looking for these student behaviors as we engage in classroom activities and tasks.



Each Claim is accompanied by a set of assessment targets that provide more detail about the range of content and Depth of Knowledge levels. The targets are intended to support the development of high-quality items and tasks that contribute evidence to the claims.



Smarter Balanced Cognitive Rigor Matrix

Handout 4

Depth of Thinking (Webb) + Type of Thinking (Revised Bloom)	DOK Level 1 Recall & Reproduction	DOK Level 2 Basic Skills & Concepts	DOK Level 3 Strategic Thinking & Reasoning	DOK Level 4 Extended Thinking
Remember	- Recall conversions, terms, facts			
Understand	-Evaluate an expression -Locate points on a grid or number on number line -Solve a one-step problem -Represent math relationships in words, pictures, or symbols	- Specify, explain relationships -Make basic inferences or logical predictions from data/observations -Use models /diagrams to explain concepts -Make and explain estimates	-Use concepts to solve non-routine problems -Use supporting evidence to justify conjectures, generalize, or connect ideas -Explain reasoning when more than one response is possible -Explain phenomena in terms of concepts	-Relate mathematical concepts to other content areas, other domains -Develop generalizations of the results obtained and the strategies used and apply them to new problem situations
Apply	-Follow simple procedures -Calculate, measure, apply a rule (e.g., rounding) -Apply algorithm or formula -Solve linear equations -Make conversions	-Select a procedure and perform it -Solve routine problem applying multiple concepts or decision points -Retrieve information to solve a problem -Translate between representations	-Design investigation for a specific purpose or research question - Use reasoning, planning, and supporting evidence -Translate between problem & symbolic notation when not a direct translation	-Initiate, design, and conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results
Analyze	-Retrieve information from a table or graph to answer a question -Identify a pattern/trend	-Categorize data, figures -Organize, order data -Select appropriate graph and organize & display data -Interpret data from a simple graph -Extend a pattern	-Compare information within or across data sets or texts -Analyze and draw conclusions from data, citing evidence -Generalize a pattern -Interpret data from complex graph	-Analyze multiple sources of evidence or data sets
Evaluate			-Cite evidence and develop a logical argument -Compare/contrast solution methods -Verify reasonableness	-Apply understanding in a novel way, provide argument or justification for the new application
Create	- Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	-Generate conjectures or hypotheses based on observations or prior knowledge and experience	-Develop an alternative solution -Synthesize information within one data set	-Synthesize information across multiple sources or data sets -Design a model to inform and solve a practical or abstract situation

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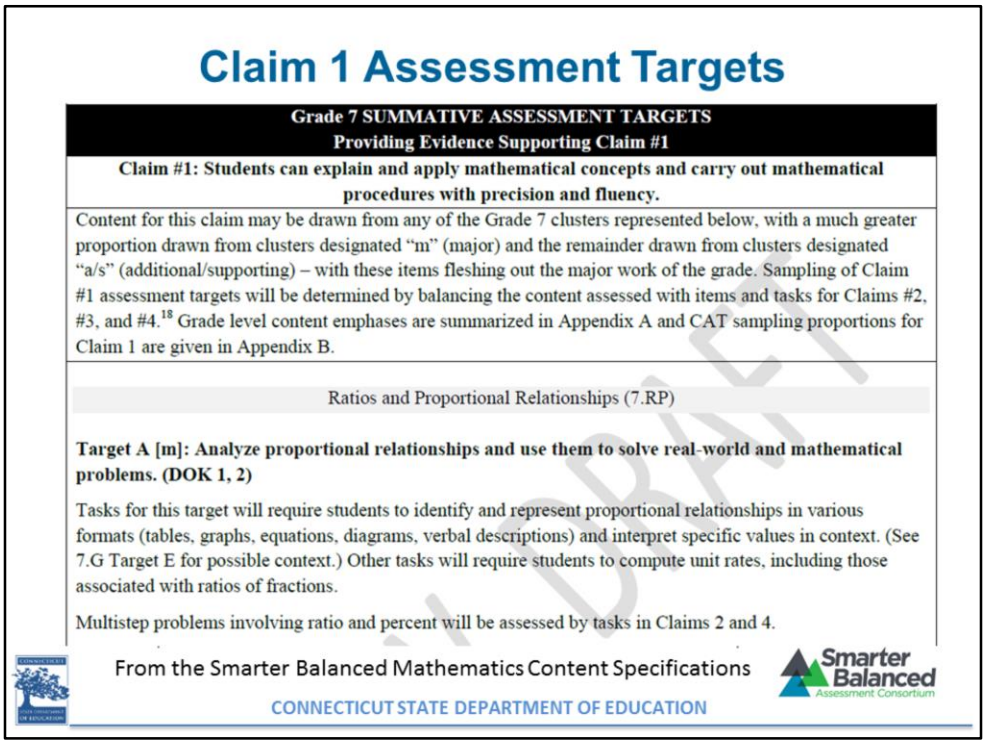
Smarter Balanced Assessment Consortium

The depth of knowledge levels defined by Smarter Balanced are informed by the Cognitive Rigor matrix. The Cognitive Rigor matrix combines two common taxonomies that categorize levels of cognition and shows how the Smarter Balanced depth of knowledge categories relate to these taxonomies. The Smarter Balanced Cognitive Rigor matrix can be found in the Smarter Balanced Content Specifications for Mathematics. Claim 1 items will be at DOK levels 1 and 2. In terms of Bloom's Types of Thinking, Claim 1 items will require understanding and application skills.

Remind participants that a copy of this is in their folders.

Now let's examine the content specifications.

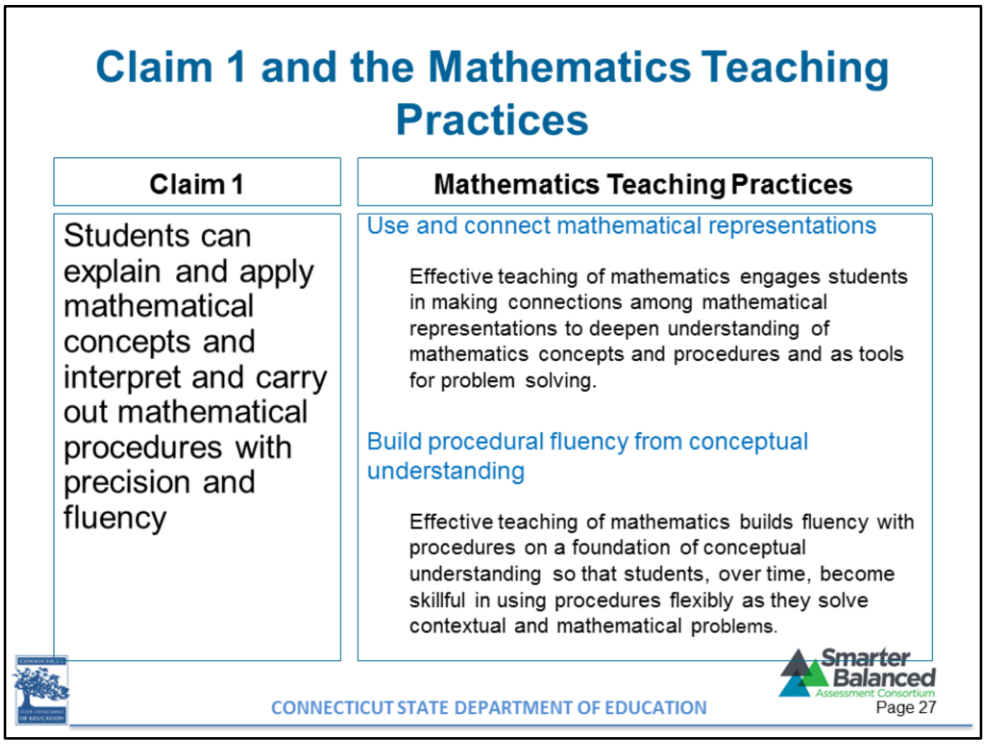


As outlined in the Smarter Balanced Mathematics Content Specifications, the Claim 1 Assessment Targets provide more detail about the range of content and Depth of Knowledge levels that are assessed in Claim 1.

The Assessment Targets were written to support the development of high-quality items and tasks that contribute evidence to the claims.

The Assessment Targets for Claim 1 are derived from the cluster headings of the content standards for the Common Core State Standards.

Targets for Claim 1 – concepts and procedures – are derived from the content standards for Common Core State standards. Use of more fine-grained descriptions would risk a tendency to atomize the content, which might lead to assessments that would not meet the intent of the standards. It is important to keep in mind the importance of developing items and tasks that reflect the richness of the mathematics in the CCSS-M.



Classroom instruction that incorporates the mathematics teaching practices, "Use and connect mathematical representations" and "Build procedural fluency from conceptual understanding" will provide opportunities for students to develop the conceptual understandings and carry out mathematical procedures with precision and fluency that are expected for Claim 1.

When teachers employ the practice of using and connecting mathematical representations, students will be engaged in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.

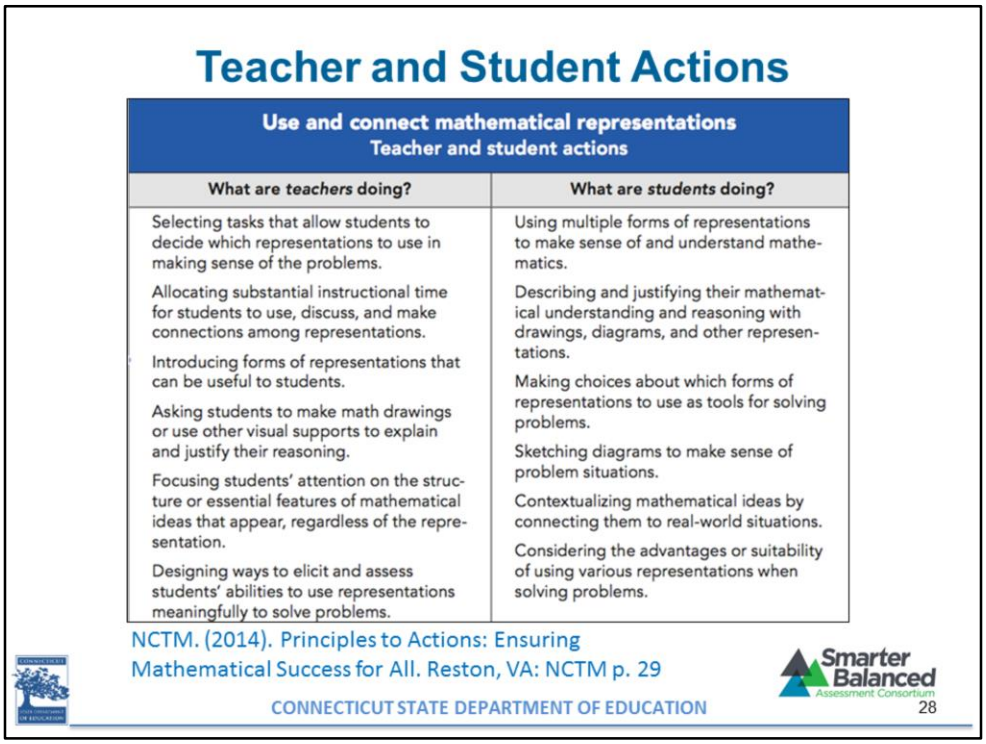
Likewise, when teachers employ the practice of building procedural fluency from conceptual understanding, students, over time, will become skillful in using procedures flexibly as they solve contextual and mathematical problems.

The Standards call for speed and accuracy in calculation. Teachers should structure class time and/or homework time for students to practice core functions such as single-digit multiplication so that students have access to more complex concepts and procedures. Note that this is not memorization absent understanding. This is the outcome of a carefully laid out learning progression.

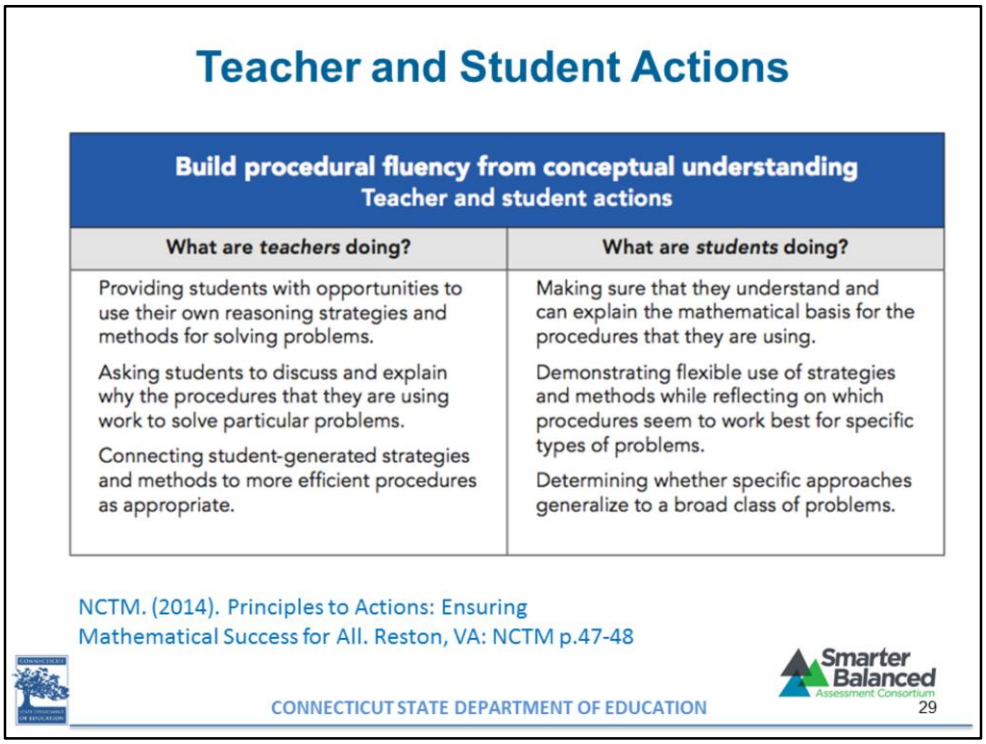
At the same time, we can't expect fluency to be a natural outcome without

addressing it specifically in the classroom and in our materials. Some students might require more practice than others, and that should be attended to.

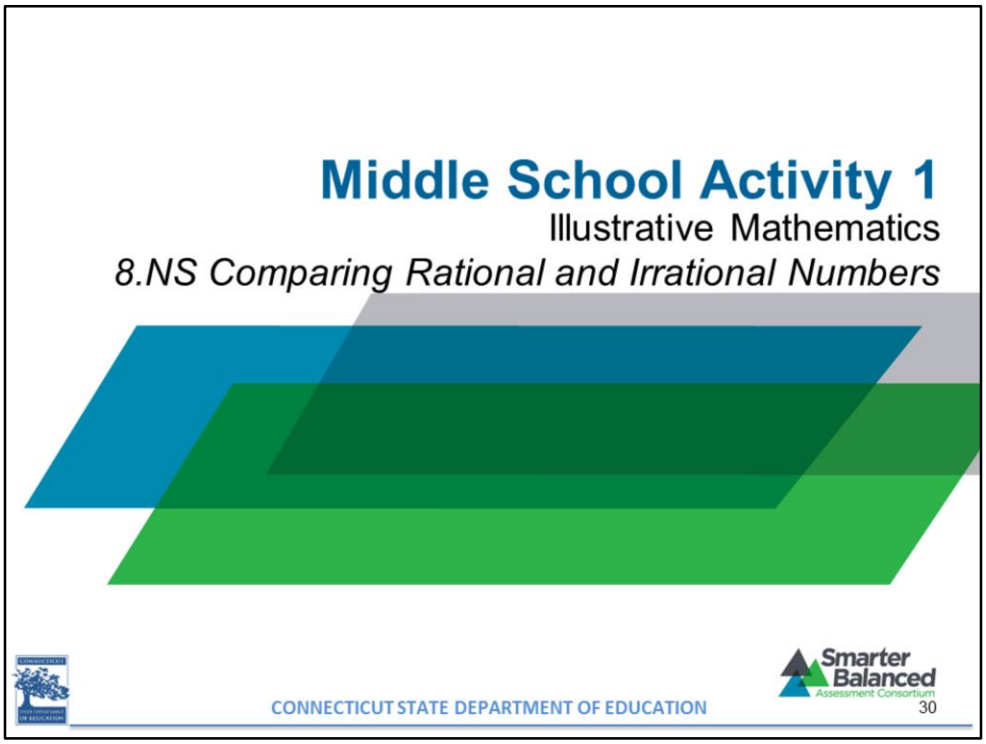
Additionally, there is not one approach to get to speed and accuracy that will work for all students. All students, however, will need to develop a way to get there.



The teacher and student actions listed in this table provide a summary of what teachers and students do in using and connecting mathematical representations in teaching and learning mathematics.

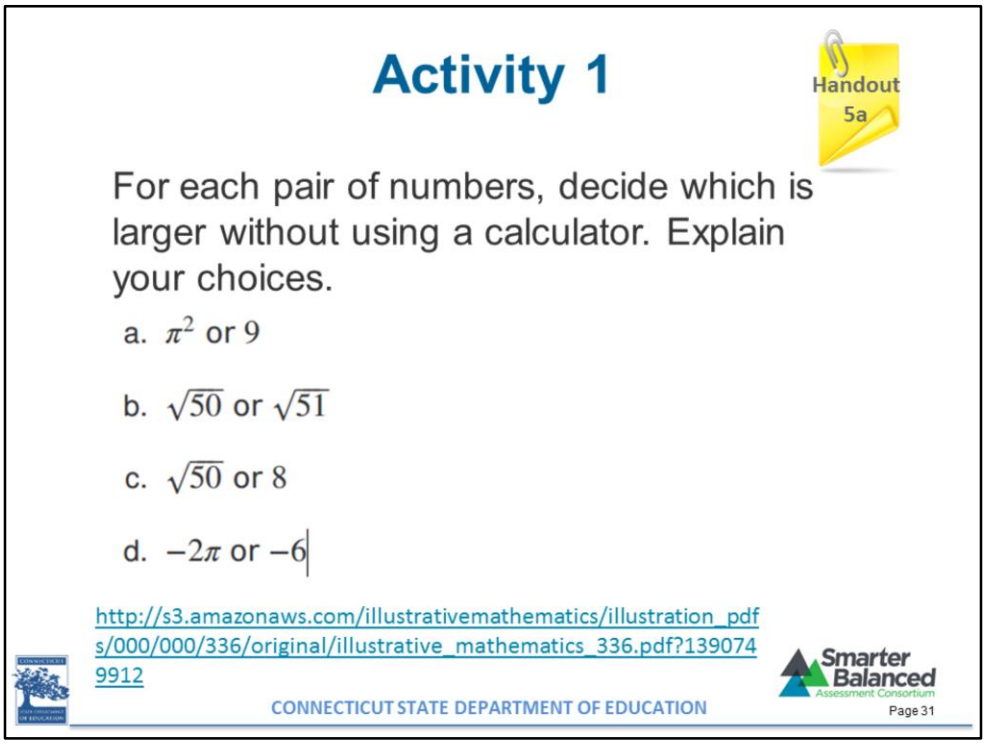


The actions listed in this table summarize what teachers and students are doing in mathematics classrooms to build procedural fluency from conceptual understanding and problem-solving experiences.



We will now work on a task that addresses Rational and Irrational Numbers.

This task is from Illustrative Mathematics. It requires students to understand various representations of quantities and use those in order to make decisions about the problem. Let's take a look at the task.

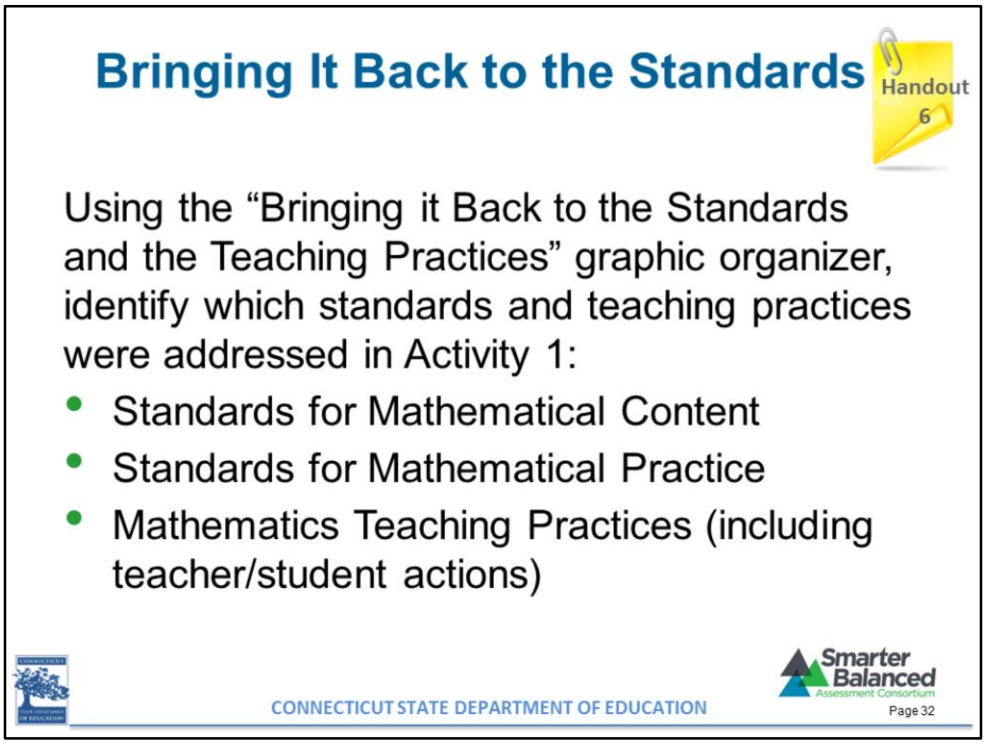


Facilitator Note: Direct participants to use Handout 5a for this activity. Ask participants to work through each question without looking at the solutions on page 2 of the handout. Once finished, they should read the solutions on page 2 and compare them to the explanations they provided.

Give groups about 3-5 minutes to share their responses to the question "Is there another way to determine which is larger?" Group members should look at the solutions provided on page 2 of the handout and share different explanations.

Providing the opportunity for students to share their thinking will not only allow each student to demonstrate their conceptual understanding of the underlying mathematics, but will allow for other students to hear different approaches that might build on their understanding of the underlying mathematics.

When students are asked to answer a question, elicit evidence of their understanding of the underlying mathematics by asking "HOW DO YOU KNOW?" or ""EXPLAIN YOUR THINKING."



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity. They will also have access to the e-book if they want to look at the tables for the 8 teaching practices.
For this particular activity, under "Standards for Mathematical Content," participants should have noted:

- Domain: The Number System
- Cluster Heading: 8.NS.A (Know that there are numbers that are not rational, and approximate them by rational numbers.)
- Standard: 8.NS.A.2 (ask a participant to read the standard language from the flip book)

Under SMP: 1, 2, 6, 7

Under Mathematical Teaching Practices: Use and Connect mathematical representations; Build procedural fluency from conceptual understanding; Elicit and use evidence of student thinking.
Ex: Teacher: provide opportunity to use own reasoning strategy
selecting a task that allows students to use different

representations

Student: uses multiple forms of representations to make sense of the mathematics

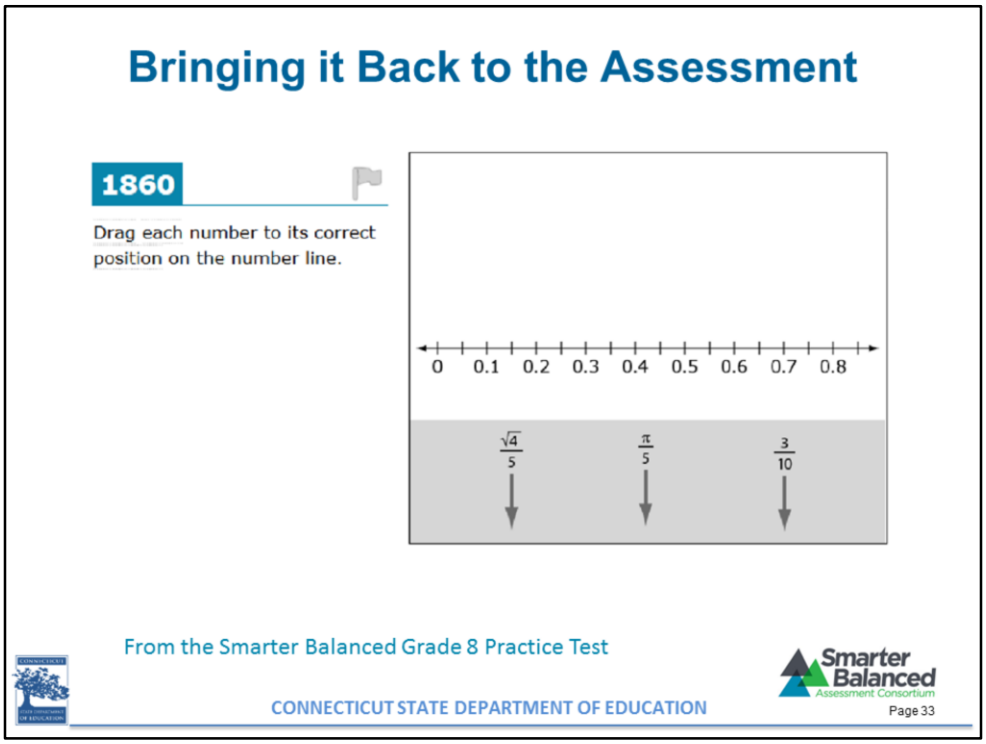
justify their mathematical understanding through other representations

explaining their decision

Note: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

This activity should be part of a larger unit of study aligned to the domain The Number System.

