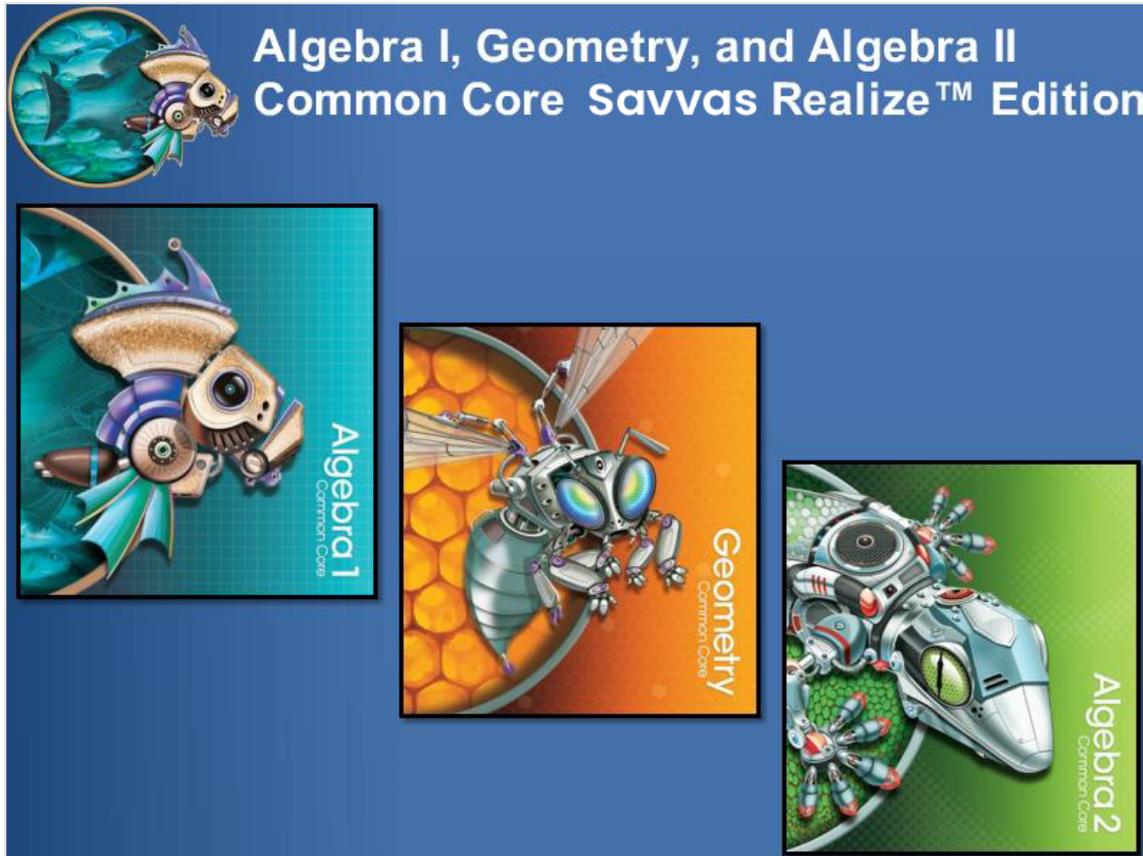


Savvas High School Mathematics Common Core Program Overview

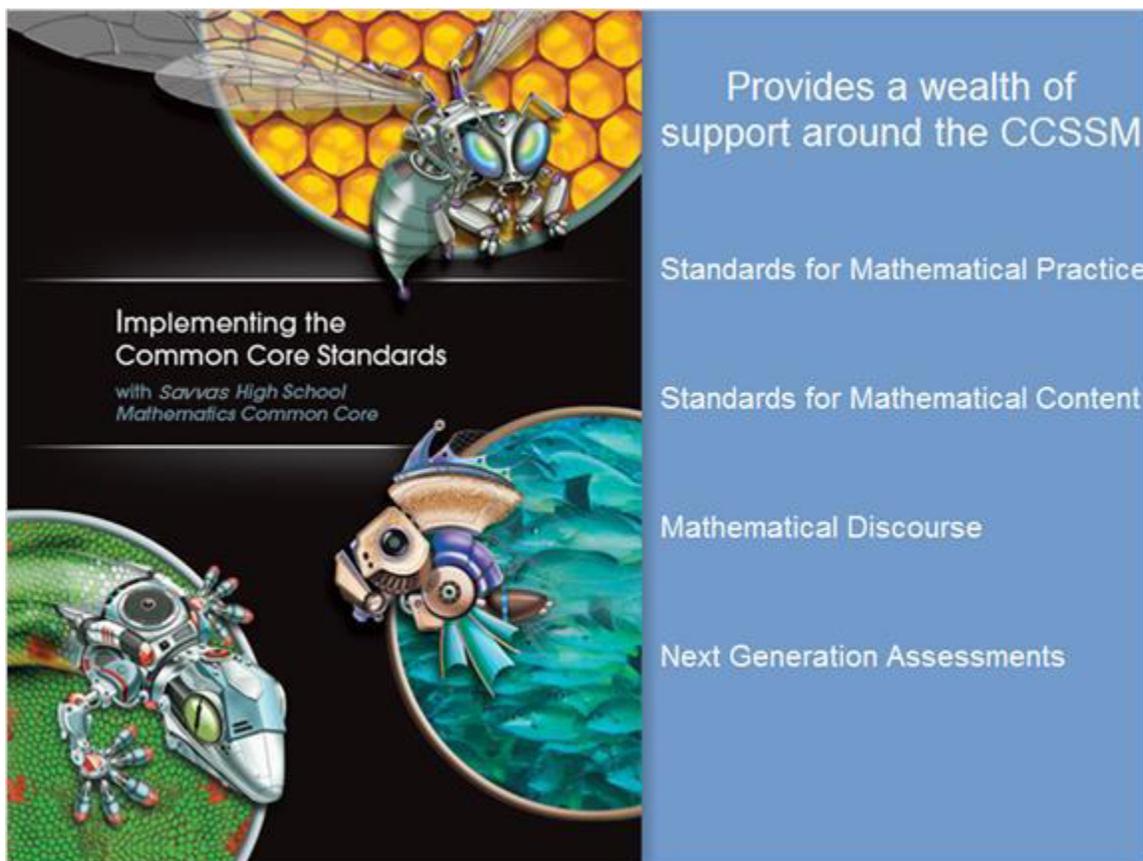
Introduction



Welcome to My Savvas Training. In this tutorial, we will explore the Algebra 1, Geometry, and Algebra 2 Common Core Savvas Realize™ Edition.