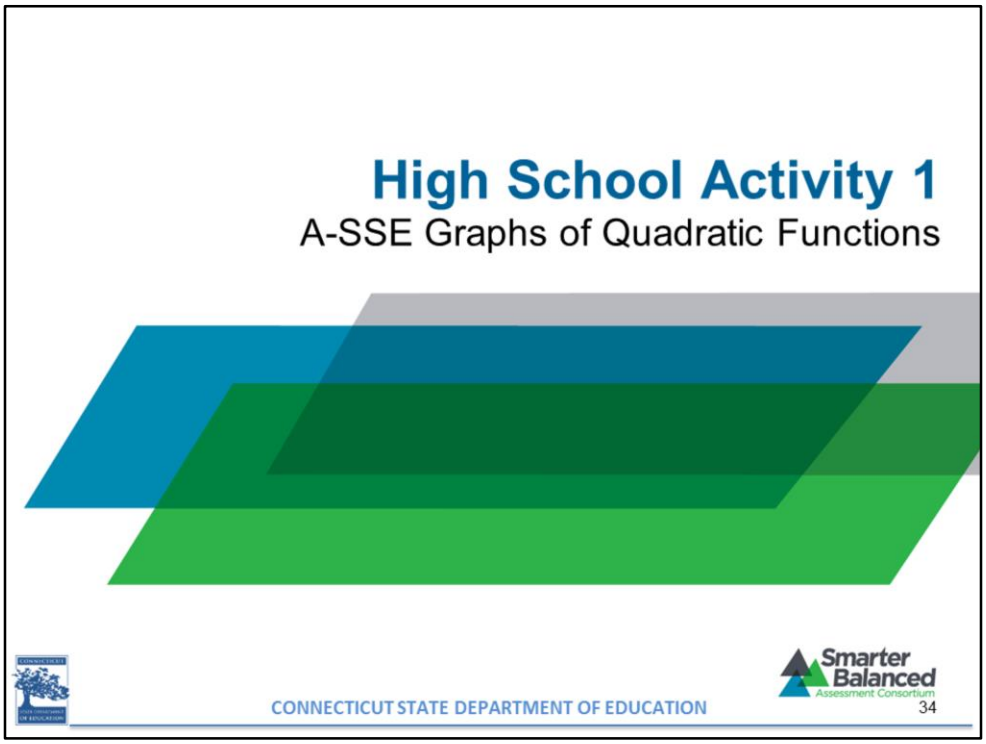
This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.



This item is from the Smarter Balanced Grade 8 Practice Test. It is a Claim 1 item aligned to Target A "Know that there are numbers that are not rational, and approximate them by rational numbers." Note that this is the cluster heading from the CCS. It is a DOK level 2 question.

Think about the evidence a teacher can collect from simply looking at the student response to this question. Even if the student places each number correctly on the number line, during instruction, a teacher should ask the question, "How do you know?" The teacher might also ask, "Can anyone explain it in a different way?"

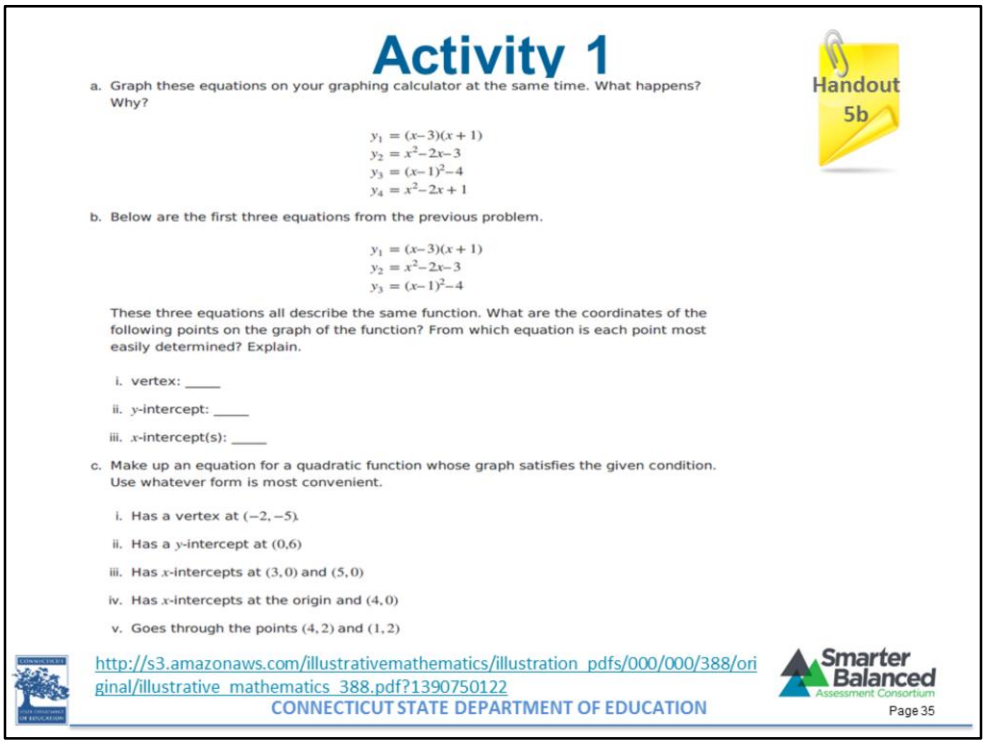
Cloning, drilling and killing exercises, where the student is presented with a number of items similar to this one, do not elicit the same level of evidence about the student's understanding of the underlying mathematics. Rather, providing students with the opportunity to engage in a few examples with the expectation that they need to explain their thinking, is a far more effective teaching strategy to improve student learning.



We will now work on a task that addresses Graphs of Quadratic Functions.

This task is from Illustrative Mathematics. This task incorporates technology and requires students to understand the structure of equations in order to efficiently find critical points of quadratic functions.

Participants will need to download a graphing calculator if they have not done so already.
On a flip chart have this site https://wabbit.codeplex.com
Once they are on this site click download (they may need to click run or open the executable file)
Next click create ROM image using open source and next
Choose the TI-83 Plus SE is fine for our purposes then click finish
They can save to the desktop and can name it TI83
When the pop-up appears, they can click view, enable skin and the calculator will work!

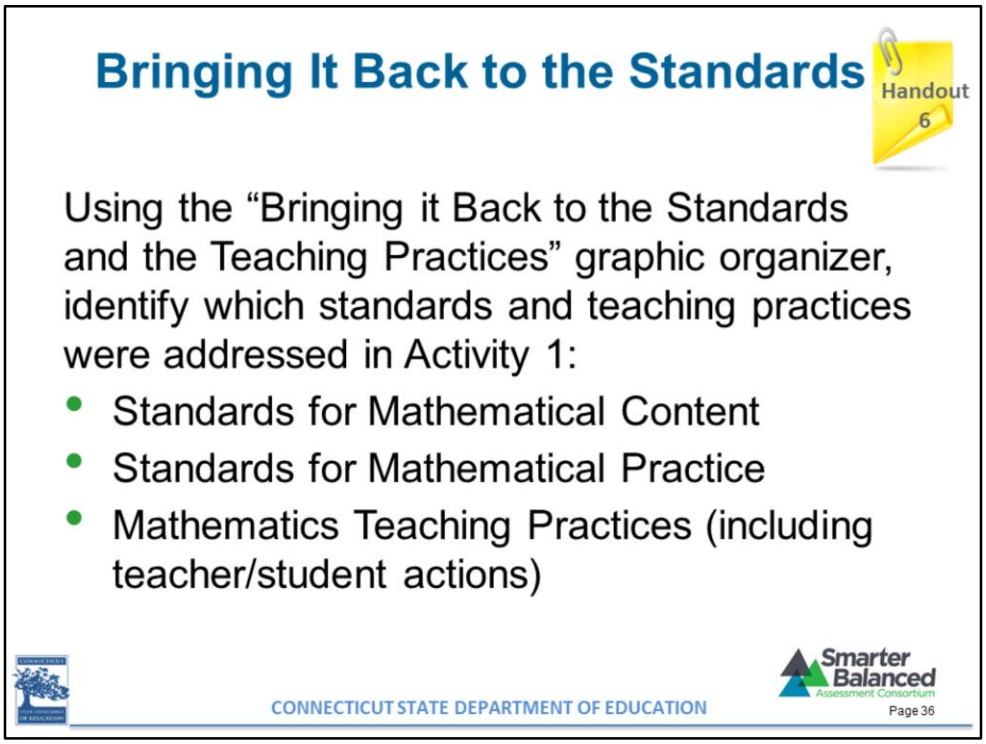


Facilitator Note: Direct participants to use Handout 5b for this activity. Ask participants to work through this activity without looking at the solutions on pages 2 and 3 of the handout. Once finished, they should read the solutions on page 2 and compare them to the explanations they provided.

Give groups about 3-5 minutes to share their responses to the question "Is there another equation that fits the criteria in part c?" Group members should look at the solutions provided on pages 2 and 3 of the handout and share different explanations.

Providing the opportunity for students to share their thinking will not only allow each student to demonstrate their conceptual understanding of the underlying mathematics, but will allow for other students to hear different approaches that might build on their understanding of the underlying mathematics.

When students are asked to answer a question, elicit evidence of their understanding of the underlying mathematics by asking "HOW DO YOU KNOW?" or ""EXPLAIN YOUR THINKING."



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity. They will also have access to the e-book if they want to look at the tables for the 8 teaching practices.
For this particular activity, under "Standards for Mathematical Content," participants should have noted:

- Conceptual Categories: Algebra and Functions
- Cluster Heading: A.SSE.B (Write expressions in equivalent forms to solve problems) AND F.IF.C (Analyze functions using different representations)
- Standard: A.SSE.B.3.a and F.IF.C.7.a (ask a participant to read the standard language from the flip book)

Under SMP: 1, 2, 7

Under Mathematical Teaching Practices: Use and connect mathematical representations, Build procedural fluency from conceptual understanding, Elicit and use evidence of student thinking. Establish mathematics goals to focus learning
Ex: Teacher: provide opportunity to use own reasoning strategy
introducing forms of representations that can be useful to

students

Student: make choices about which forms of representations to use as tools for solving problems

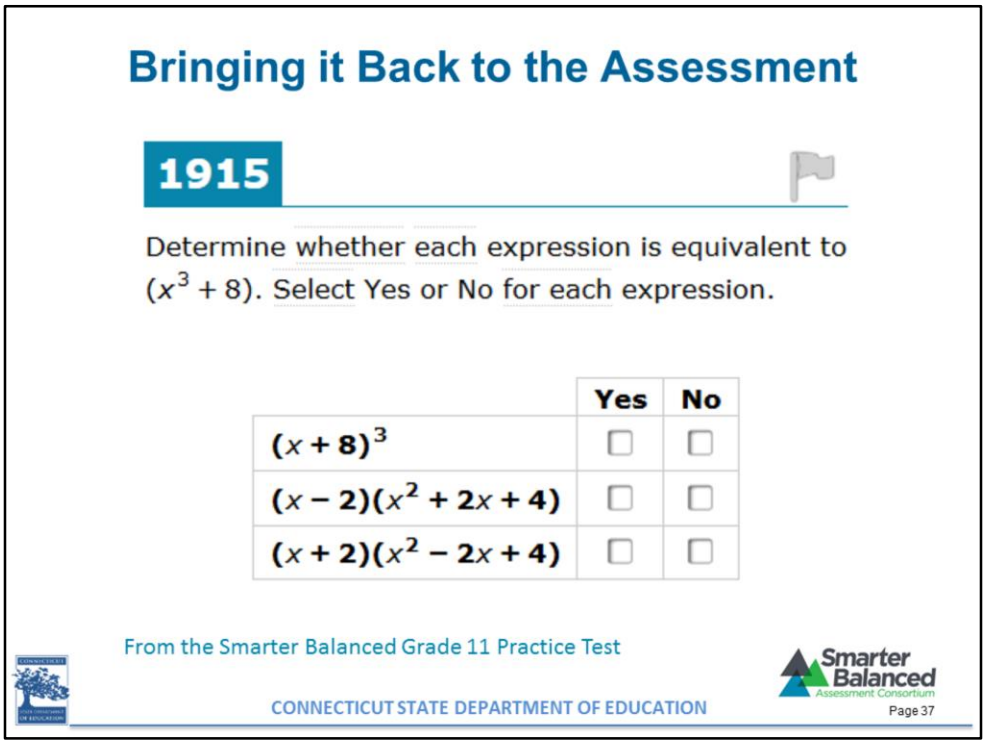
determine which procedures seem to work best for specific types of problems

connecting current work with mathematics previously studied

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

This activity should be part of a larger unit of study aligned to the conceptual category of Functions.

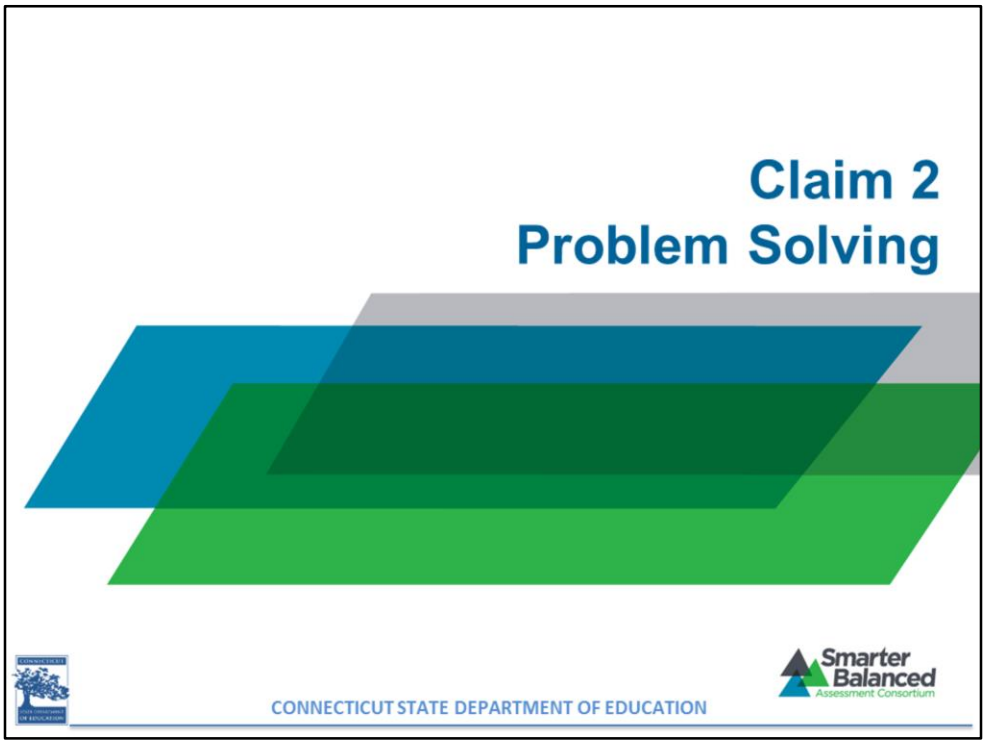
This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.



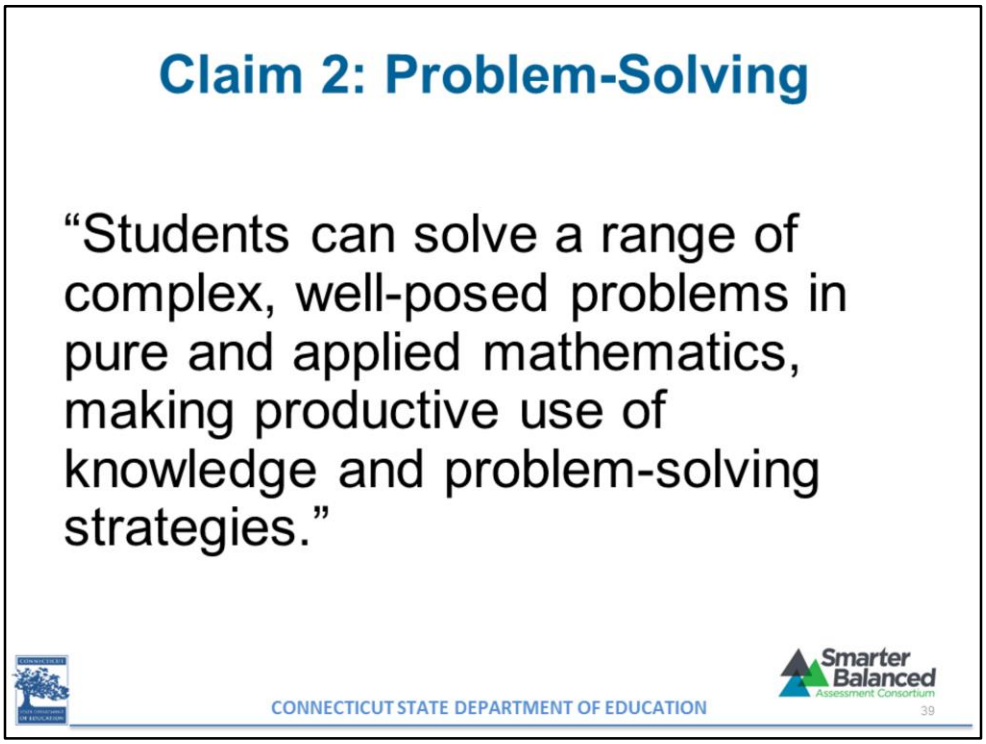
This item is from the Smarter Balanced Grade 11 Practice Test. It is a Claim 1 item aligned to Target D "Interpret the structure of expressions." Note that this is the cluster heading from the CCS. It is a DOK level 1 task.

Think about the evidence a teacher can collect from simply looking at the student response to this question. Even if the student identifies the correct equivalent expressions during instruction, a teacher should ask the question, "How do you know?" The teacher might also ask, "Are there other ways to get the same answer?"

Cloning, drilling and killing exercises, where the student is presented with a number of items similar to this one, do not elicit the same level of evidence about the student's understanding of the underlying mathematics. Rather, providing students with the opportunity to engage in a few examples with the expectation that they need to explain their thinking, is a far more effective teaching strategy to improve student learning.

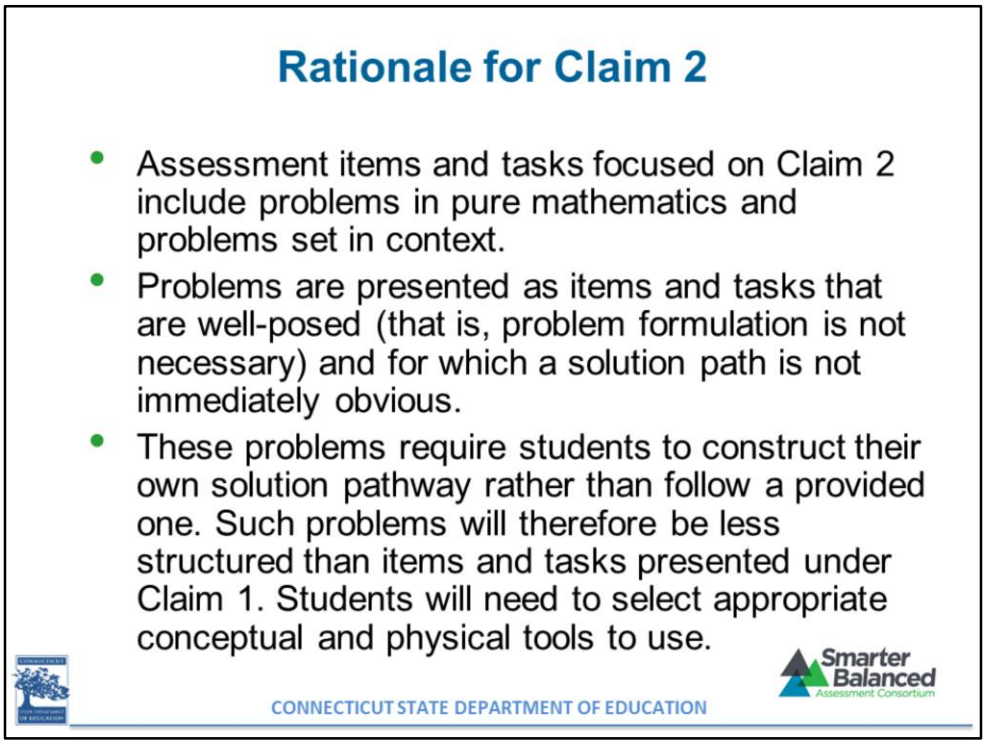


Let's move on to Claim 2: Problem Solving



Claim 2 items and tasks measure the extent to which students can solve a range of complex, well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.

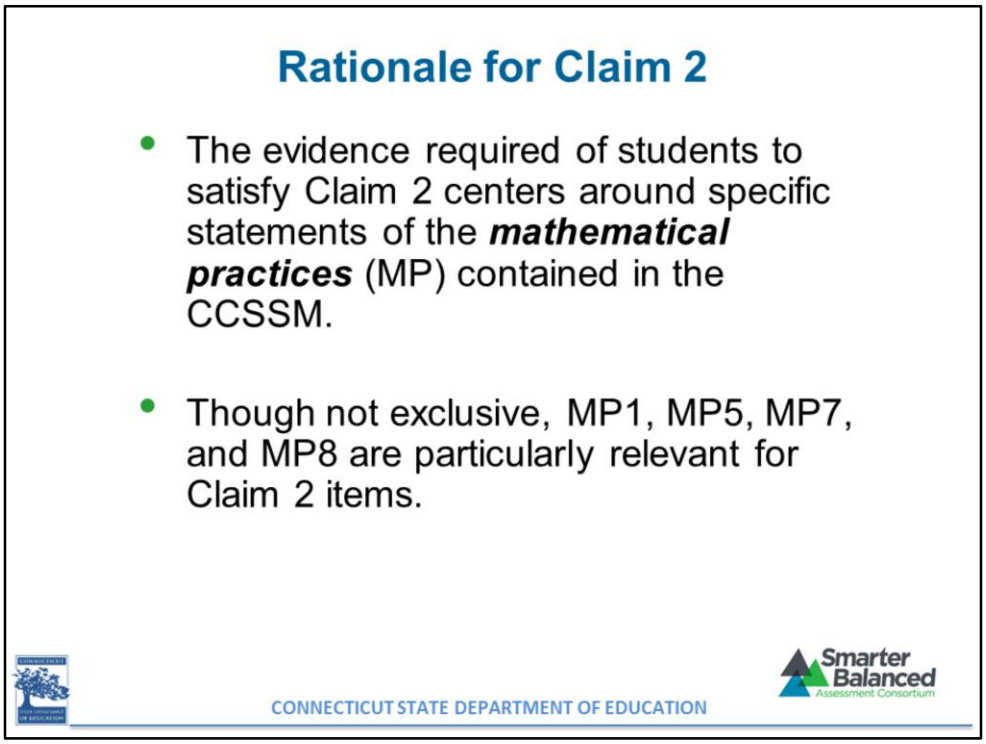
Keep in mind that not all word problems are Claim 2. Word problems that are procedural are tagged to Claim 1.



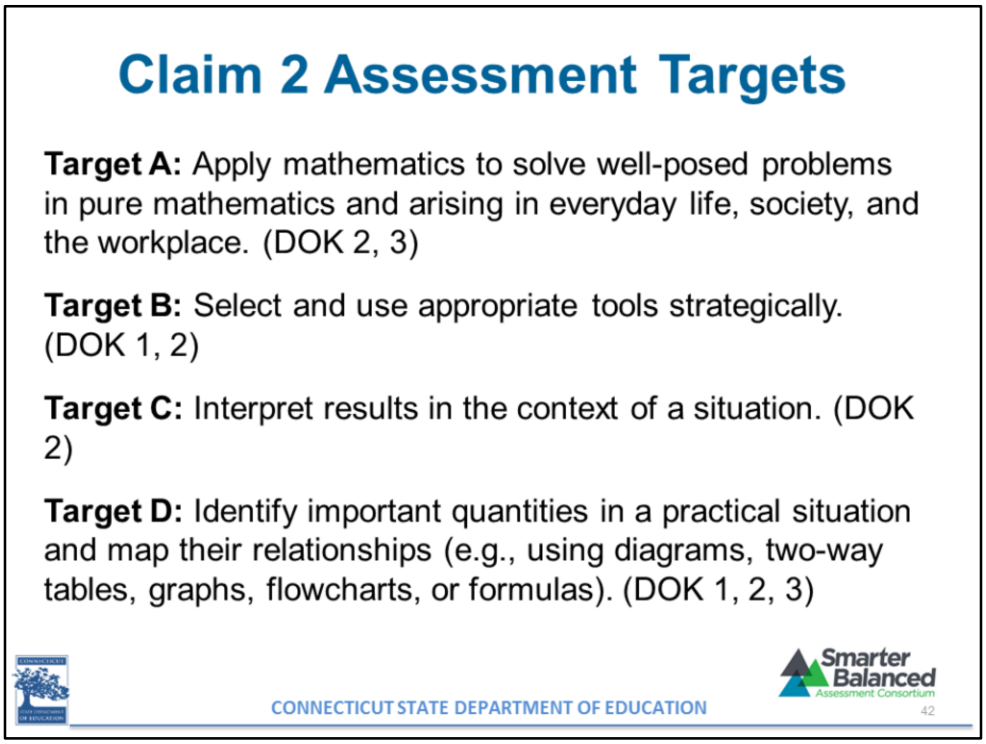
Claim 2 items may be pure mathematics or set in context.