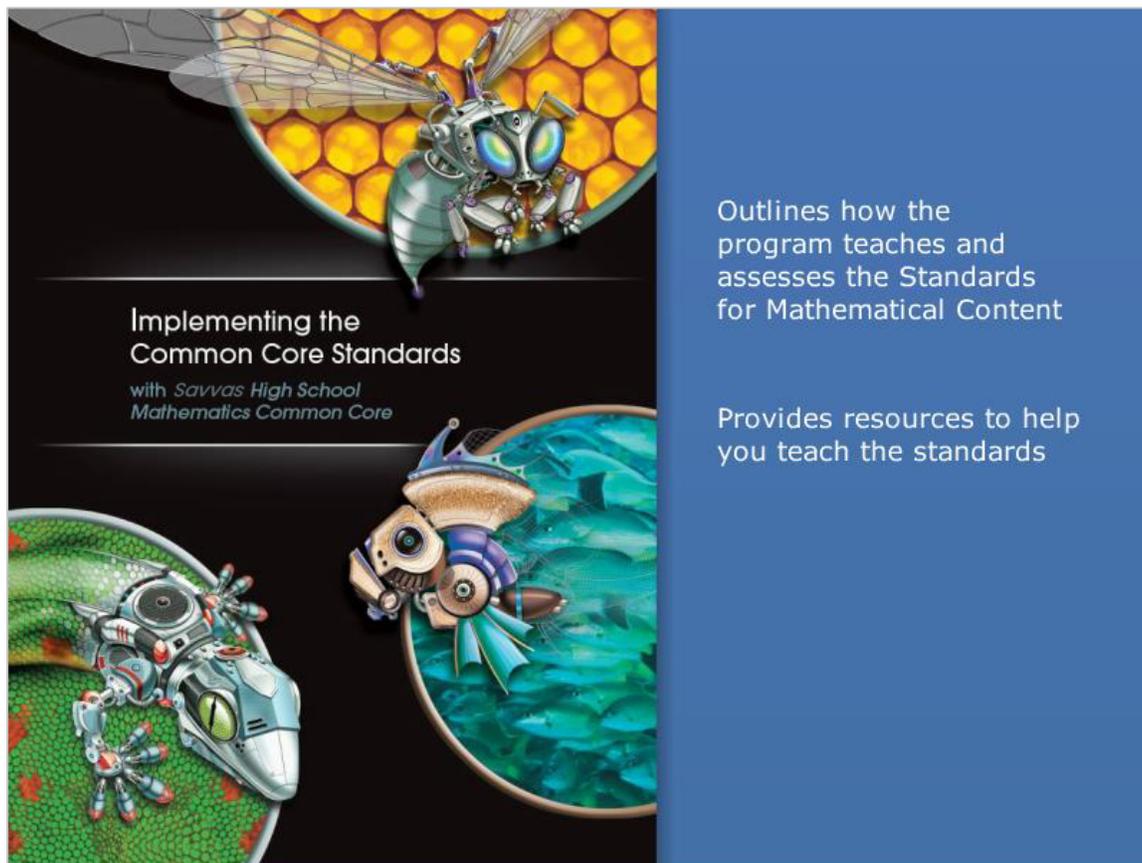
We will review the blended print and digital curriculum, which is built on the program's five essential components of learning. We will also examine how the program supports the focus and coherence of the Common Core State Standards for Mathematics -- or CCSSM.

Guide to Implementing the Common Core State Standards



Implementing the Common Core State Standards provides a wealth of support around the CCSSM. This guide includes an overview of the Standards for Mathematical Practice and the Standards for Mathematical Content. It also provides information about mathematical discourse and how to prepare students for the Next Generation Assessments.

Standards



The Standards for Mathematical Practice describe eight behaviors of mathematically proficient students. For example, these students demonstrate problem-solving skills, reasoning skills, and mathematical ways of thinking.

The Standards for Mathematical Content in high school are organized into six conceptual categories.

They are Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics and Probability.

When students understand mathematical concepts, they can explain why a mathematical statement is true or where a mathematical rule comes from.

Implementing the Common Core State Standards outlines how the program teaches and assesses these standards. It also provides resources to help you teach them.

Mathematical Discourse

Supporting Mathematical Discourse with Savvas High School Mathematics Common Core

Assess High School Mathematics Common Core was designed to create learning environments where students engage in meaningful mathematical discourse. Through this discourse, students become mathematically proficient and develop proficiency with the Standards for Mathematical Practice. In this walk-through, you will find suggestions for supporting and enhancing the mathematical discourse in your classroom.

QR CODES link to professional development videos for the program. Each video begins with an overview of the pedagogy of one of the five steps of the lesson by lead author Dr. Randall Charles, followed by a classroom look at implementing Assess High School Mathematics Common Core. To view the videos, scan each QR code using a QR code reader app on a smartphone or tablet.

1 INTERACTIVE LEARNING

The purpose of the **Solve It!** is to engage students in a discussion around the problem presented. Students are encouraged to work in pairs or small groups to not just solve the problem presented, but defend their solution.

1 Supporting Mathematical Discourse

Promote deep mathematical conversations

The lesson includes advice for using the probing questions

Scan the QR codes for professional development videos

- **Revoice students' answers.** By restating a student's explanations, you can clarify the explanation for other students in the class, and, even more important, can help the student confirm and solidify his or her thinking.
- **Prompt for participation.** Ask other students what they think about a response or an explanation to draw more students into the discussion.