As opposed to problems tagged to Claim 4, Claim 2 items are well posed, meaning that the students are **not** required to formulate a model to solve the problem, however, the solution path should not be obvious (this is Claim 1).

Students are required to construct their own solution path. In some cases, there may be one solution path with multiple correct answers, or several solution paths that lead to a single correct answer.

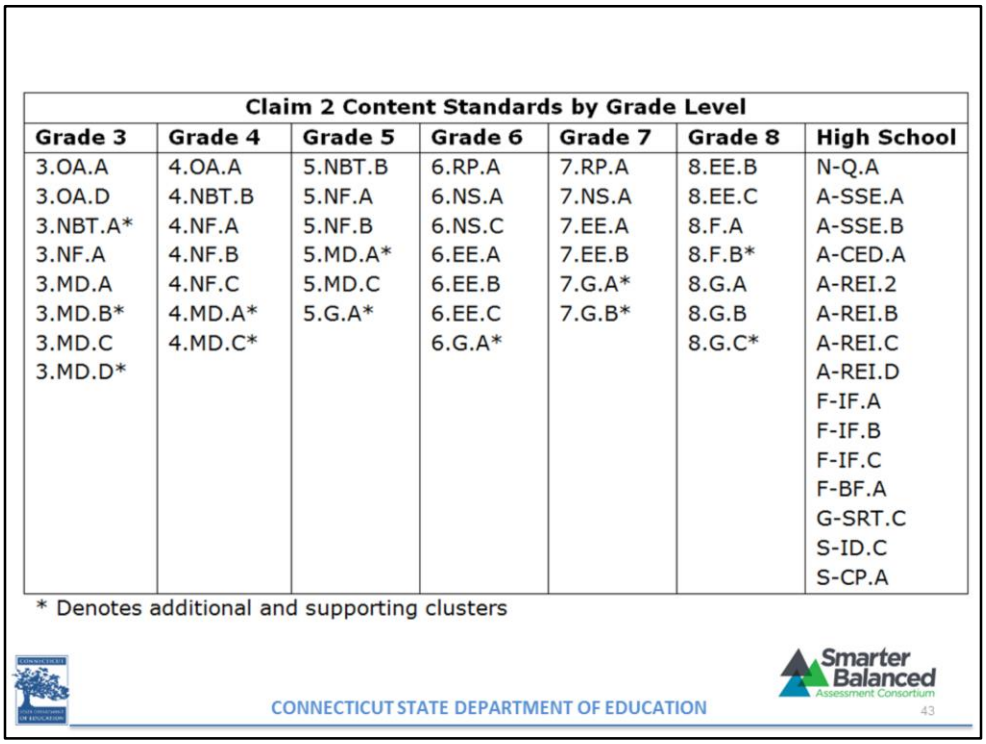


Read the slide. Tell participants to refer to Handout 2 that describes the student behaviors for each Practice Standard noted on the slide. We will be looking for these student behaviors as we engage in classroom activities and tasks.



Unlike Claim 1 assessment targets which are grade-level specific, the Claim 2, 3 and 4 assessment targets are common across all grades.

As you can see, the language of the targets are drawn from the Standards for Mathematical Practice.

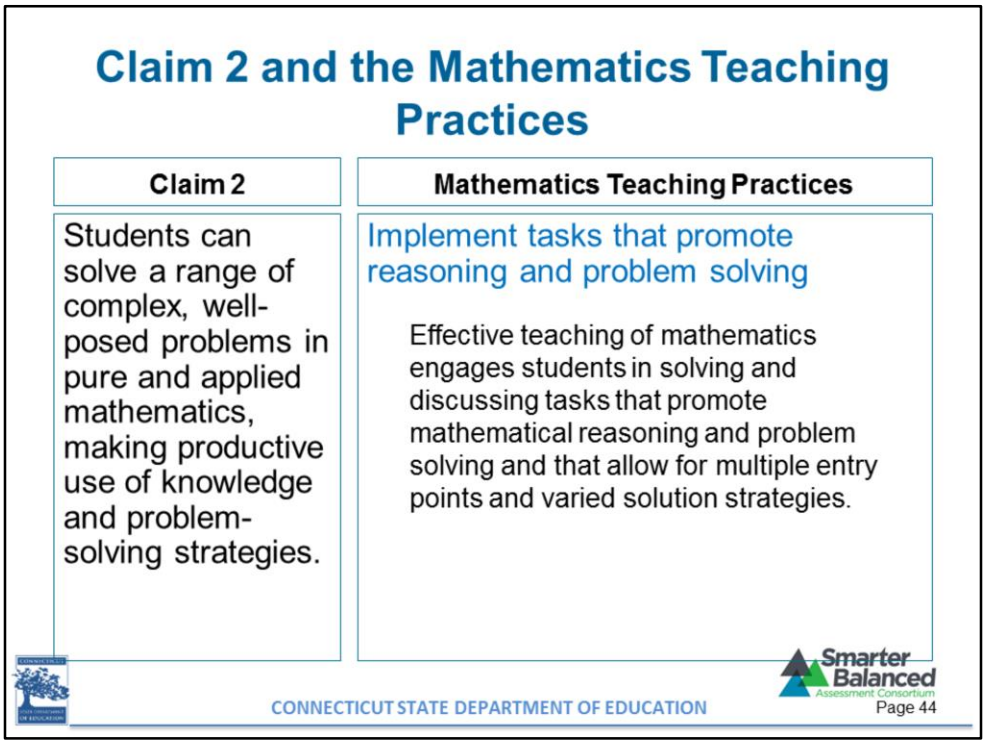


Claim 2 Content Standards by Grade Level						
Grade 3	**Grade 4**	**Grade 5**	**Grade 6**	**Grade 7**	**Grade 8**	**High School**
3.OA.A	4.OA.A	5.NBT.B	6.RP.A	7.RP.A	8.EE.B	N-Q.A
3.OA.D	4.NBT.B	5.NF.A	6.NS.A	7.NS.A	8.EE.C	A-SSE.A
3.NBT.A*	4.NF.A	5.NF.B	6.NS.C	7.EE.A	8.F.A	A-SSE.B
3.NF.A	4.NF.B	5.MD.A*	6.EE.A	7.EE.B	8.F.B*	A-CED.A
3.MD.A	4.NF.C	5.MD.C	6.EE.B	7.G.A*	8.G.A	A-REI.2
3.MD.B*	4.MD.A*	5.G.A*	6.EE.C	7.G.B*	8.G.B	A-REI.B
3.MD.C	4.MD.C*		6.G.A*		8.G.C*	A-REI.C
3.MD.D*						A-REI.D
						F-IF.A
						F-IF.B
						F-IF.C
						F-BF.A
						G-SRT.C
						S-ID.C
						S-CP.A

* Denotes additional and supporting clusters

This table was developed for item writers and identifies CCS domains and content clusters for Claim 2. Items and tasks can center on a single cluster listed, or synthesize across listed clusters within a grade. Note that at the high school level, some clusters that were not included in the Claim 1 targets are included as content to be assessed in Claim 2.

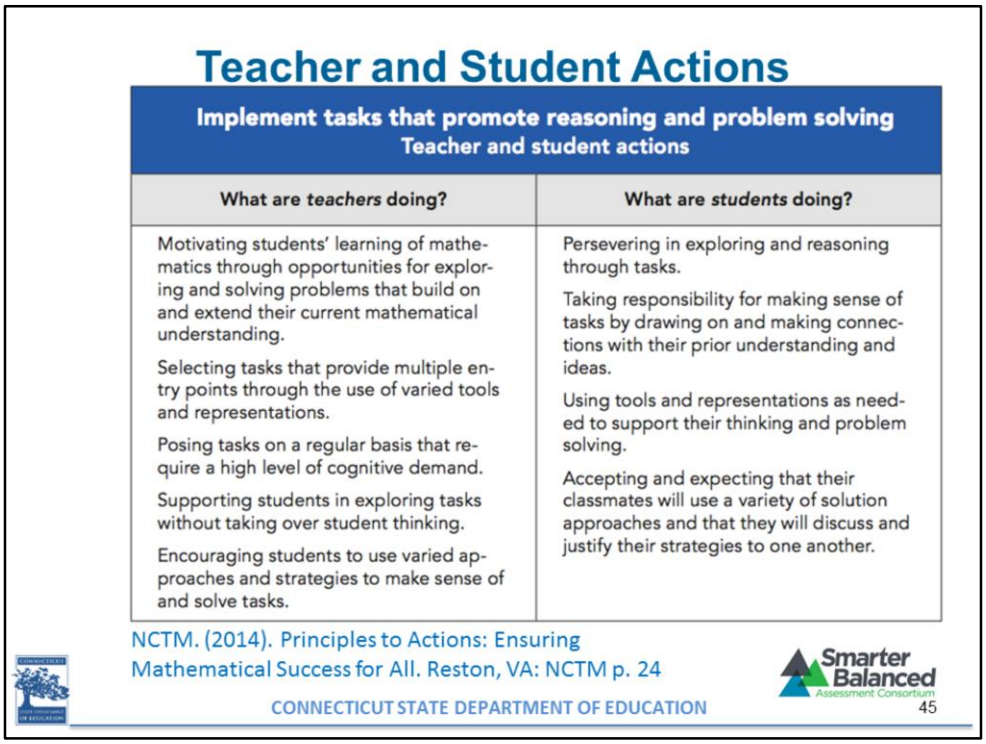
This information is provided in the Smarter Balanced Mathematics Content Specifications.



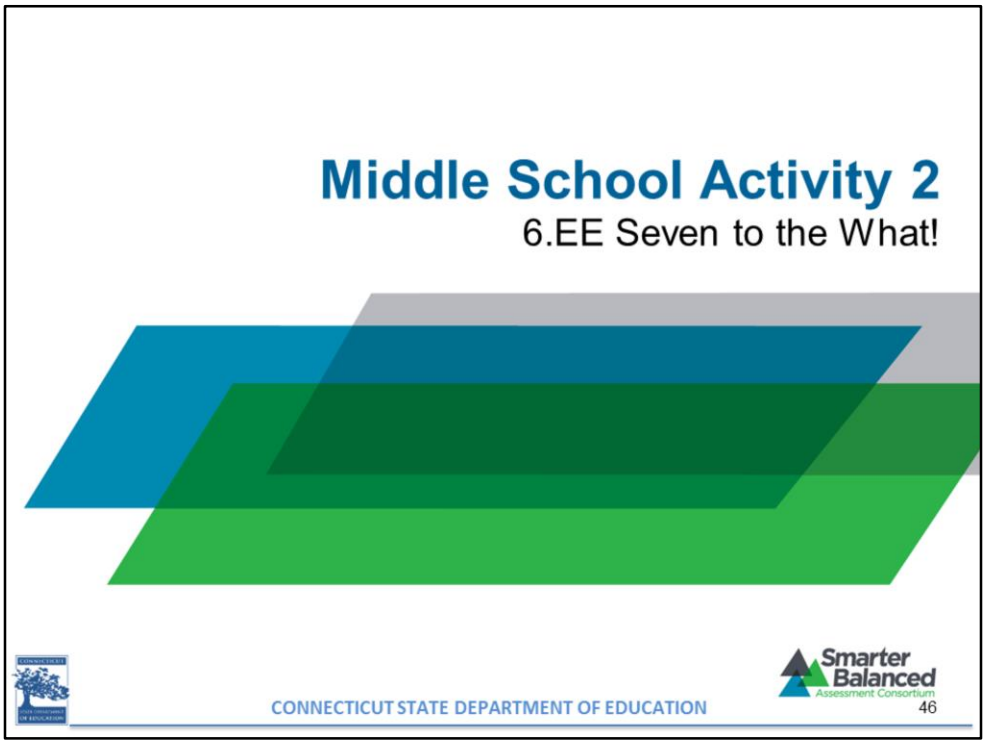
Classroom instruction that incorporates the mathematics teaching practice, "Implement tasks that promote reasoning and problem solving" will provide opportunities for students to develop mathematical reasoning and problem solving skills that are expected for Claim 2.

From Principles to Action (page 17):

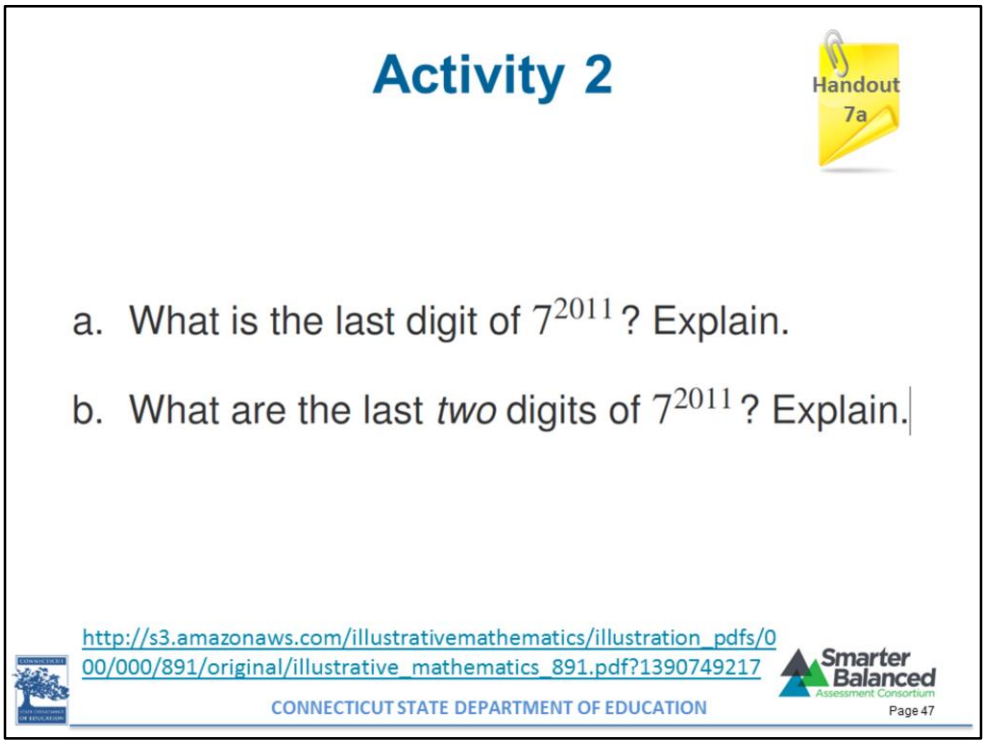
"To ensure that students have the opportunity to engage in high-level thinking, teachers must regularly select and implement tasks that promote reasoning and problem solving. These tasks encourage reasoning and access to the mathematics through multiple entry points, including the use of different representations and tools, and they foster the solving of problems through varied solution strategies."



The actions listed in this table provide a summary of what teachers and students need to do when implementing tasks that promote reasoning and problem solving in the mathematics classroom.



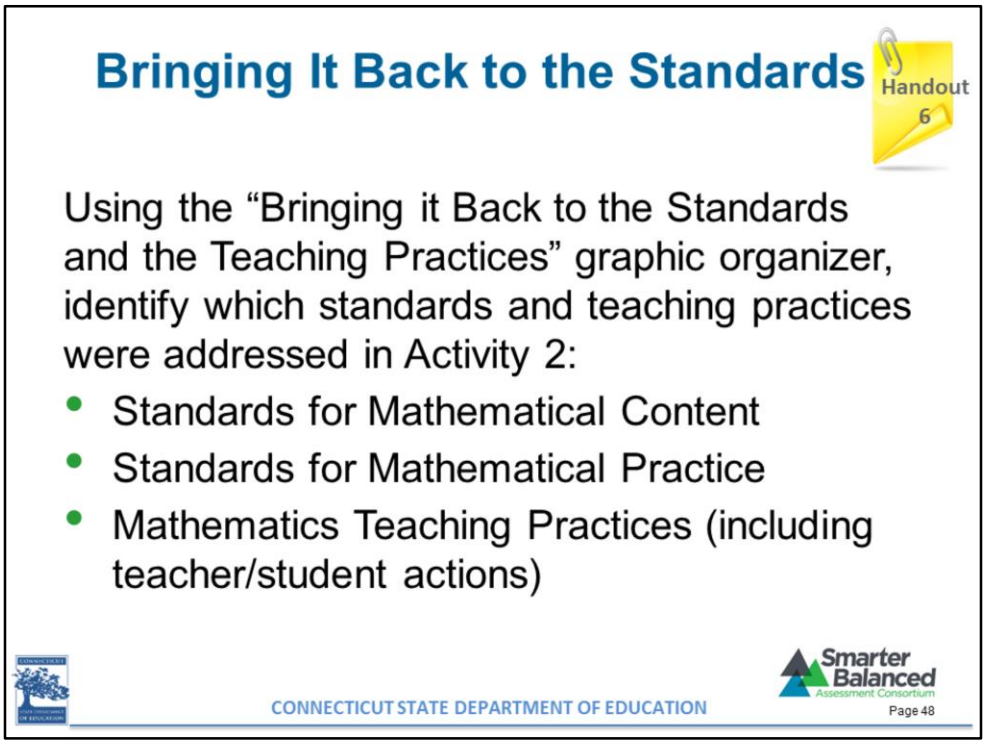
Next we will look at a middle school task from Illustrative Mathematics that is an example of problem solving with pure mathematics. You should note that this task is not straightforward or procedural and requires students to find an entry point into solving the problem.



Facilitator Note: Direct participants to use Handout 7a for this activity. Ask participants to work through this activity without looking at the solutions on pages 2-4 of the handout. Once finished, they should think about other approaches to this problem.

Give groups about 3-5 minutes to look at and discuss the solutions provided on pages 2-4 of the handout. Participants should think about the depth of learning that can result from this type of task as opposed to a bunch of questions about evaluating exponential expressions and how this type of problem allows various entry points into the mathematics.

As we said previously, providing the opportunity for students to share their thinking will not only allow each student to demonstrate their conceptual understanding of the underlying mathematics, but will allow for other students to hear different approaches that might build on their understanding of the underlying mathematics.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity. They will also have access to the e-book if they want to look at the tables for the 8 teaching practices.

For this particular activity, under "Standards for Mathematical Content," participants should have noted:
Domain: Expressions and Equations
Cluster: 6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions
Standard: 6.EE.A.1 (ask a participant to read the standard language from the flip book)

Under SMP: 1, 6, 7 and 8

Under Mathematical Teaching Practices: Implement tasks that promote reasoning and problem solving; Support productive struggle in learning mathematics
Ex: Teacher: encourage students to use varied approaches and strategies to make sense and solve tasks

provide opportunity for explorations that build on and extend current mathematical thinking

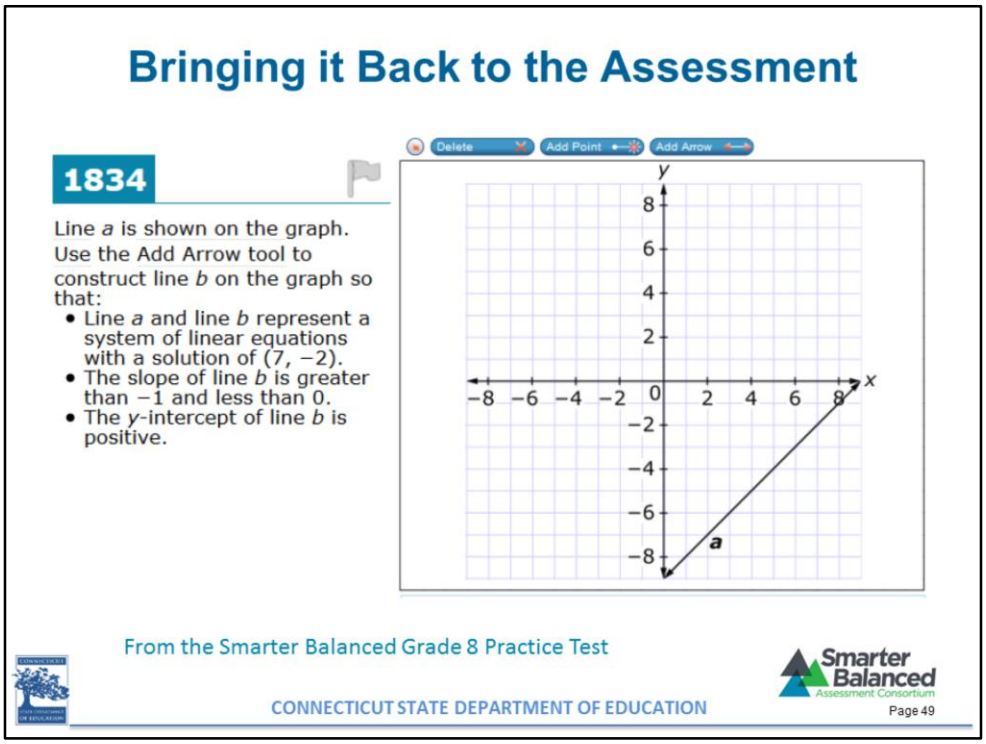
Student: use tools and representations as needed to support thinking and problem solving

persevere in exploring and reasoning through the task

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

This activity should be part of a larger unit of study aligned to the domain of expressions and equations.

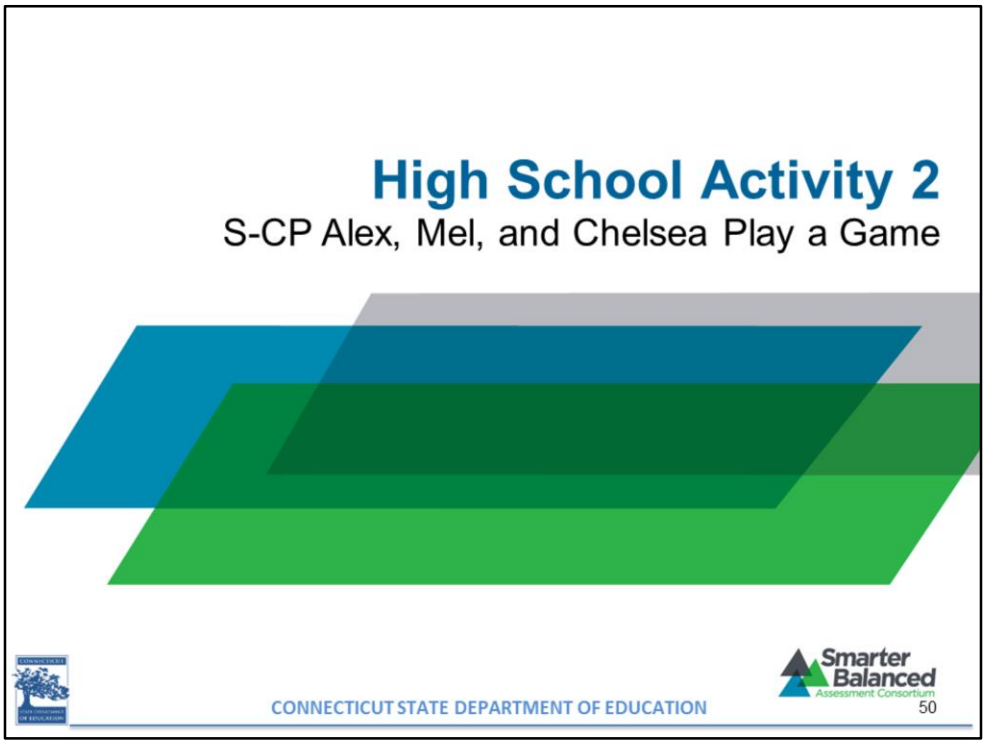
This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.



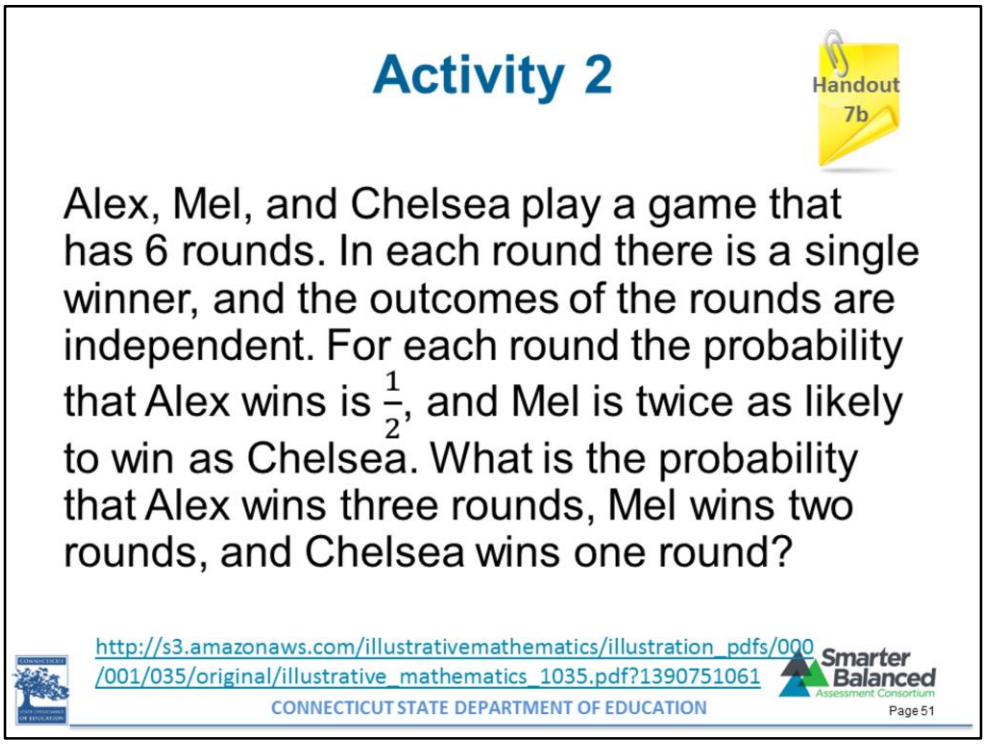
This item is from the Smarter Balanced Grade 8 Practice Test. It is a Claim 2 item aligned to target D, identify important quantities in a practical situation and map their relationships and target B, select and use appropriate tools strategically. (DOK 1, 2).

Ask participants to share what a student would need to know to solve this problem and what types of approaches might they take to get there.

Think about the evidence a teacher can collect from simply looking at the student response to this question. If the student graphed line b to show the correct point of intersection during instruction, a teacher should ask the question, “Are there other lines that will give the same point of intersection?” The teacher might also ask, “Does your line meet the other criteria?”, “Can you explain that to me?”



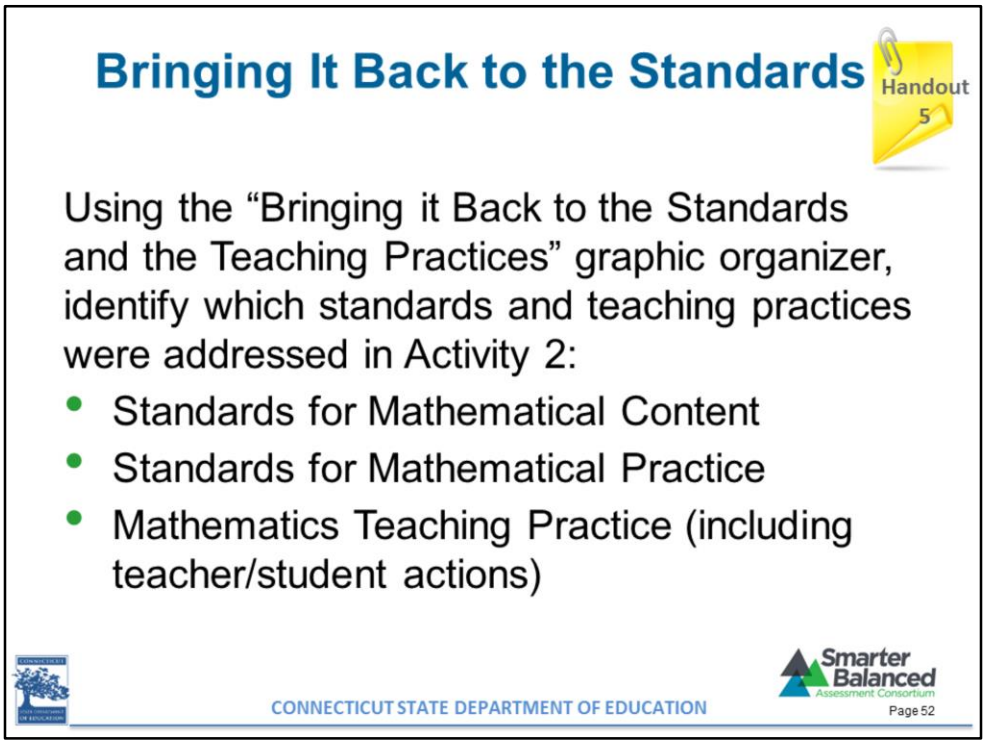
Now we will look at a high school item from Illustrative Mathematics. Like the last example, this is an example of problem solving with pure mathematics. You should note that this task is not straightforward or procedural and requires students to find an entry point into solving the problem.



Facilitator Note: Direct participants to use Handout 7b for this activity. Ask participants to think about a plan for solving this problem without looking at the solutions on pages 2 and 3. Once finished they should look at the solutions on pages 2 and 3.

Give groups about 3-5 minutes to discuss the different ways that they may approach the problem. Participants should think about how this type of task engages students in the standards for math practice and what students would need to know to solve this problem. They should also think about ways to support the productive struggle that may result from this type of task.

As can be seen, this problem is not straightforward or procedural. This type of task allows students to have various points of entry into the problem. Based upon the student responses a teacher can determine a great deal about the students depth of understanding and provide the appropriate instruction.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity.
For this particular activity, under "Standards for Mathematical Content," participants should have noted:

- Conceptual Category: Statistics and Probability
- Cluster Heading: S-CP.B Use the rules of probability to compute probabilities of compound events in a uniform probability model
- Standard: S-CP.B.9(ask a participant to read the standard language from the flip book)

Under SMP: 1, 2, 6

Under Mathematical Teaching Practices: Implement tasks that promote reasoning and problem solving; Support productive struggle in learning mathematics
Ex: Teacher: encourage students to use varied approaches and strategies to make sense and solve tasks
provide tasks that require high level cognitive demand
anticipate what the struggles might be and prepare to support

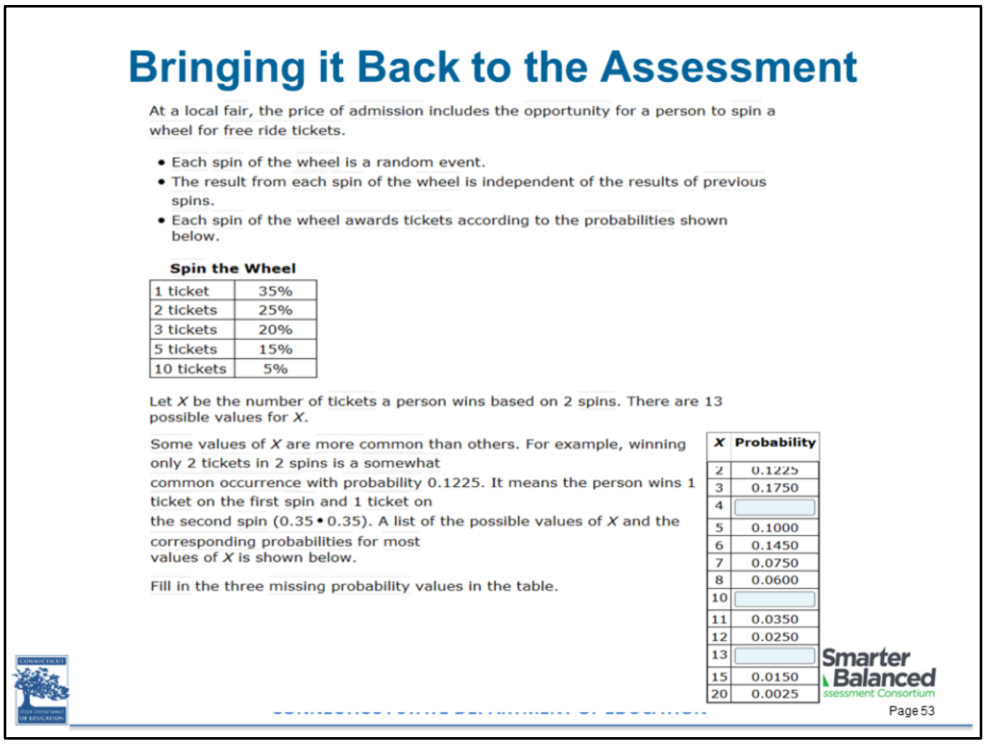
them with questions that scaffold their thinking

Student: persevere in exploring and reasoning through the task
make sense of tasks by drawing on and making connections with their prior understanding and ideas

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

This activity should be part of a larger unit of study aligned to the Conceptual Category Statistics and Probability.

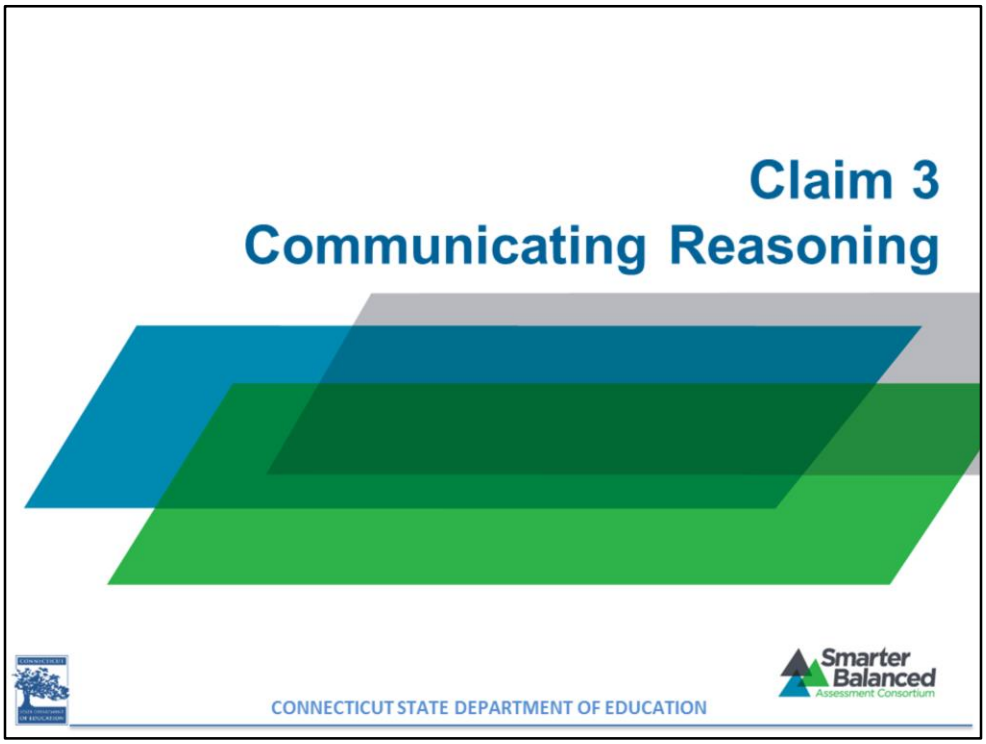
This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.



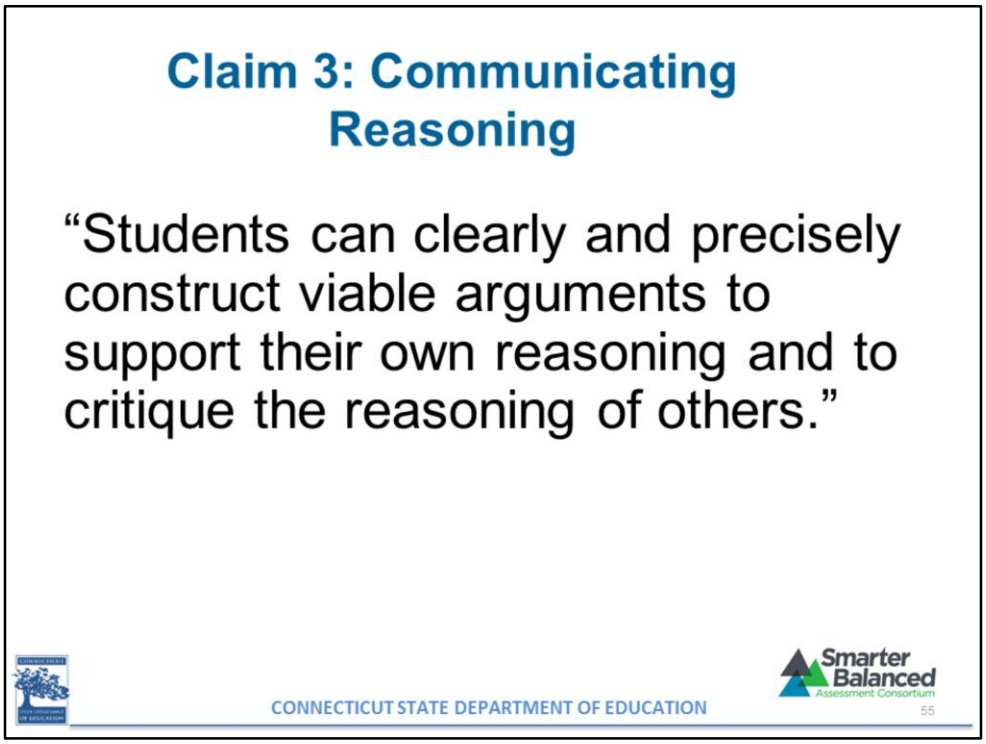
This item is from the Smarter Balanced Grade 11 Practice Test. It is a Claim 2 item aligned to Target A, Apply mathematics to solve well-posed problems in pure mathematics and those arising in everyday life, society, and the workplace. DOK 2

Ask participants to share what a student would need to know to solve this problem and what types of approaches might they take to get there.

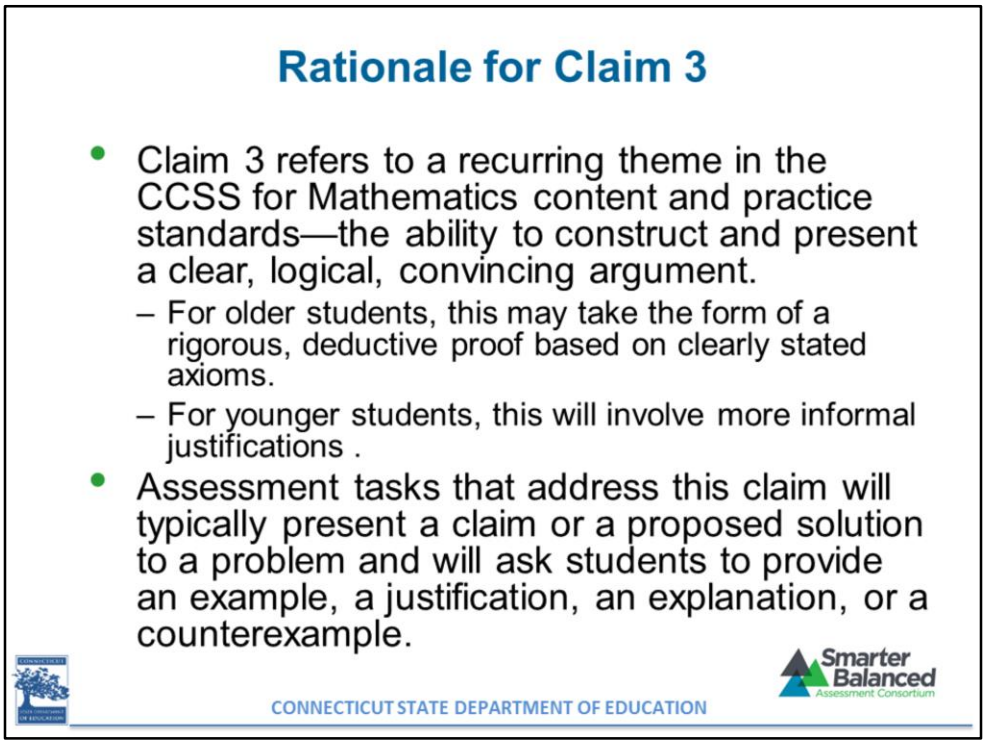
Again, think about the evidence a teacher can collect from simply looking at the student response to this question. If the student identifies the correct probabilities for some of the questions during instruction, a teacher should ask the question, “How did you get that?” The teacher might also ask, “Does that work for all of the probabilities you are asked to find?”



Now we will look at Claim 3, Communicating Reasoning.



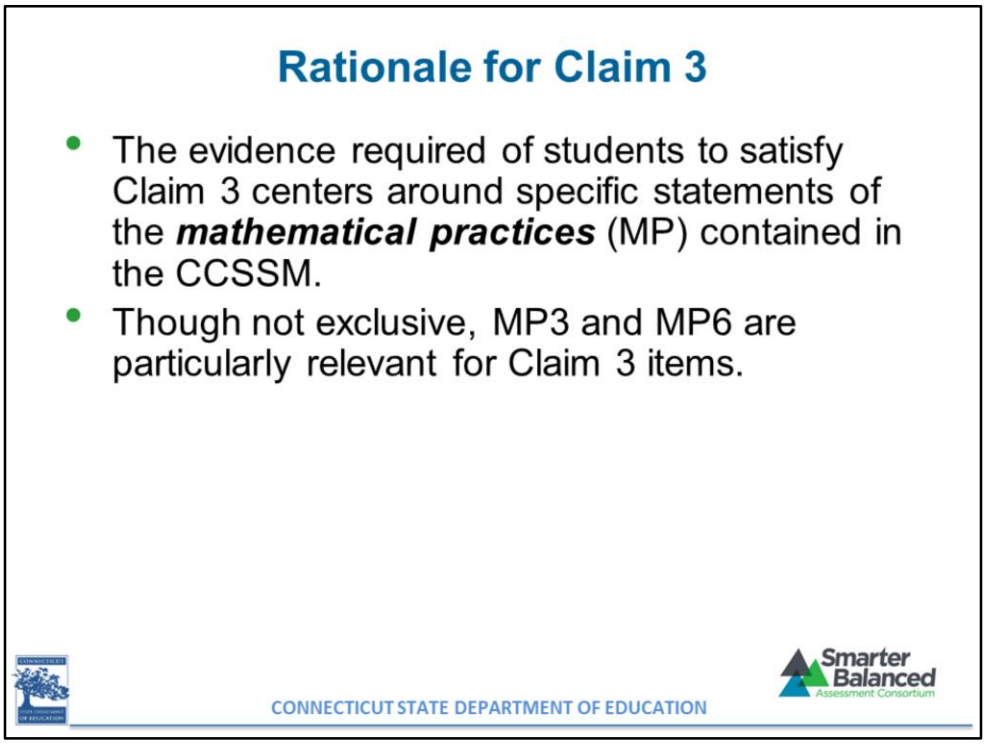
Claim 3 items and tasks measure the extent to which students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.



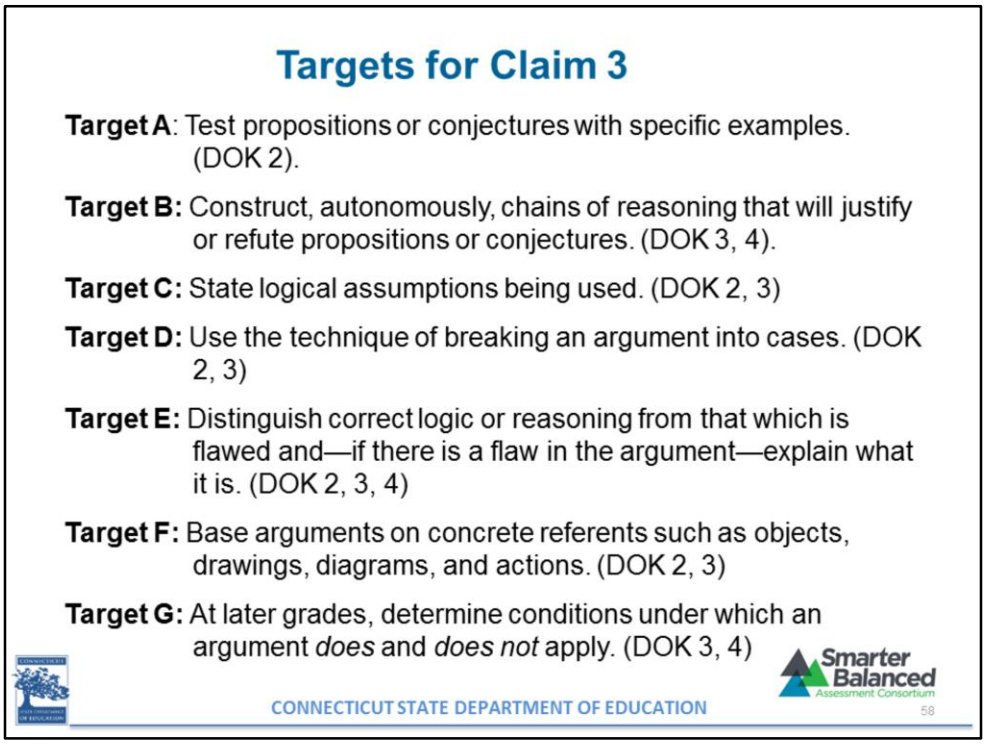
The Smarter Balanced assessments will attend thoroughly to those places in the content standards that call explicitly for communicating mathematics reasoning. For example, many content standards call for students to explain, justify, or illustrate.

This may look differently across grade levels, for example, in high school students may need to construct a deductive proof based on clearly stated axioms, where younger students will need to provide more informal justifications.

Typically, students are presented with a claim or a proposed solution to a problem and will be asked to provide an example, a justification, or a counterexample.

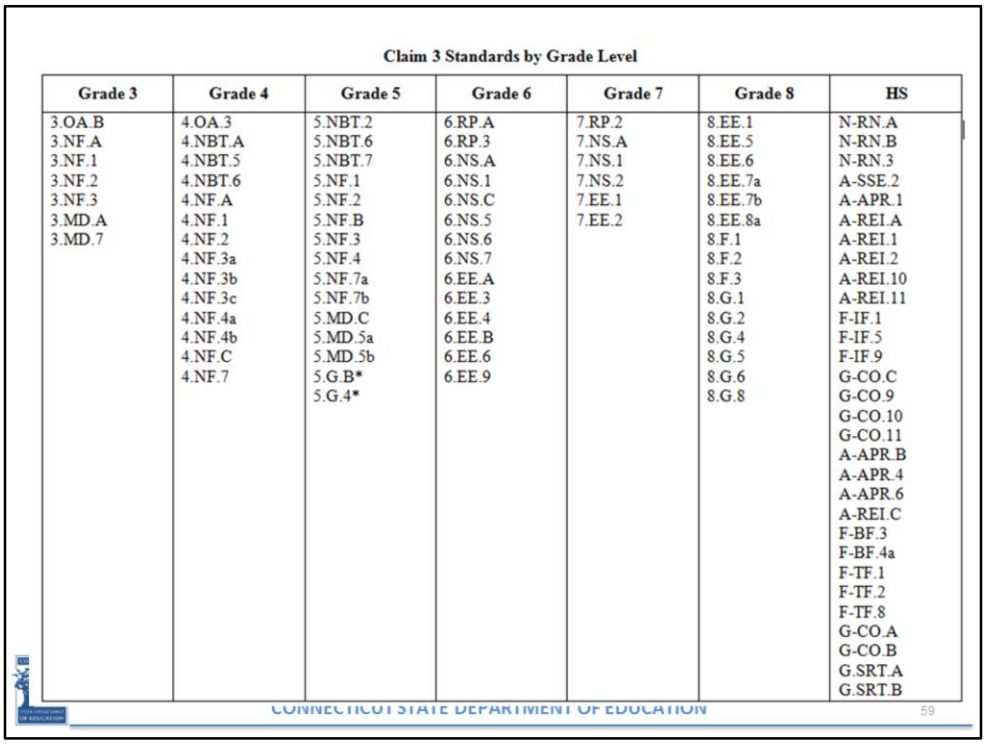


Read the slide. Tell participants to refer to Handout 2 that describes the student behaviors for each Practice Standard noted on the slide. We will be looking for these student behaviors as we engage in classroom activities and tasks



Like Claim 2, the assessment targets for Claim 3 are common across all grades.

As you can see, the language of the targets are drawn from the Standards for Mathematical Practice.