Review the Supporting Mathematical Discourse content to promote deep mathematical conversations in your classroom. Each step of the lesson includes advice for using the program's probing questions. Scan the QR codes for professional development videos that are designed to support a successful implementation.

Next Generation Assessments

Standards for Mathematical Practice
Observational Protocol

Name of Student	Dates of Observations	Name of Student	Dates of Observations
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <p>Think</p> <p>Are $7x^2$ and $3y^2$ like terms? No; they have different variables.</p> </div> <div style="width: 60%; border: 1px solid black; padding: 10px;"> <p style="text-align: center;">Problem 5 Simplifying Algebraic Expressions</p> <p>Combine like terms. What is a simpler form of each expression?</p> <p>A $7x^2 + 3y^2 + 2y^2 - 4x^2$</p> $7x^2 + 3y^2 + 2y^2 - 4x^2$ $= 7x^2 - 4x^2 + 3y^2 + 2y^2$ $= (7 - 4)x^2 + (3 + 2)y^2$ $= 3x^2 + 5y^2$ <p style="margin-left: 20px;">Identify like terms. Commutative Property of Addition Distributive Property Combine like terms.</p> <p>B $-(3k + m) + 2(k - 4m)$</p> $-3k - m + 2k - 8m$ $= -k - 9m$ <p style="margin-left: 20px;">Opposite of a Sum and Distributive Property Combine like terms.</p> <p>Got It? 5. Combine like terms. What is a simpler form of each expression?</p> <p style="margin-left: 40px;">a. $-4j^2 - 7k + 5j + j^2$ b. $-(8a + 3b) + 10(2a - 5b)$</p> </div> <div style="width: 20%; font-size: small;"> <p>1. Make sense of problems and persevere in solving them.</p> <p>a. identifies main goal or goal(s)</p> <p>b. relates to other goals</p> <p>c. explains regularity in repeated reasoning</p> <p>d. identifies when to use each of these practices</p> <p>NOTES</p> <p>2. Reason abstractly.</p> <p>a. explains relationships among objects</p> <p>b. writes an equation representing a problem</p> <p>NOTES</p> <p>3. Construct viable arguments and critique the reasoning of others.</p> <p>a. adds appropriate evidence</p> <p>b. compares and contrasts</p> <p>NOTES</p> <p>4. Model with mathematics.</p> <p>a. represents a problem</p> <p>b. identifies the key quantities</p> <p>c. represents relationships among quantities graphically</p> <p>NOTES</p> <p>5. Analyze problems to identify given information, to determine goal(s) to be achieved, and to plan a solution.</p> <p>a. analyzes relationships among quantities</p> <p>b. explores relationships among quantities</p> <p>c. represents relationships among quantities graphically</p> <p>NOTES</p> <p>6. Attend to precision.</p> <p>a. uses precise definitions of operations and symbols</p> <p>b. communicates mathematical ideas</p> <p>c. asks whether the solution is reasonable</p> <p>NOTES</p> <p>7. Look for structure.</p> <p>a. notices repeated calculations or methods</p> <p>b. notices general methods or shortcuts from repeated calculations</p> <p>NOTES</p> </div> </div>			