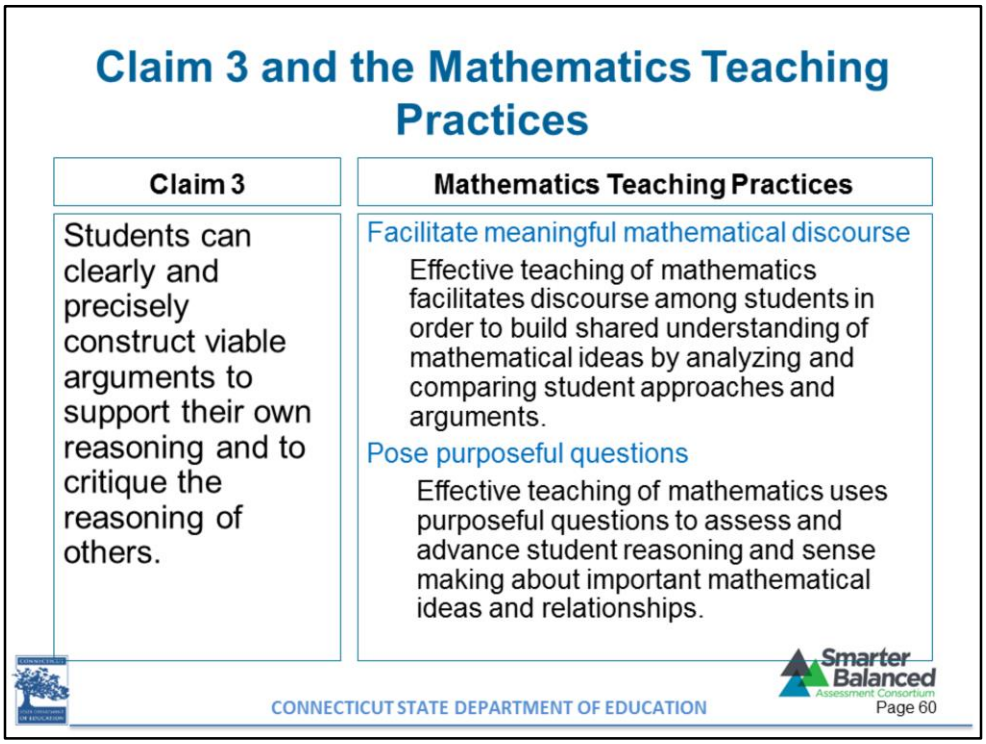


Claim 3 Standards by Grade Level

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	HS
3.OA.B	4.OA.3	5.NBT.2	6.RP.A	7.RP.2	8.EE.1	N-RN.A
3.NF.A	4.NBT.A	5.NBT.6	6.RP.3	7.NS.A	8.EE.5	N-RN.B
3.NF.1	4.NBT.5	5.NBT.7	6.NS.A	7.NS.1	8.EE.6	N-RN.3
3.NF.2	4.NBT.6	5.NF.1	6.NS.1	7.NS.2	8.EE.7a	A-SSE.2
3.NF.3	4.NF.A	5.NF.2	6.NS.C	7.EE.1	8.EE.7b	A-APR.1
3.MD.A	4.NF.1	5.NF.B	6.NS.5	7.EE.2	8.EE.8a	A-REI.A
3.MD.7	4.NF.2	5.NF.3	6.NS.6		8.F.1	A-REI.1
	4.NF.3a	5.NF.4	6.NS.7		8.F.2	A-REI.2
	4.NF.3b	5.NF.7a	6.EE.A		8.F.3	A-REI.10
	4.NF.3c	5.NF.7b	6.EE.3		8.G.1	A-REI.11
	4.NF.4a	5.MD.C	6.EE.4		8.G.2	F-IF.1
	4.NF.4b	5.MD.5a	6.EE.B		8.G.4	F-IF.5
	4.NF.C	5.MD.5b	6.EE.6		8.G.5	F-IF.9
	4.NF.7	5.G.B*	6.EE.9		8.G.6	G-CO.C
		5.G.4*			8.G.8	G-CO.9
						G-CO.10
						G-CO.11
						A-APR.B
						A-APR.4
						A-APR.6
						A-REI.C
						F-BF.3
						F-BF.4a
						F-TF.1
						F-TF.2
						F-TF.8
						G-CO.A
						G-CO.B
						G.SRT.A
						G.SRT.B

Like the table we looked at earlier for Claim 2, this table was developed for item writers and identifies CCS domains and content clusters for Claim 3. Items and tasks can center on a single cluster listed, or synthesize across listed clusters within a grade. Note that at the high school level, some clusters that were not included in the Claim 1 targets are included as content to be assessed in Claim 3.

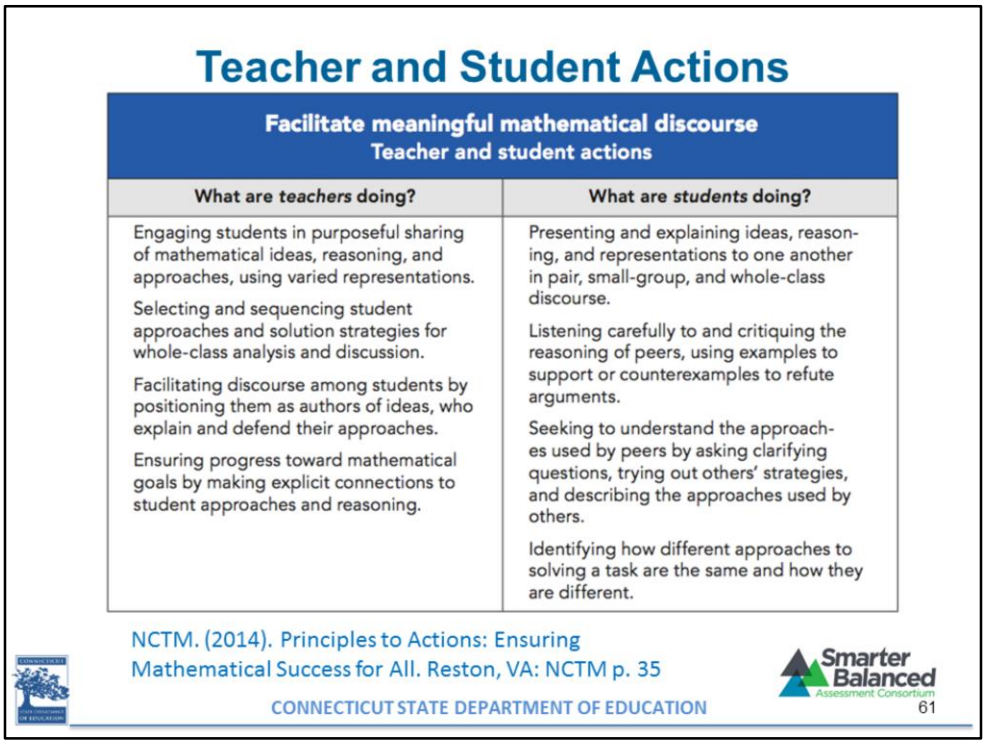
This information is provided in the Smarter Balanced Mathematics Content Specifications.



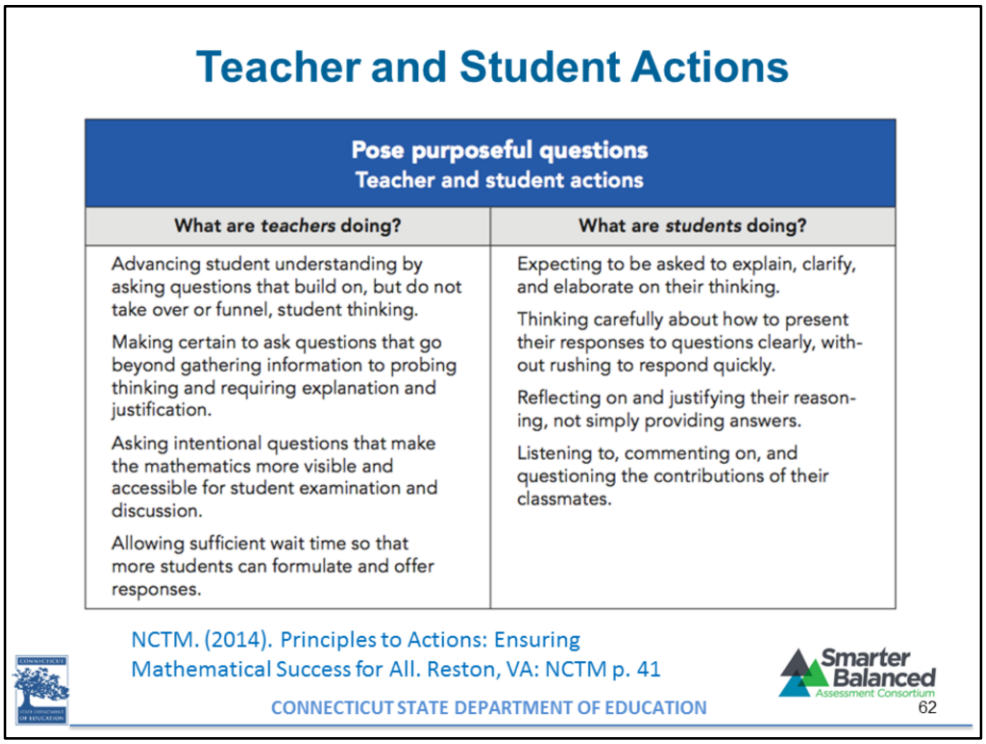
Classroom instruction that incorporates the mathematics teaching practices, "Facilitate meaningful mathematical discourse" and "Pose purposeful questions" will provide opportunities for students to build shared understanding of mathematical ideas by analyzing and comparing various approaches and arguments as well as assess and advance student reasoning and sense making which is expected in Claim 3.

From Principles to Action (page 29 and 35):

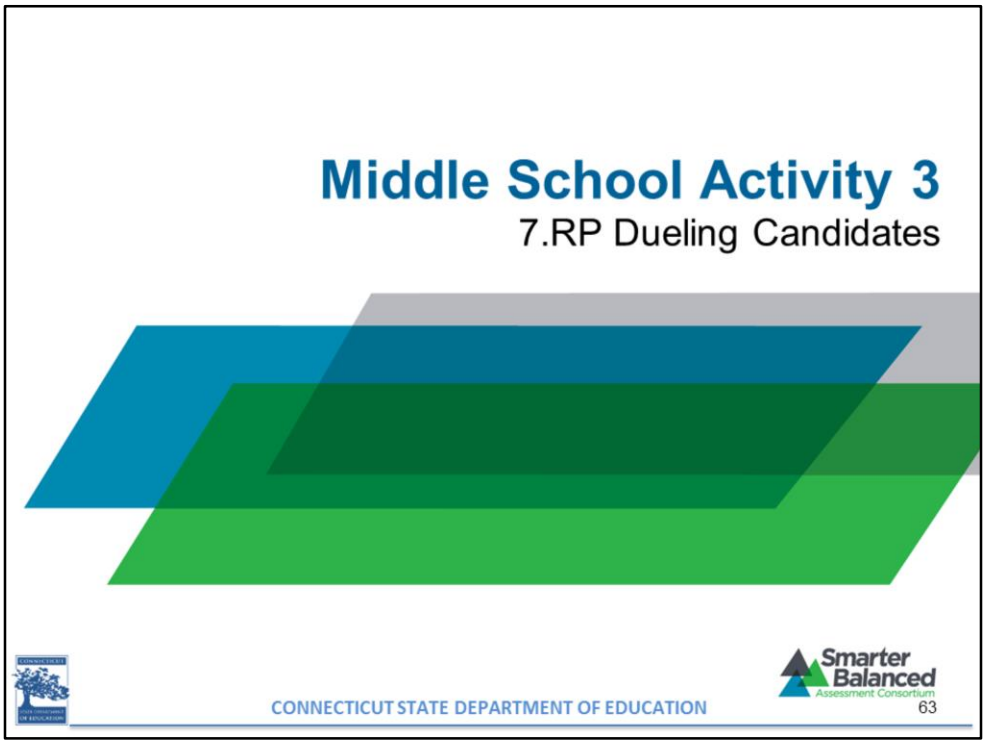
"Mathematical discourse includes the purposeful exchange of ideas through classroom discussion, as well as through other forms of verbal, visual, and written communication."
"Purposeful questions allow teachers to discern what students know and adapt lessons to meet varied levels of understanding, help students make important mathematical connections, and support students in posing their own questions."



The actions listed in this table provide guidance on what teachers and students do as they engage in meaningful mathematical discourse in the mathematics classroom.

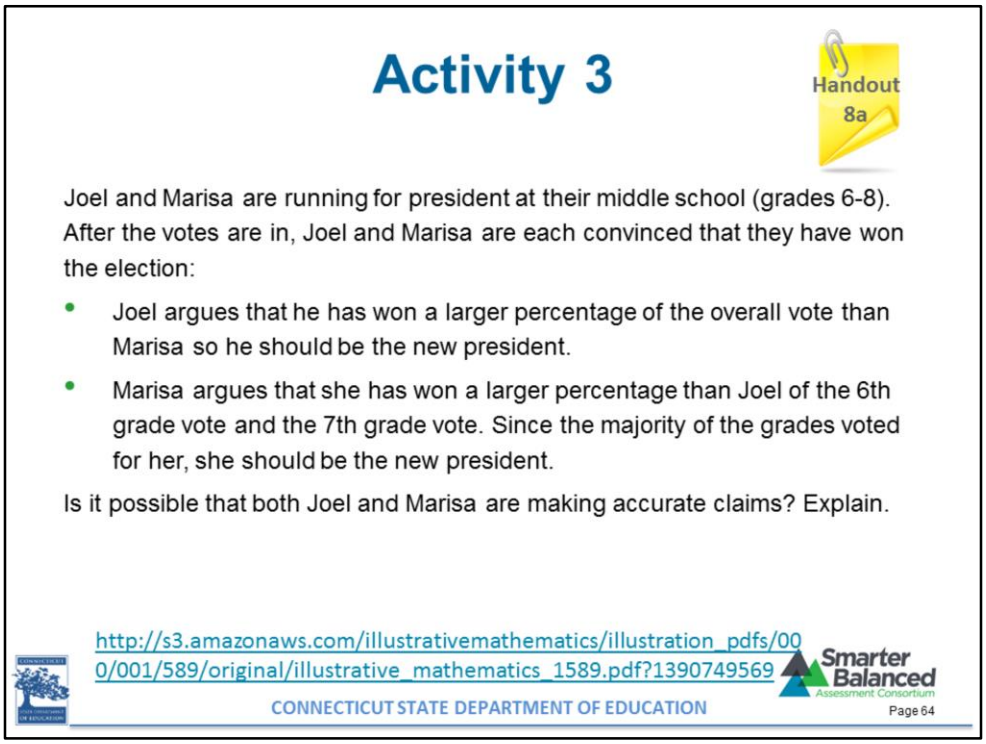


The actions listed in this table provide guidance on what teachers and students do when using questions purposefully in the mathematics classroom.



The next item is a middle school task from Illustrative Mathematics.

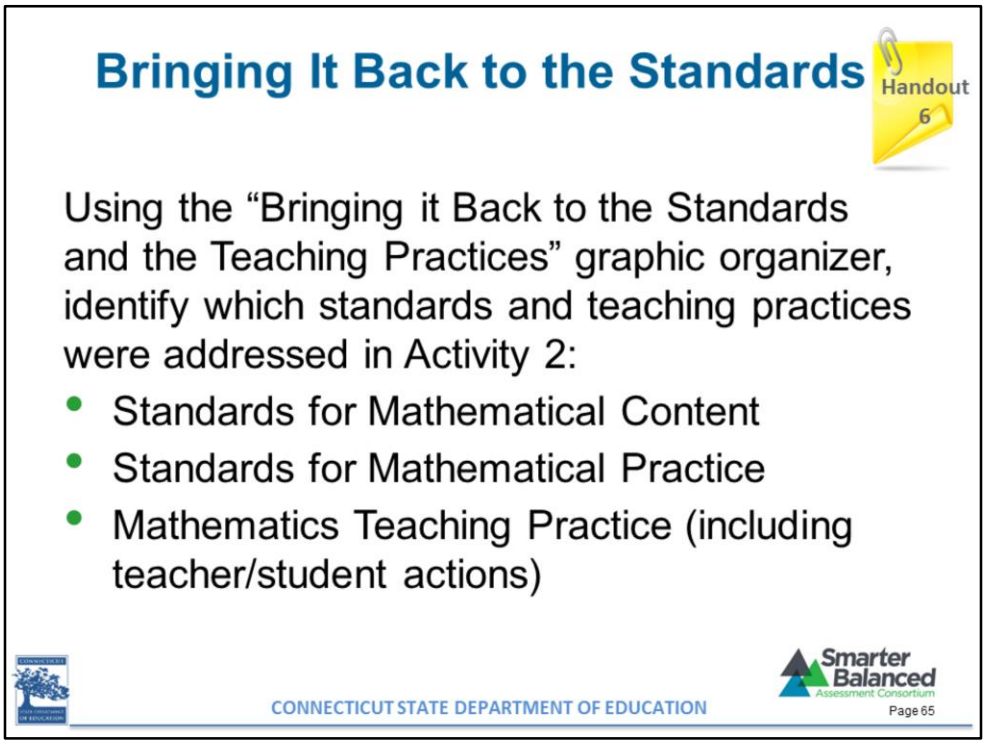
This task is very open ended, giving students the opportunity to use mathematics to defend their claim in a variety of ways. It also requires students to construct and reason with numbers. It is ideally suited to be done in groups which will further promote the discourse in the classroom.



Facilitator Note: Direct participants to use Handout 8a for this activity. Ask participants to work through this activity without looking at the solutions on pages 2-4 of the handout. Once finished, they should think about how they might be able to justify the other person's claim.

Give groups about 3-5 minutes to look at and discuss the solutions provided on pages 2-4 of the handout. Participants should think about the mathematics involved in justifying both claims.

By providing the opportunity for students to share their thinking other students hear different approaches and use the mathematics to support their own claim or refute that of a classmate. This will lead to a deeper understanding of variables that may effect problems.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity. They will also have access to the e-book if they want to look at the tables for the 8 teaching practices.

For this particular activity, under "Standards for Mathematical Content," participants should have noted:

- Domain: Ratios and Proportional Relationships
- Cluster: 7.RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems
- Standard: 7.RP.A.3(ask a participant to read the standard language from the flip book

Under SMP: 1, 2, and 3
Under Mathematical Teaching Practices: Pose purposeful questions; Facilitate meaningful mathematical discourse;
Ex: Teacher: engage students in purposeful sharing of mathematical ideas and reasoning

ask questions that require justification and explanation

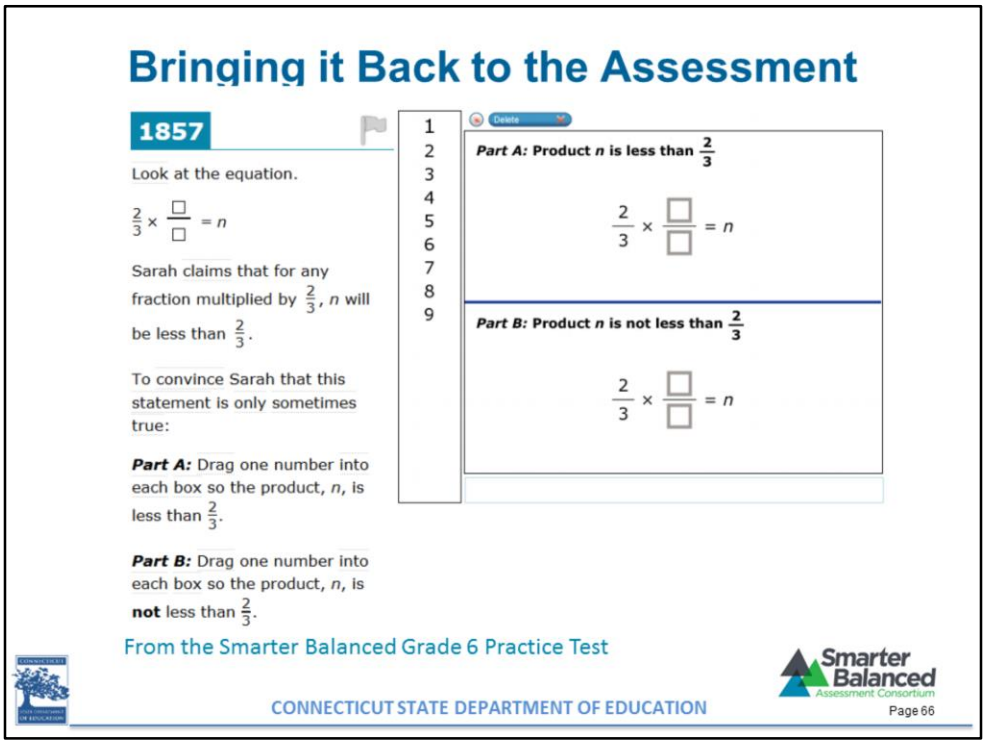
Student: listen to and critique reasoning of peers

explaining ideas and reasoning to others

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

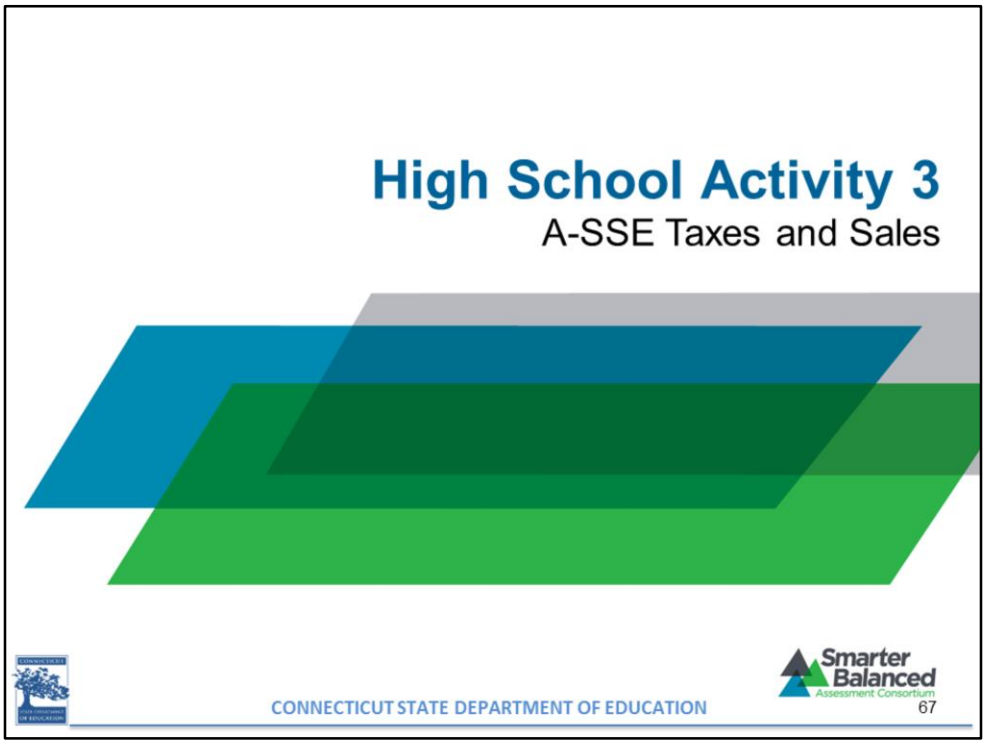
This activity should be part of a larger unit of study aligned to the Domain of Ratios and Proportional Reasoning.

This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.



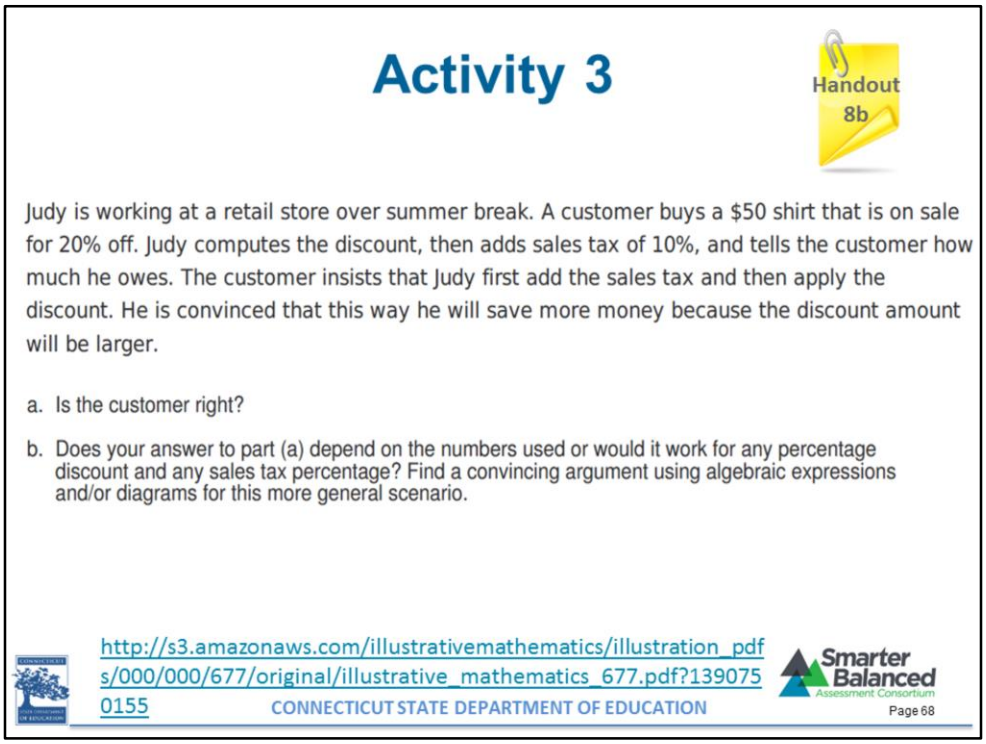
This item is from the Smarter Balanced Grade 6 Practice Test. It is a Claim 3 item aligned to Target A, test propositions or conjectures with specific examples using content from Number and Operations with Fractions. DOK 3.

Again, simply asking students to provide a correct fraction for each part, does not provide them with the opportunity to explain their reasoning. Using a question like this during instruction should allow for students to share their answers and note that there are multiple correct answers. Teachers should facilitate a discussion that allows students to generalize what the correct answer can be:
Part A may be any fraction less than 1.
Part B may be any fraction greater than 1.



The next task is from Illustrative Mathematics and addresses Algebra.

This task is about using structure in the computation to make a general argument. It also allows for students to justify their arguments using different representations.

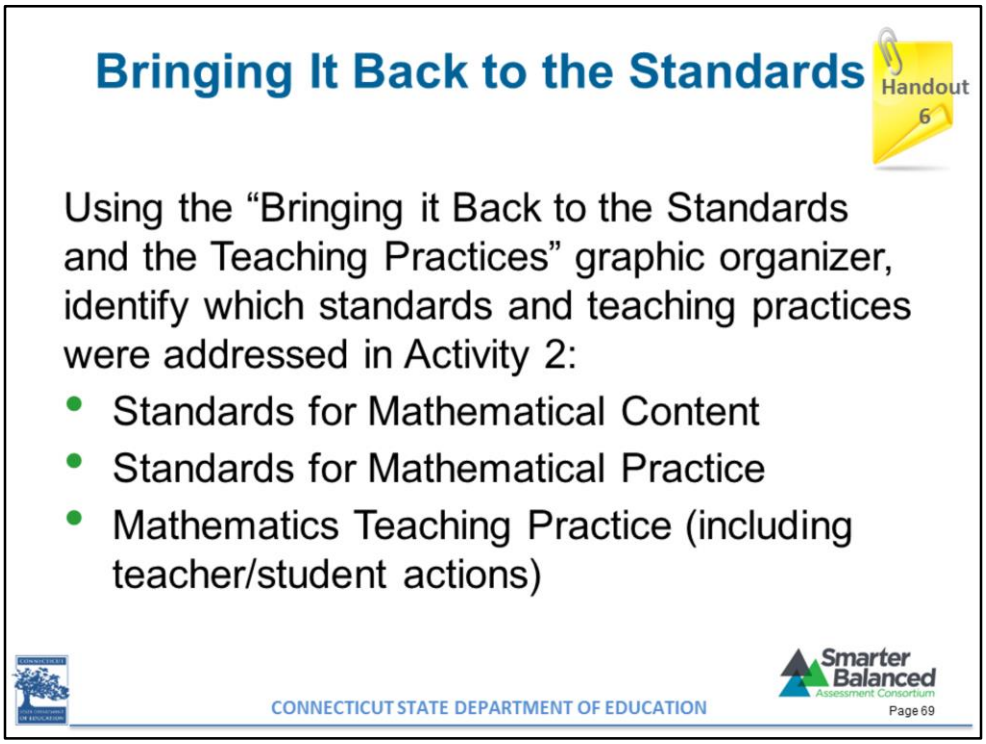


Facilitator Note: Direct participants to use Handout 8b for this activity. Ask participants to work through this activity without looking at the solutions on pages 2 and 3 of the handout. Once finished, they should think about in what ways they can justify their answer.

Give groups about 3-5 minutes to look at and discuss the solutions provided on pages 2-4 of the handout. Participants should think about the various approaches to justifying the response to this question.

By providing the opportunity for students to justify their answer in a variety of ways, they will see connections between different representations.

Note to facilitator: Point out to participants that the content of percent is grade 7, but the reasoning to use the structure of the expressions to justify their answers would not be expected until high school.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity. They will also have access to the e-book if they want to look at the tables for the 8 teaching practices.

For this particular activity, under "Standards for Mathematical Content," participants should have noted:

- Conceptual Category: Algebra
- Cluster Heading: A.SSE Seeing structure in Expressions
- Standard: A.SSE.B (ask a participant to read the standard language from the flip book)

Under SMP: 1, 2, 3 and 7

Under Mathematical Teaching Practices: Pose purposeful questions; Facilitate meaningful mathematical discourse; Use and connect mathematical representations
Ex: Teacher: engage students in purposeful sharing of mathematical ideas and reasoning
ask questions that require justification and explanation

ask students to use drawings to support and explain reasoning

Student: listen to and critique reasoning of peers

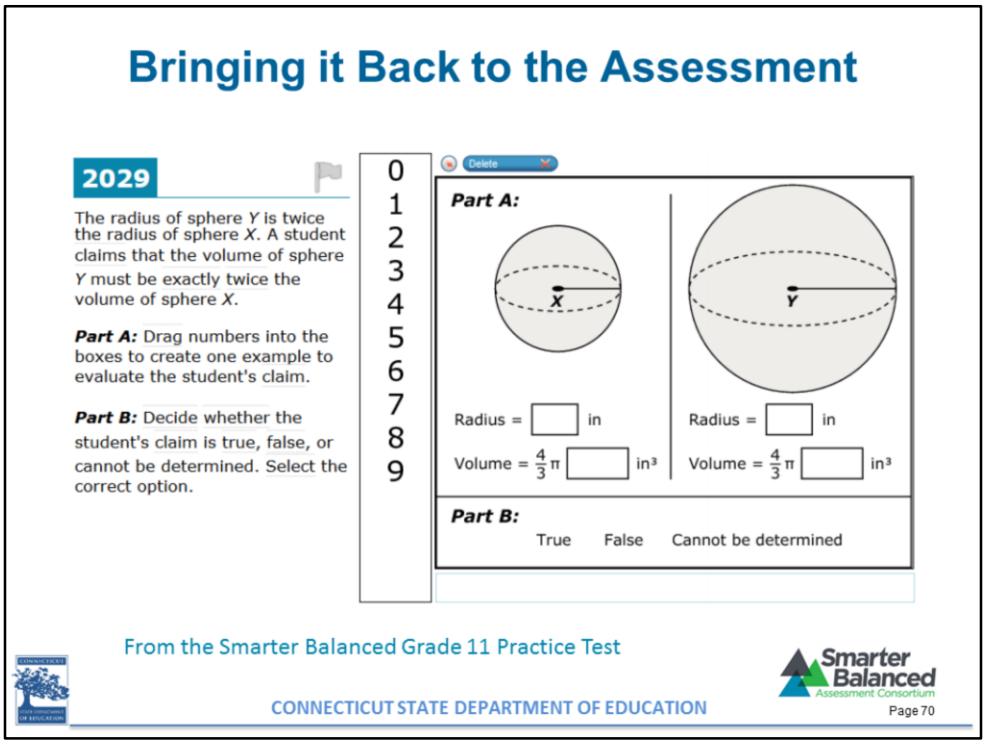
explaining ideas and reasoning to others

describe and justify reasoning with drawings, diagrams and other representations

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

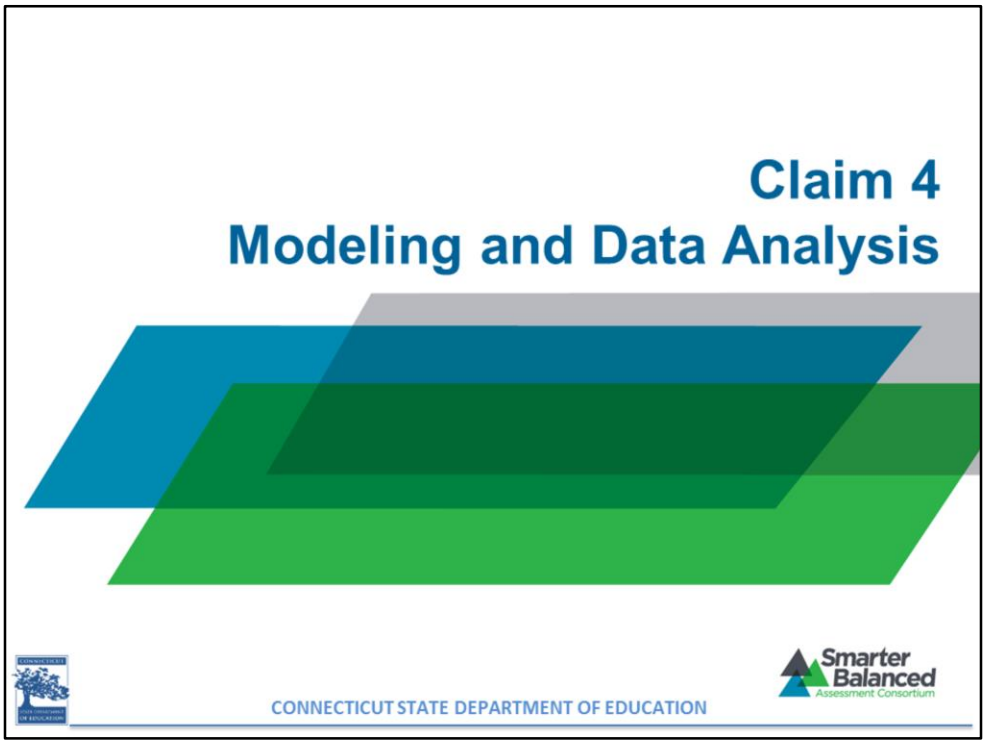
This activity should be part of a larger unit of study aligned to the Conceptual Category of Algebra.

This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.

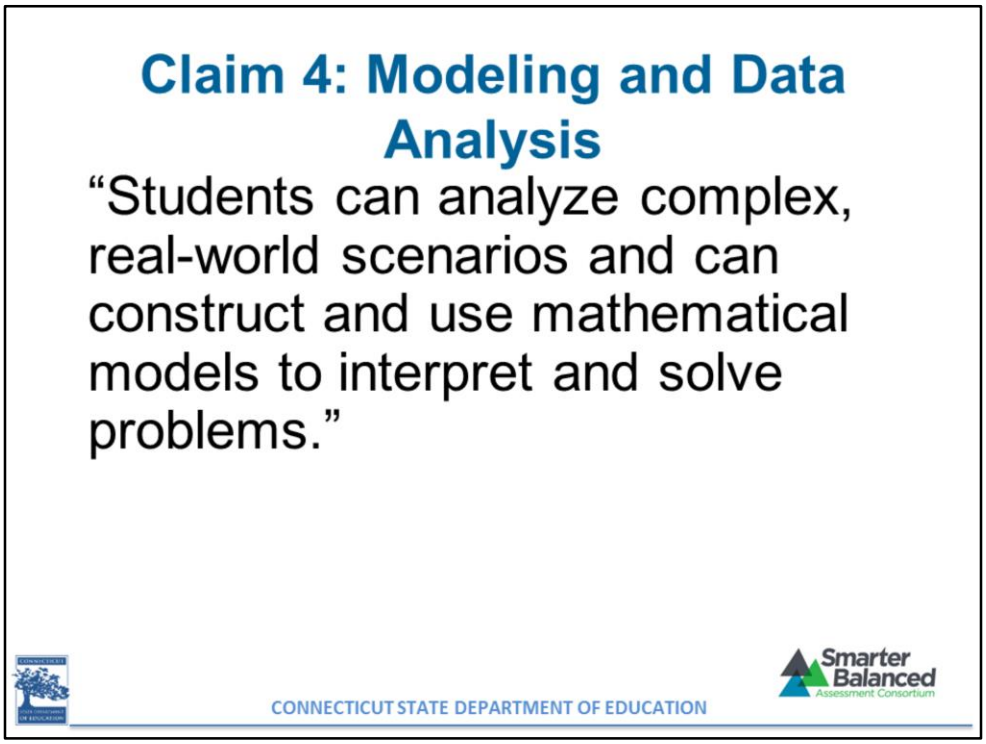


This item is from the Smarter Balanced Grade 11 Practice Test. It is a Claim 3 item aligned to Target A, apply mathematics to solve well-posed problems arising in everyday life, society and the workplace. It is a DOK 3 item.

During instruction, a teacher should ask the student to further explain why they decided whether the student's claim is true, false, or cannot be determined.



Now we will look at Claim 4, Modeling and Data Analysis.

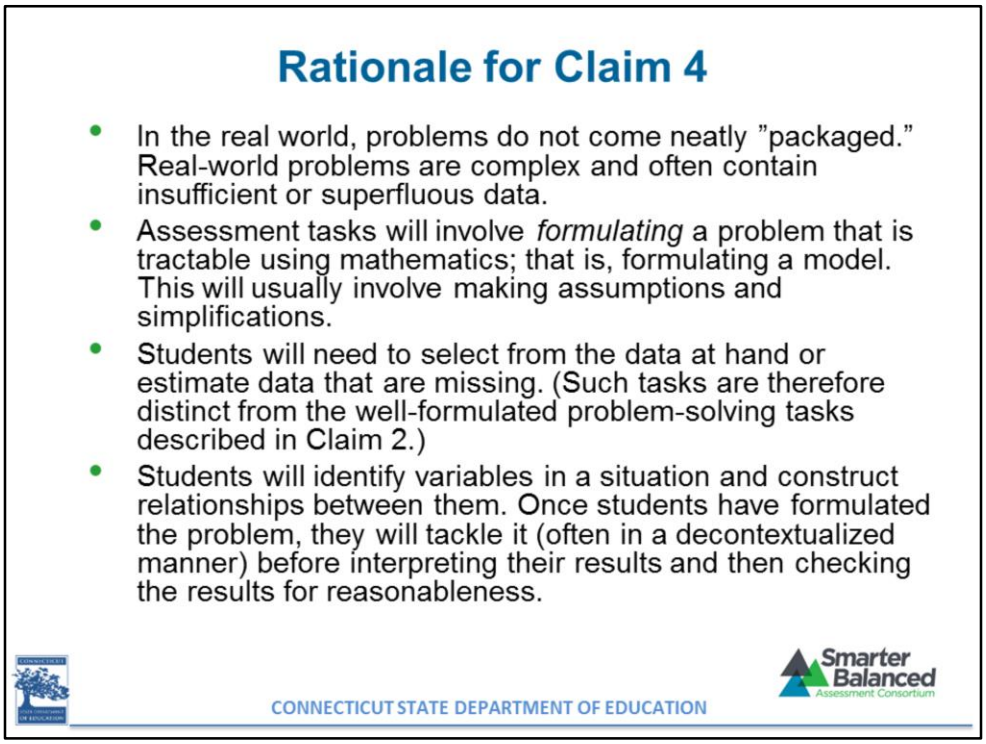


Claim 4 items and tasks measure the extent to which students can analyze complex, real-world scenarios and construct and use mathematical models to interpret and solve problems.

Note to facilitator: **Read this definition of modeling drawn directly from the standards.**

"Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decision-making." (p.72, CCSSM)

As such, modeling is the bridge across the "school math"/"real world" divide that has been missing from many mathematics curricula and assessments . Modeling is the twin of mathematical literacy, the focus of the PISA international comparison tests in mathematics. CCSSM features modeling as both a mathematical practice at all grades and a conceptual category in high school. (Smarter Balanced Content Specifications pg. 71)



A key feature of items and tasks in Claim 4 is that the student is confronted with a contextualized, or "real world" situation and must decide which information is relevant and how to represent it.

"Real world" situations do not necessarily mean questions that a student might really face; it means that mathematical problems are embedded in a practical, application context.
Read the slide. This language comes directly from the Smarter Balanced Mathematics Content Specifications.

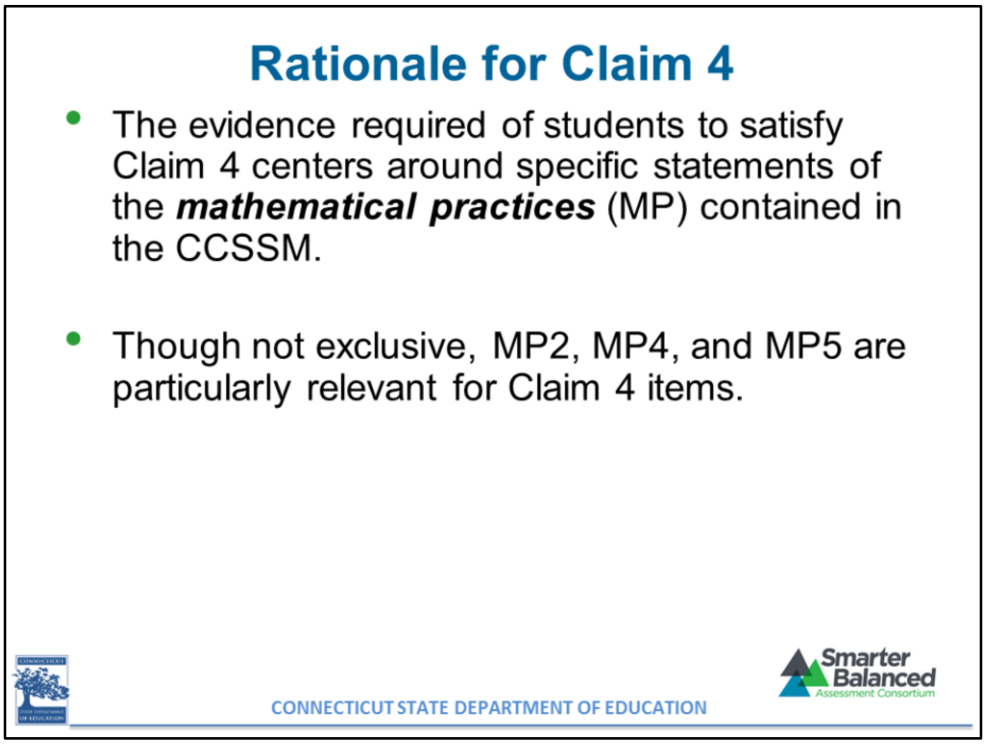
In this way, items and tasks in Claim 4 differ from those in Claim 2, because while the goal is clear, the Claim 4 problems themselves are not yet fully formulated (well-posed) in mathematical terms.

Items/tasks in Claim 4 assess student expertise in choosing appropriate content and using it effectively in formulating models of the situations presented and making appropriate inferences from them.

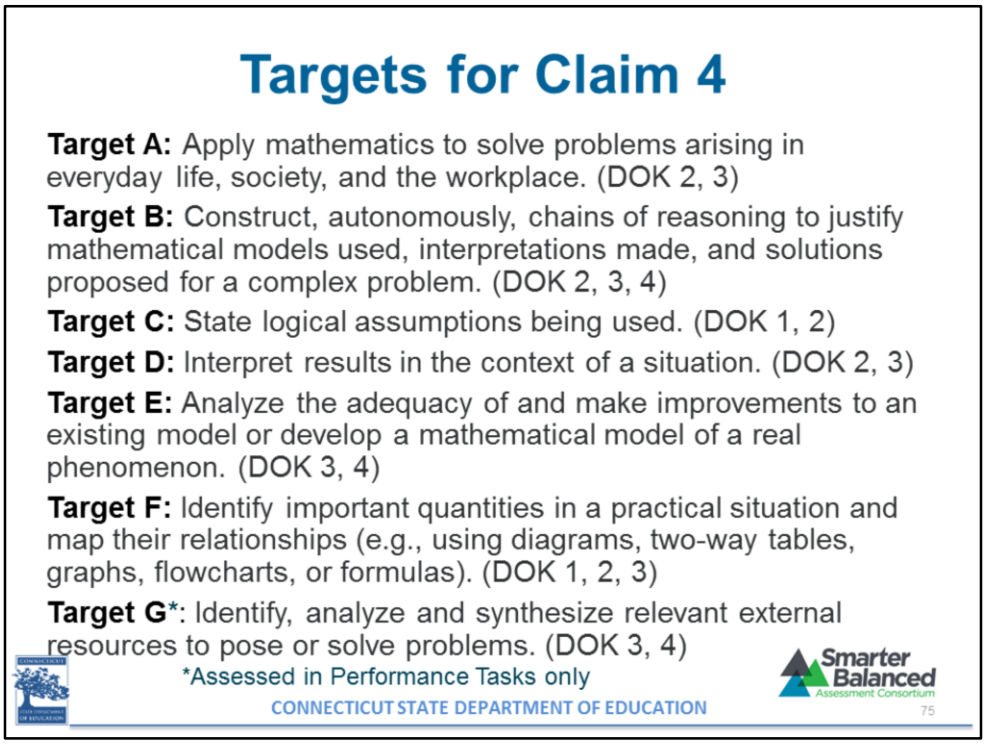
Claim 4 items and tasks should sample across the content domains, with many of these involving more than one domain.

Items and tasks of this sort require students to apply mathematical concepts at a

significantly deeper level of understanding of mathematical content than is expected by Claim 1.

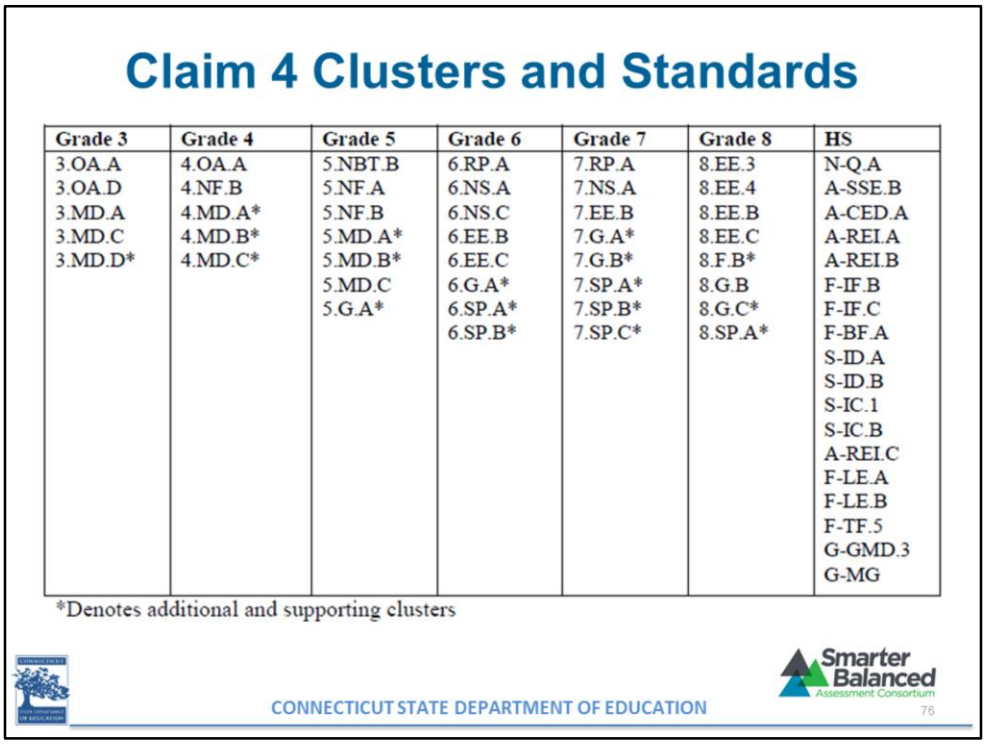


Read the slide. Tell participants to refer to Handout 2 that describes the student behaviors for each Practice Standard noted on the slide. We will be looking for these student behaviors as we engage in classroom activities and tasks.



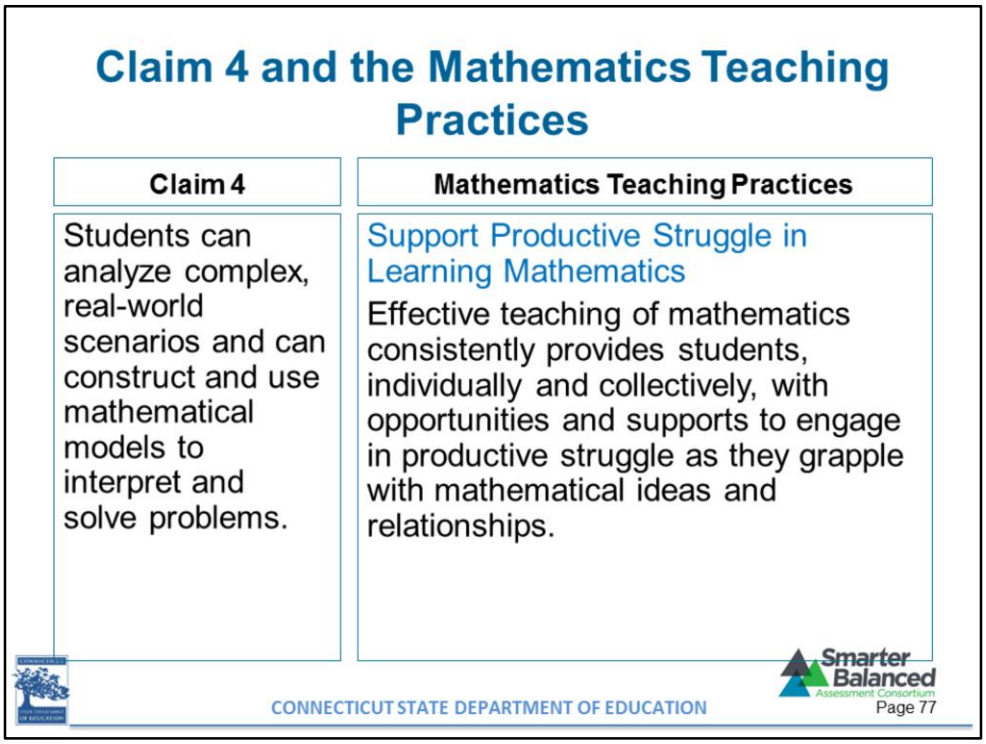
Like Claims 2 and 3, the assessment targets for Claim 4 are common across all grades.