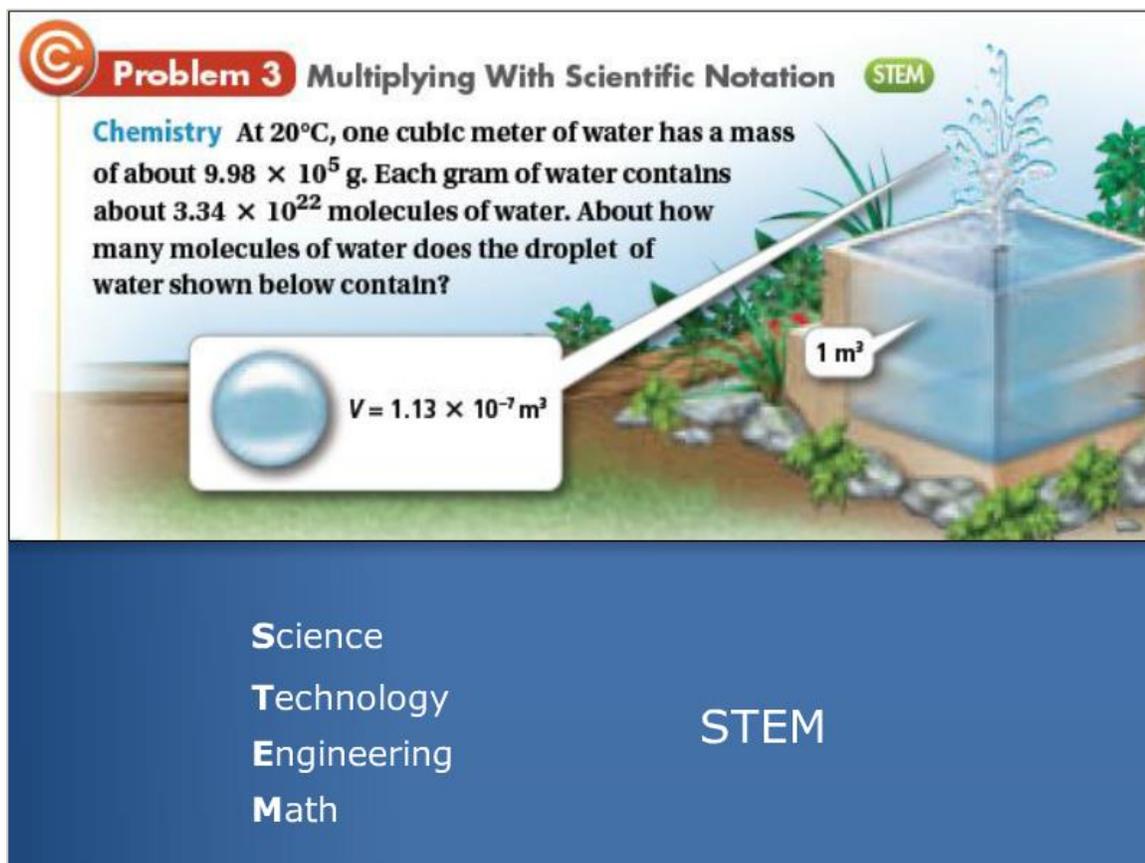
Use both tools for formative assessment throughout the year

The *Implementing the Common Core State Standards* guide also provides information on how to prepare your students for the Next Generation Assessments. Use the Rubric for Formative Assessment as your students complete various performance tasks throughout each chapter.

For everyday instruction, use the Observation Protocol for the exercises with a red Common Core logo.

Both the rubric and Observation Protocol are tools you can use for formative assessment throughout the year.

Problem Solving



Problem 3 Multiplying With Scientific Notation **STEM**

Chemistry At 20°C, one cubic meter of water has a mass of about 9.98×10^5 g. Each gram of water contains about 3.34×10^{22} molecules of water. About how many molecules of water does the droplet of water shown below contain?

$V = 1.13 \times 10^{-7} \text{ m}^3$

1 m³

Science
Technology
Engineering
Math

STEM

Now, let's look at the five essential components that build the foundation for learning in the program.

Problem Solving is the first essential component of learning. It is also one of the foundations of Savvas High School Mathematics Common Core.

Program features that support problem solving appear throughout the program. They are called out in blue boxes. For example, Know-Need-Plan boxes outline the problem-solving process. These boxes help students to decontextualize the problem and break it down into manageable parts.

Reasoning and Error Analysis exercises challenge students to justify their thinking and critique the reasoning of others. This helps them become proficient thinkers and problem solvers.

Notice the exercises with blue headings. These are multidisciplinary problem situations, many of which have a science, technology, engineering, and math-or STEM-focus. Direct students to STEM-labeled problems so they can apply their knowledge to solve real-world problems that focus on STEM topics.