As you can see, the language of the targets are drawn from the Standards for Mathematical Practice.



Like the tables we looked at earlier for Claims 2 and 3, this table was developed for item writers and identifies CCS domains and content clusters for Claim 4. Items and tasks can center on a single cluster listed, or synthesize across listed clusters within a grade. Note that at the high school level, some clusters that were not included in the Claim 1 targets are included as content to be assessed in Claim 4.

This information is provided in the Smarter Balanced Mathematics Content Specifications.

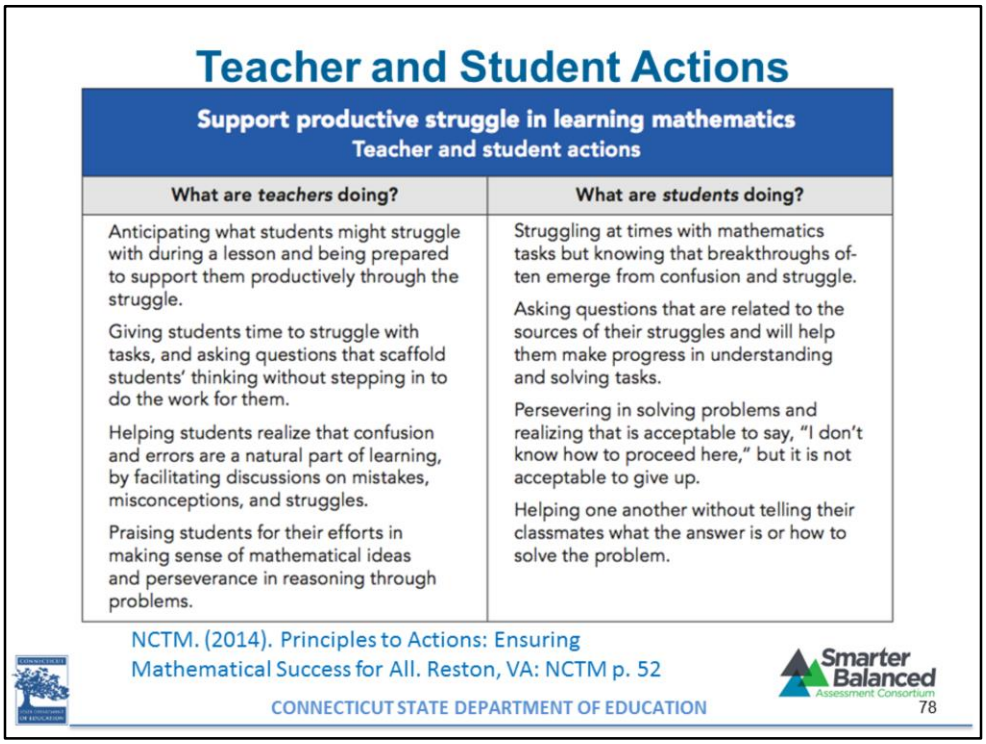


Classroom instruction that incorporates the mathematics teaching practice, "Support Productive Struggle in Learning Mathematics" will provide opportunities for students to engage in productive struggles as they grapple with mathematical ideas and relationships that is needed to formulate the problems to be solved for Claim 4.

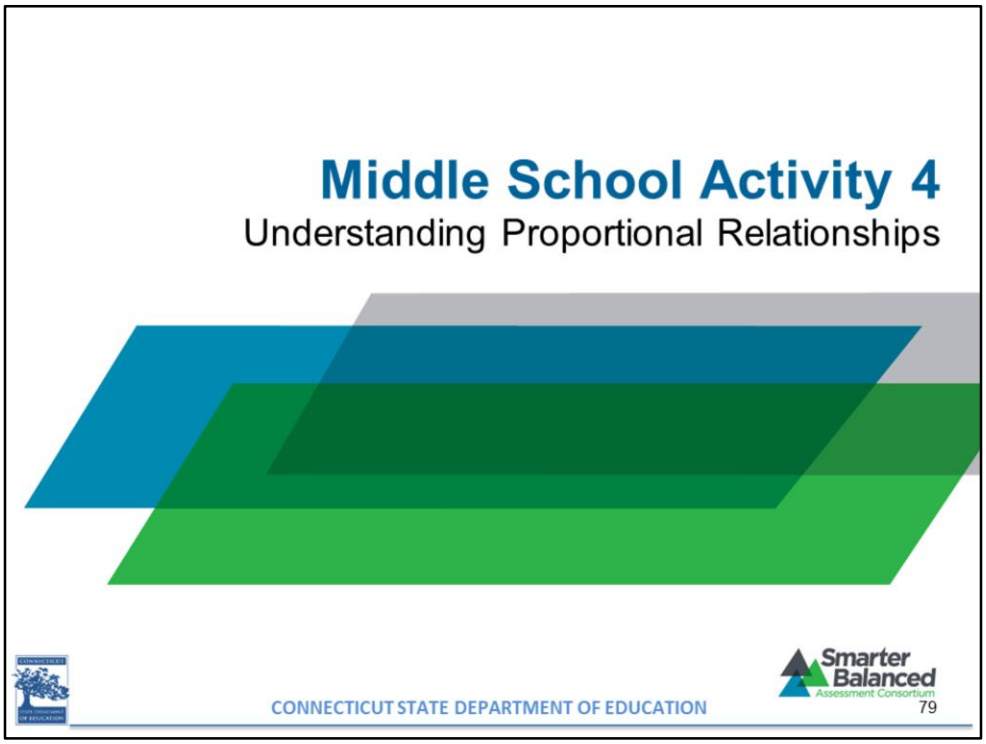
From Principles to Action (page 48):

"Such instruction embraces a view of students' struggles as opportunities for delving more deeply into understanding the mathematical structure of problems and relationships among mathematical ideas, instead of simply seeking correct solutions. In contract to productive struggle, unproductive struggle occurs when students "make no progress towards sense-making, explaining, or proceeding with a problem or task at hand (Warshauer 2011)."

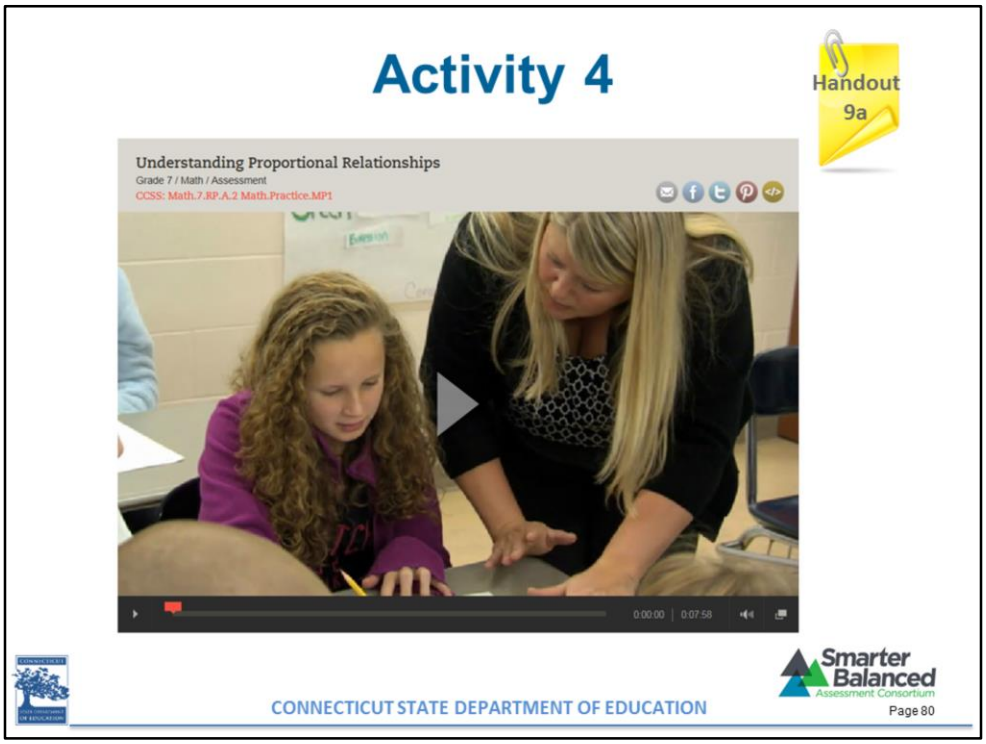
"Teaching that embraced and uses productive struggle leads to long-term benefits, with students more able to apply their learning to new problem situations (Kapur 2010)."



This table summarizes teacher and student actions that embrace struggle as a natural aspect of learning in the mathematics classroom.



In this video you will see how a grade 7 teacher utilizes the formative assessment process and establishes an environment where productive struggle is part of the instruction.

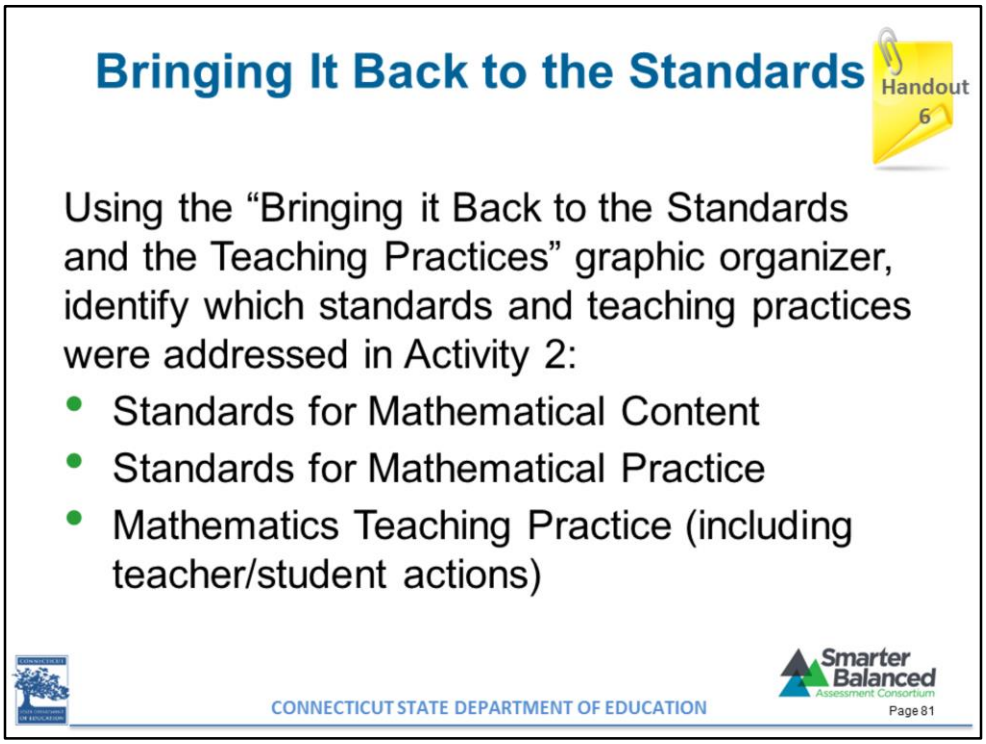


This task comes from a lesson from the Shell Center.
Facilitator Note: As participants watch this video from the Teaching Channel they should think about the following questions:
How does Ms. Walker encourage her students to take responsibility for their learning?
Why does Ms. Walker use feedback questions instead of comments when responding to student work?
What is powerful about grade level teachers looking at student work together?

Participants should collect evidence for these questions on handout 9a.

Give groups about 3-5 minutes to discuss their responses to these questions and each group can share out.

As this lesson demonstrates, asking purposeful questions, applying the formative assessment process and looking at student evidence to guide instruction lead to an environment where students are experience struggle for the purpose of learning, thus making their learning more meaningful.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this video.
For this particular video, under "Standards for Mathematical Content," participants should have noted:

- Domain: Ratios and Proportional Relationships
- Cluster: 7.RP.A Analyze proportional relationships and use them to solve real-world and mathematical problems
- Standard: 7.RP.A.2(ask a participant to read the standard language from the flip book

Under SMP: 1, 2, and 4

Under Mathematical Teaching Practices : Pose purposeful questions; Support productive struggle in learning mathematics; Use and connect mathematical representations

Ex: Teacher: ask questions that require justification and explanation
ask students to use drawings to support and explain reasoning
anticipate what students might struggle with

give time for students to struggle with tasks

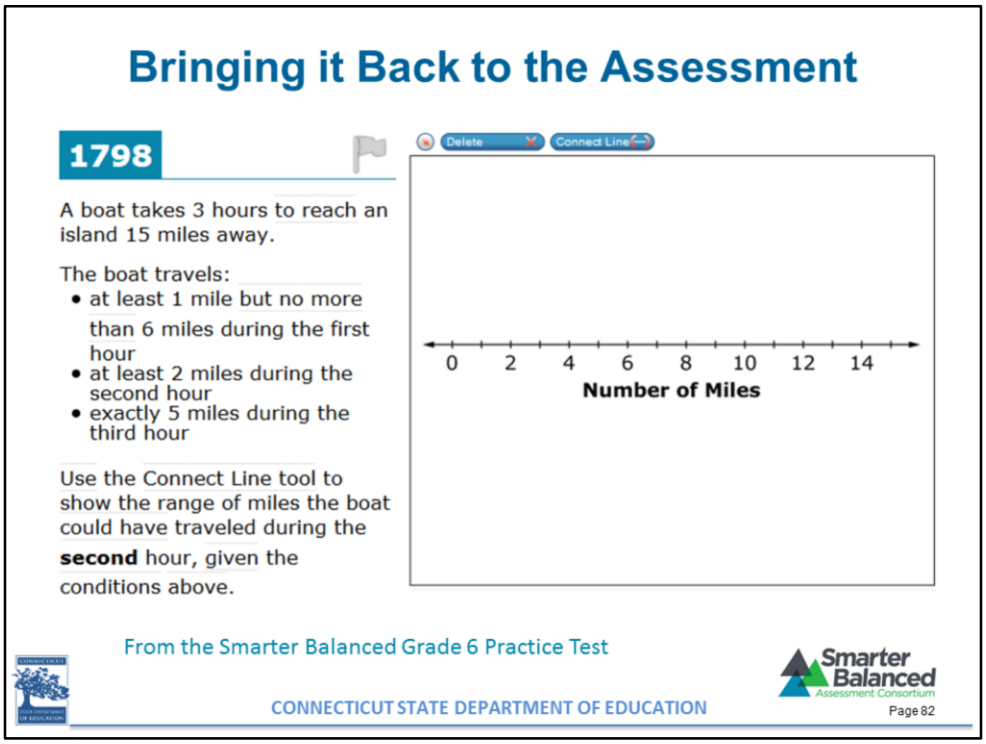
Student: explaining ideas and reasoning to others

describe and justify reasoning with drawings, diagrams and other representations

helping one another

This activity should be part of a larger unit of study aligned to the domain ratio and proportional reasoning.

This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.

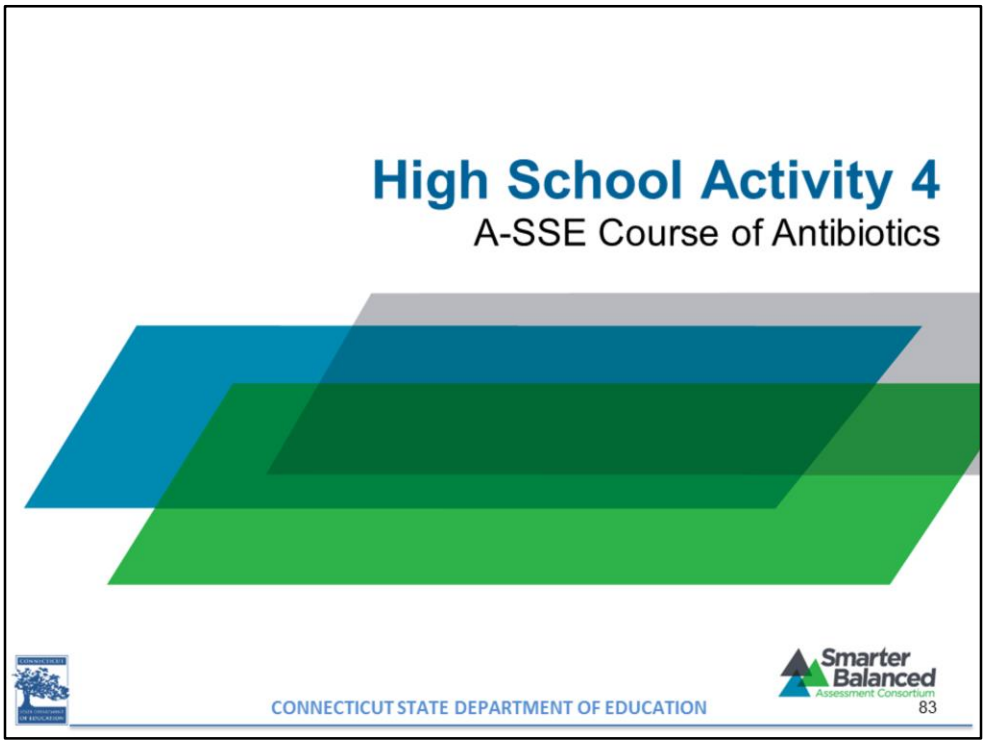


Allow participants 5 minutes to work on this problem. Once finished they should think about how providing students with the opportunity to engage in productive struggle will prepare them for a similar task on the assessment.

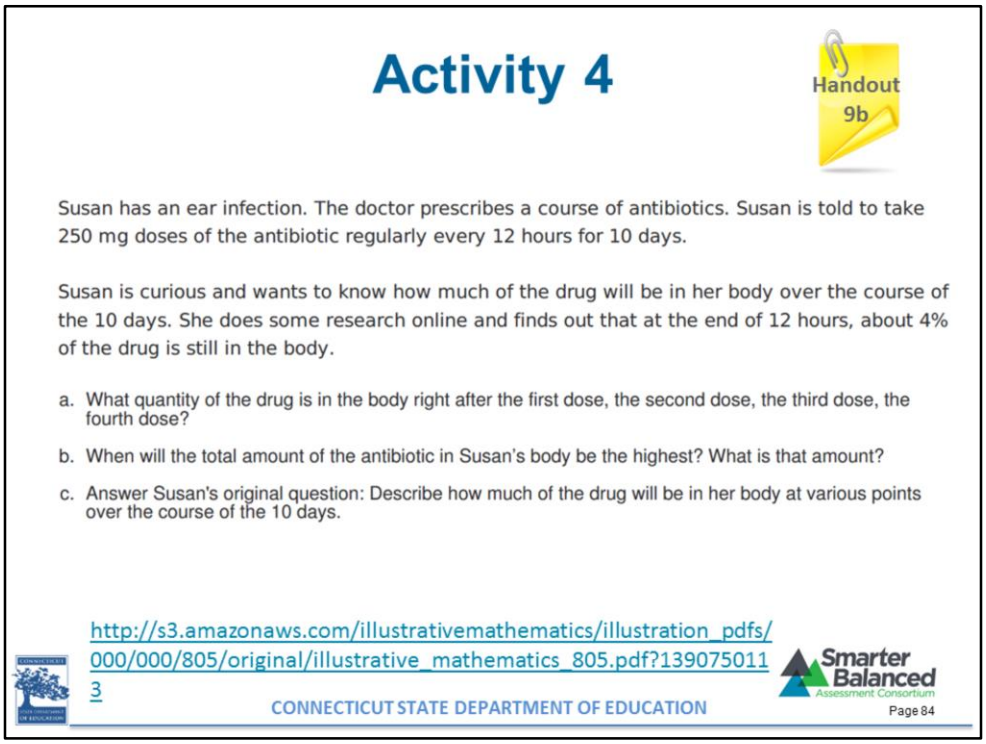
This item is from the Smarter Balanced Grade 6 Practice Test. It is a Claim 4 item aligned to:
Target F, Identify important quantities in a practical situation and map their relationships
Target G, Identify, analyze and synthesize relevant external resources to pose or solve problems.
This is a item at DOK level 3

Point out to participants that this problem differs from a claim 2 item in that while the goal is clear, the problem is "neatly packaged."

Answer: The students should have a line that goes from 4 to 9.



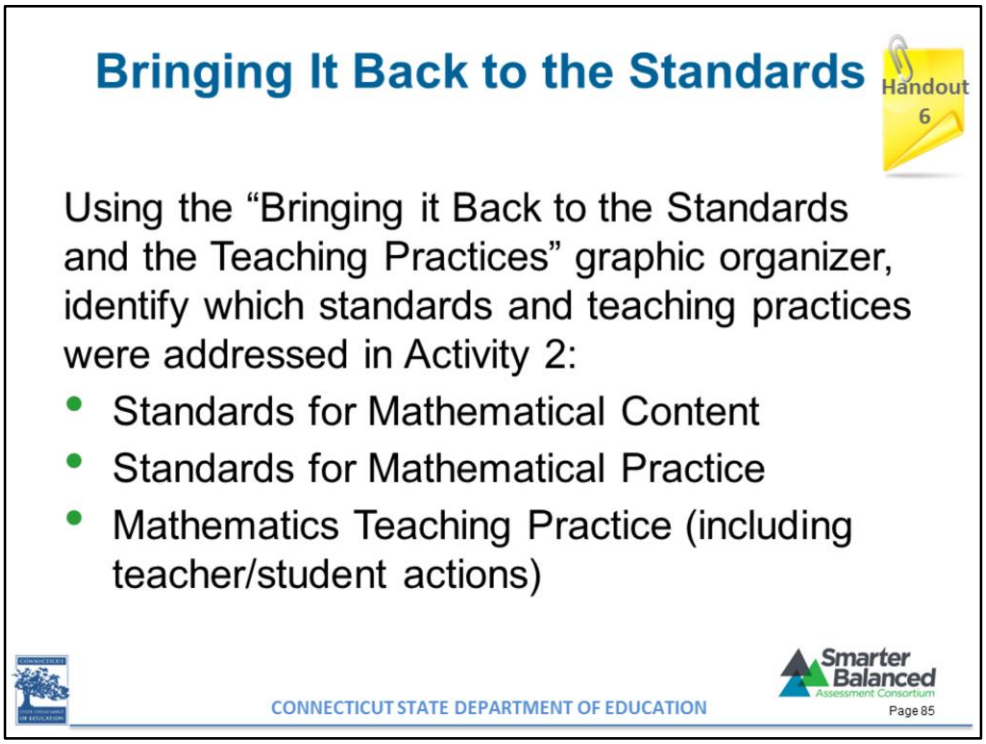
This task presents a real world application of finite geometric series. As part of cooperative group work, this task will engage students in the mathematical practices.



Facilitator Note: Direct participants to use Handout 9b for this activity. Ask participants to work through this activity without looking at the solutions on pages 2-4 of the handout. Once finished, they should think about how this type of activity helps to engage students in productive struggle as seen in the video.

Give groups about 3-5 minutes to look at and discuss the solutions provided on pages 2-4 of the handout. Participants should think about the mathematics involved, anticipate where students might struggle and how they could address that productive struggle in the class.

By providing the opportunity for students to share their thinking other students hear different approaches and use the mathematics to support their own claim or refute that of a classmate. This will lead to a deeper understanding of variables that may effect problems.



Note to facilitator: Each table should work with one copy of Handout #6, "Bringing it Back to the Standards and the Teaching Practices" graphic organizer.

Inform participants that they may refer to Handouts 2 (Practice Standards) and 3 (Principles to Action Executive Summary) to jot down the standards and teaching practices addressed in this activity.
For this particular activity, under "Standards for Mathematical Content," participants should have noted:
Conceptual Category: Algebra
Cluster: A.SSE Seeing structure in expressions
Standard: A.SSE.B.4 (ask a participant to read the standard language from the flip book)

Under SMP: 1, 2, 4 and 8

Under Mathematical Teaching Practices: Implement tasks that promote reasoning and problem solving, Support productive struggle in learning mathematics
Ex: Teacher: encourage students to use varied approaches and strategies to make sense and solve tasks
provide tasks that require high level cognitive demand
anticipate what the struggles might be and prepare to support them with questions that scaffold their thinking

Student: persevere in solving problems
ask questions related to source of struggle

NOTE: Examples of student and teacher actions should be aligned to the above standards for math practice and math teaching practices. Facilitator needs to guide participants to note how the MTP are aligned to and supportive of the SMP.

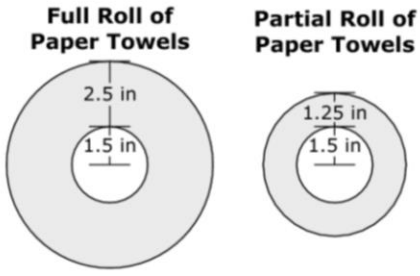
This activity should be part of a larger unit of study aligned to the conceptual category of Algebra.

This will help us to confirm the alignment of the activity and eventually the overall unit with the CCS.

Bringing it Back to the Assessment

2032

The diagram shows the end view of a roll of paper towels when it is full and the end view of the roll after some of the paper towels have been used.



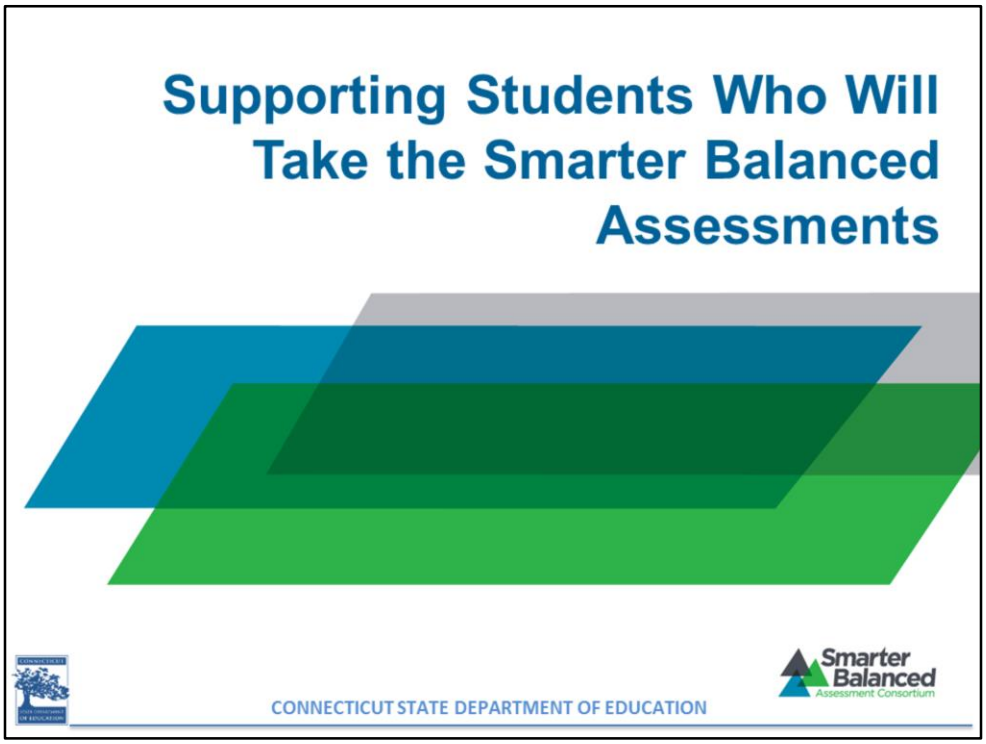
When the full roll of paper towels is unrolled, it has a length of 528 inches of paper towels of uniform width and thickness. Enter the length, in inches, of the paper towels remaining on the partial roll.

From the Smarter Balanced Grade 11 Practice Test

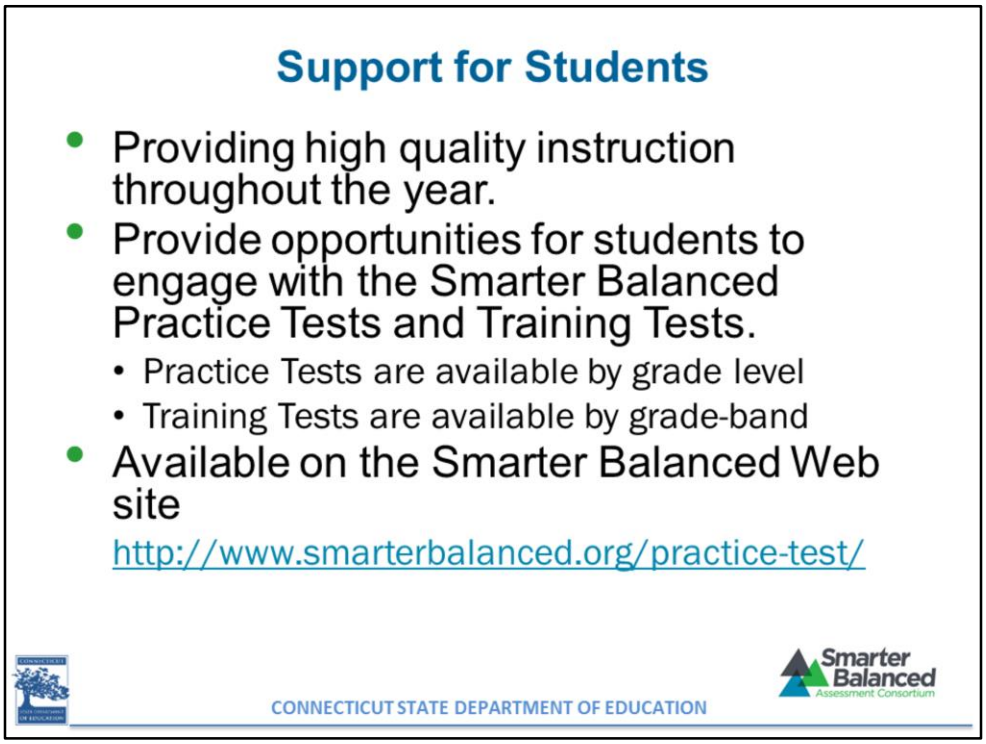
This item is from the Smarter Balanced Grade 11 Practice Test. It is a Claim 4 item aligned to Target A, apply mathematics to solve problems arising in everyday life, society and the workplace. This is a DOK level 3 item.

The content being assessed here builds upon area of a circle which is first introduced in grade 7. From the Smarter Balanced Math content specifications (pg. 72), "Tasks generating evidence for claim 4 in a given grade will draw upon knowledge and skills articulated in the progression of standards up to that grade with strong emphasis on the major work of the grades." This is also true for claim 2.

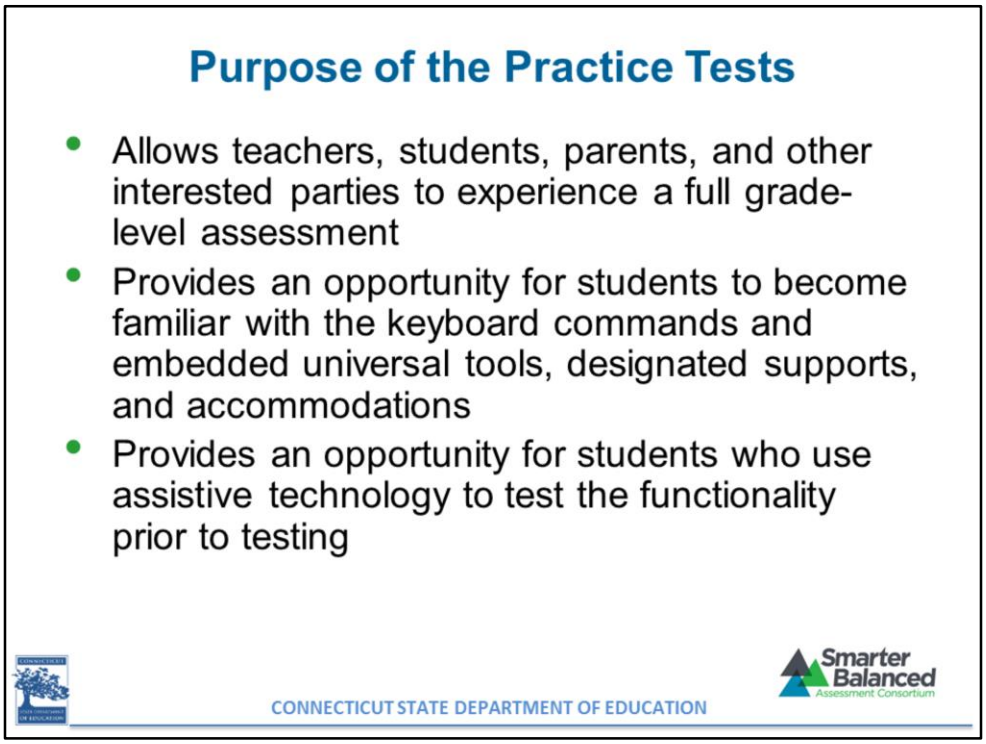
Again, ask participants to recognize how this problem differs from a claim 2 item in that while the goal is clear, the problem is not "neatly packaged".



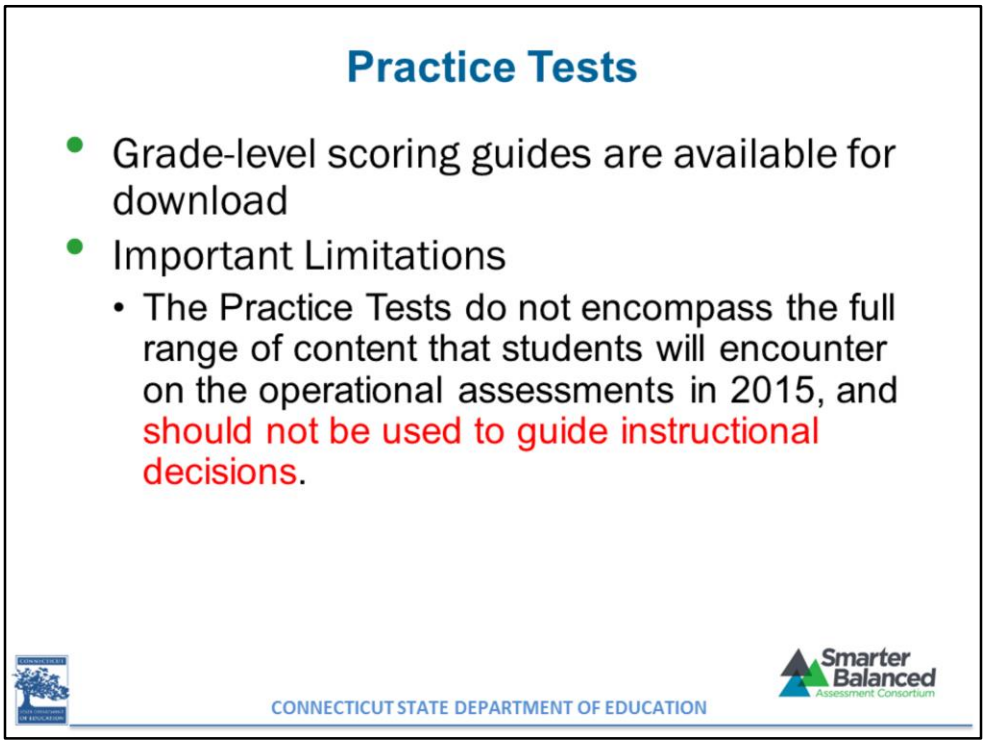
What else should teachers do to support students who will take the Smarter Balanced assessments?



Besides providing high quality instruction throughout the year, teachers should also provide students with opportunities to engage with the Smarter Balanced Practice and Training Tests. The Practice and Training Tests are available on the Smarter Balanced Web site.



Read to the slide



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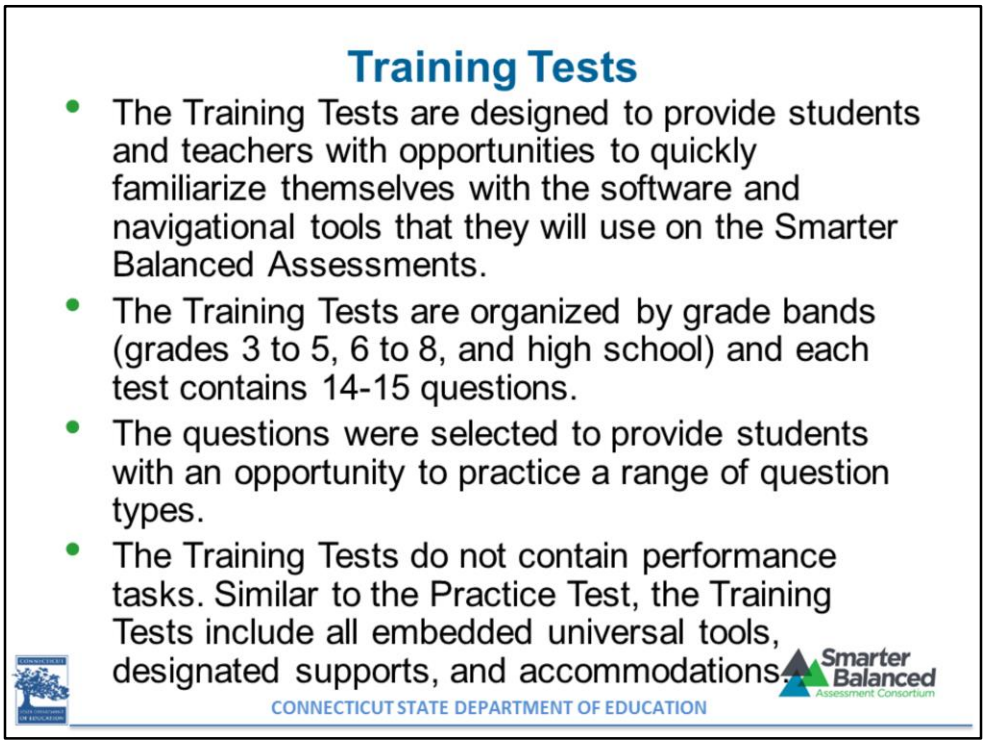

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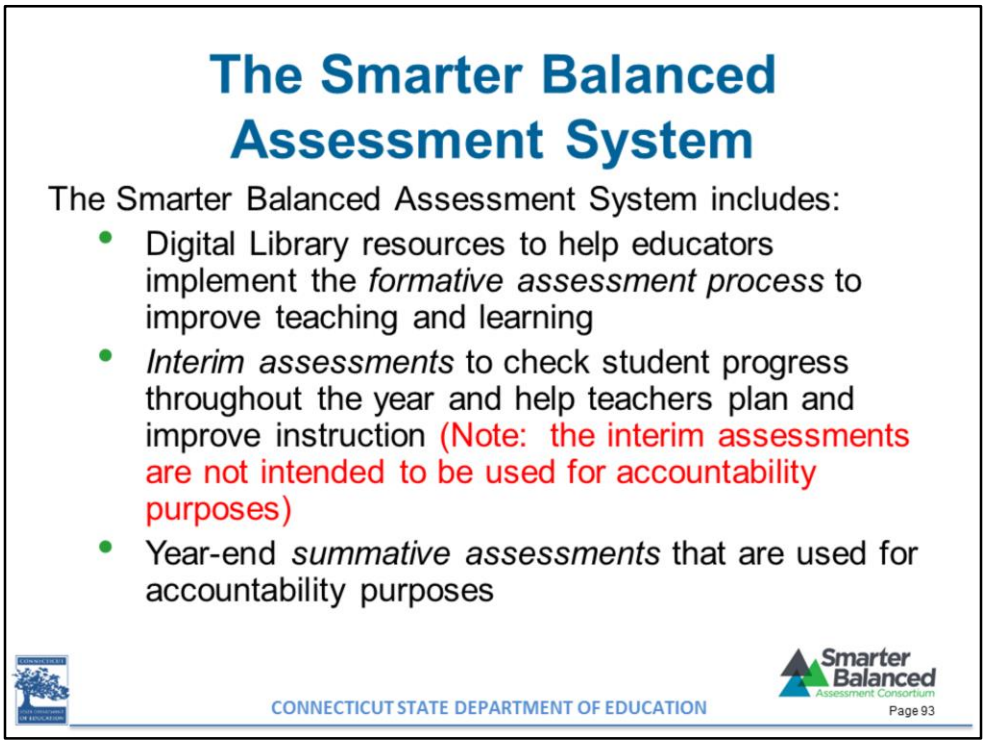
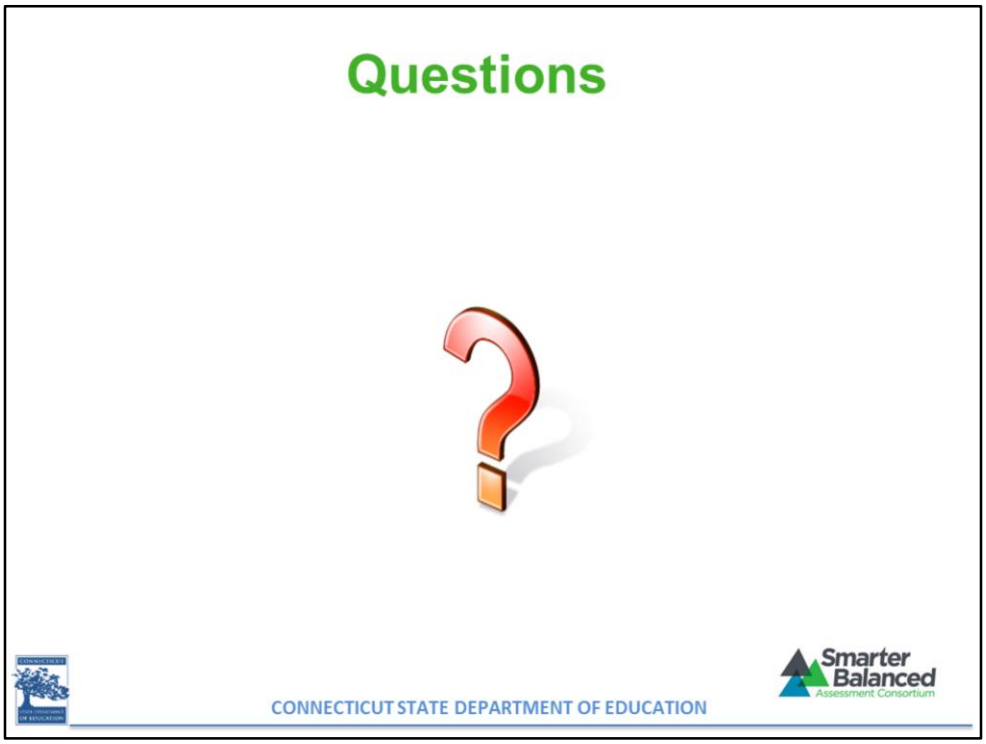
How Does the Smarter Balanced Assessment System Support Instruction?

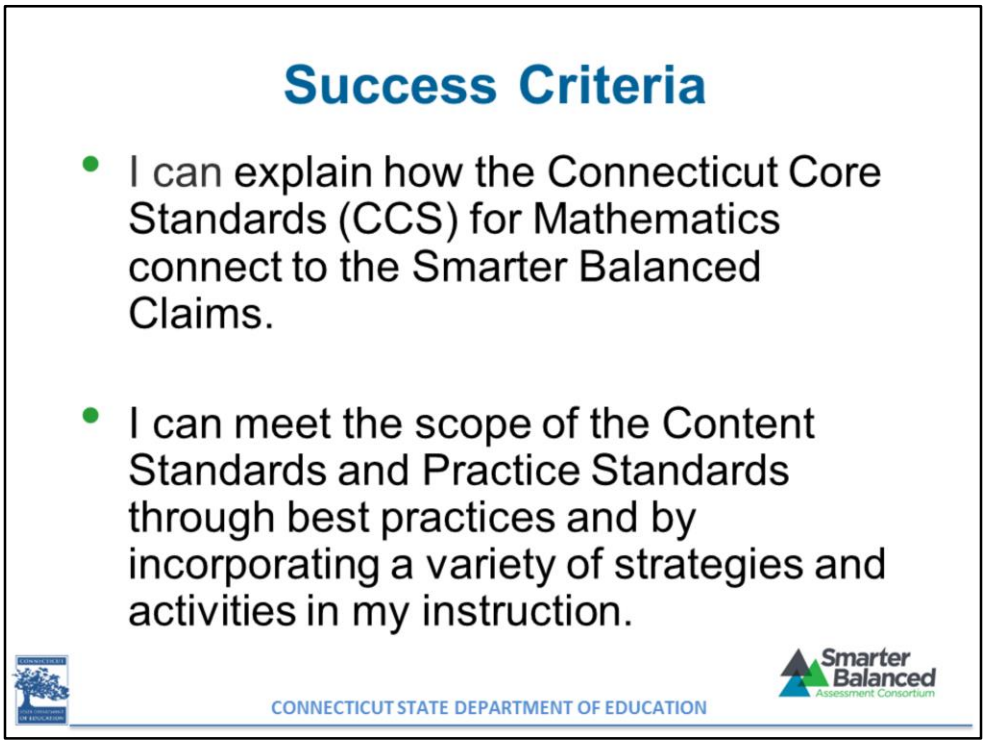


Along with the summative assessment that is used for accountability, the Smarter Balanced Assessment System also includes a Digital Library which contains tools and resources to support the formative assessment process.

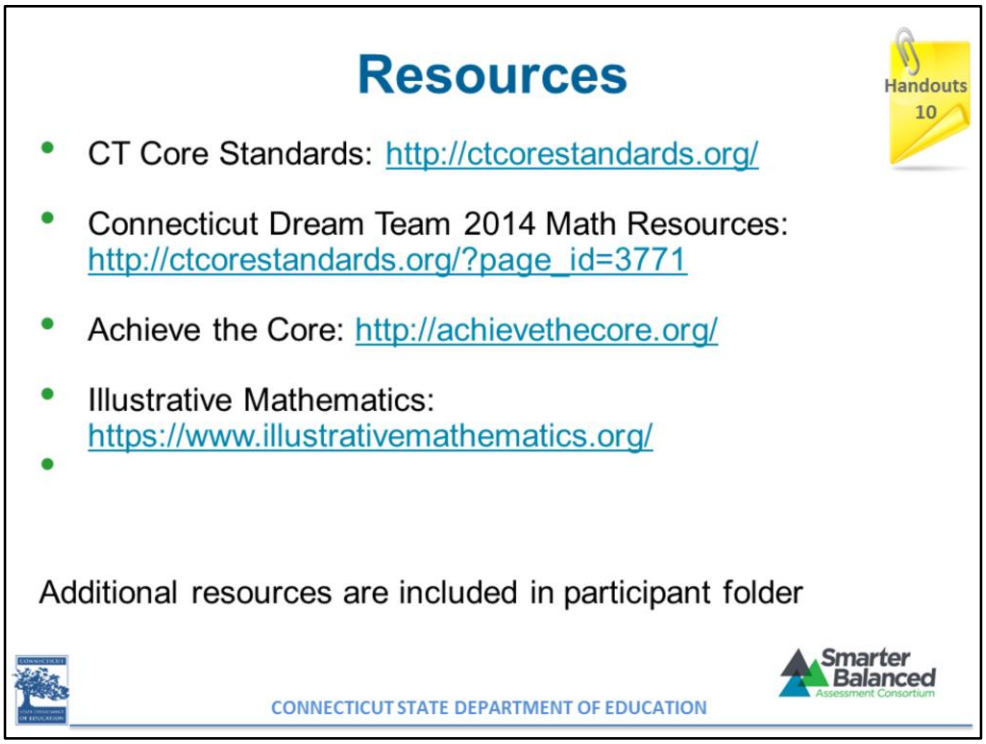
The system also includes an interim assessment component which is can be used throughout the year to gauge student progress toward mastery of the skills measured by the summative assessment and to assess targeted concepts at strategic points during the school year.



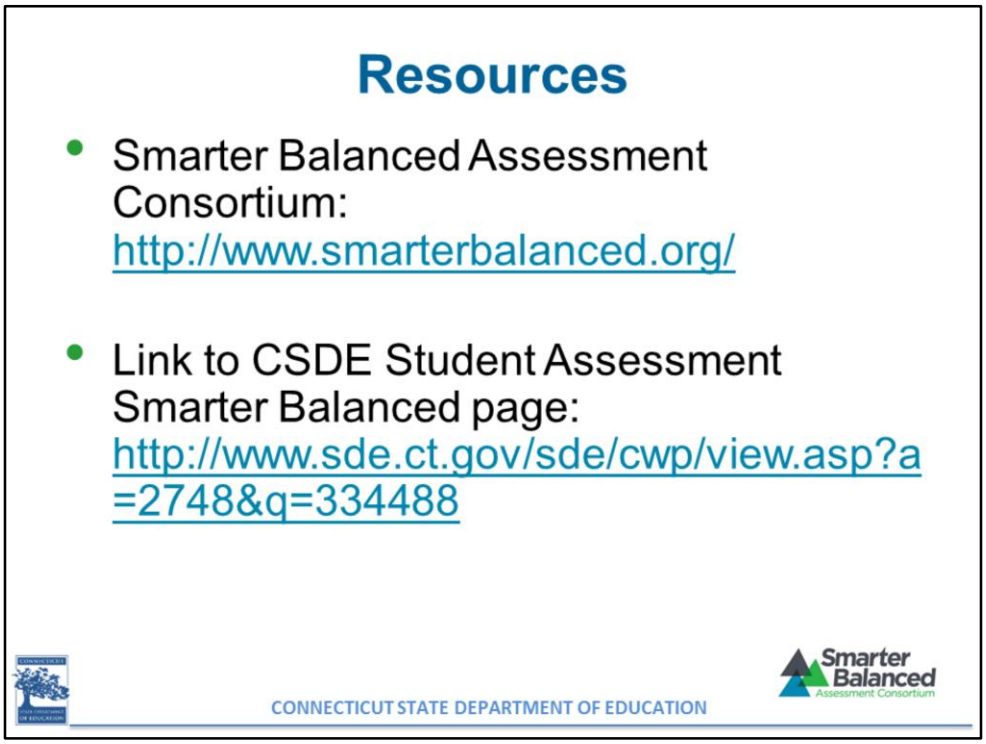
Allow participants time to ask questions to clarify their understanding of the material presented throughout the day.



Ask participants: Please reflect back on the Success Criteria presented at the beginning of the presentation. How well did you meet the success criteria?



This slide includes some resources



* Please see the Resources page in your folder for a more extensive listing.