3-Act Math



Additionally, every topic is introduced with a 3-Act Math task. These thought-provoking tasks are inspired by Dan Meyer’s work on engaging students.

The first act of the task uses a video to introduce a real-world problem. Throughout the topic, students develop tools to address the problem.

They complete the second act by modeling to develop a solution. In the final act, they compare their solutions to the actual result.

You can find support for each 3-Act Math task in the Overview and *Implementation Guide*.

Students have space in the *Interactive Math Journal: Student Companion* to work out solutions for 3-Act Math tasks.

Visual Learning

Problem 4 Finding the Complement of a Set

Universal set $U = \{\text{king, queen, bishop, knight, rook, pawn}\}$ and set A is the set of chess pieces that move side to side. What is the complement of set A ?

Know

- The elements of set U
- The elements of set A

Need

- The elements of A'

Plan

Use a Venn diagram to find all the elements in set U that are *not* in set A .

The Venn diagram shows the relationship between sets A and U . The elements in set U that are *not* in set A are bishop, knight, and pawn.

So, $A' = \{\text{bishop, knight, pawn}\}$.

Types of Chess Pieces

U	king queen rook	A	bishop knight pawn
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Got It? 4. Universal set $U = \{\text{months of the year}\}$ and set $A = \{\text{months with exactly 31 days}\}$. What is the complement of set A ? Write your answer in roster form.

Make sense of problems

Model with mathematics

Visual Learning is the second essential component of learning. It is a powerful method for making abstract ideas concrete.

Take a look at a few examples of visual learning in your resources.

The Solve It! feature helps students to tap into their prior knowledge and connect it to key concepts in the lesson.

The callouts draw students' attention to important aspects of the problem that will help them develop solution plans.

Maximize visual learning to help students make sense of problems more readily. Support students as they make connections between real-life situations and mathematical models that represent the problems, as this leads to mathematical proficiency.

Big Ideas

Savvas & Common Core

Big Ideas

Big Ideas and Essential Questions provide the organizing structure of the program and are based on the principles of Understanding by Design¹, which uses a backward design to develop curriculum. Planning the curriculum with the end results in mind leads to a more coherent program of instruction.

Big Ideas and Essential Questions, found on each chapter opener, help students focus on the key mathematical concepts of the chapter.

Chapter 7 Exponents and Exponential Functions

Chapter Preview

- 7.1 Add and Subtract Fractions
- 7.2 Multiplying Fractions and the Order Rules
- 7.3 More Multiplication Properties of Exponents
- 7.4 Division Properties of Exponents
- 7.5 Radical Equations and Functions
- 7.6 Exponential Growth and Decay
- 7.7 Exponential Regression

Vocabulary

BIG Ideas

1 Equivalence
Essential Questions: How can you represent numbers less than 1 using exponents?

2 Properties
Essential Questions: How can you simplify expressions involving exponents?

3 Function
Essential Questions: What are the characteristics of exponential functions?

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T16 Pearson & Common Core

The third essential component of learning is Big Ideas.

Note that Big Ideas in Savvas High School Mathematics align closely with the Conceptual Categories and Domains of the Standards for Mathematical Content.

Use the Chapter Opener to introduce the Big Ideas and Essential Questions. Then have students provide answers to these activities in the Chapter Review.

Big Ideas and Essential Questions use a backward design approach to promote conceptual understanding. The program is built with the end result in mind, which underscores the focus and coherence of the curriculum.

Interactive Learning



The fourth essential component is Interactive Learning. This refers to the program’s digital technology.

Savvas Realize™ serves as the portal into the digital world of Savvas High School Mathematics Common Core. Use this website as a stand-alone digital course, or integrate it with print materials to provide a blended learning experience for your students. You can access resources, assign student work, and support students’ understanding through this powerful online learning environment.

Direct students to Savvas Realize™ to access audio, video, and key lesson concepts to support their learning.

Have students download the Virtual Nerd Mobile Math app to access tutorials that relate to each lesson’s content.

The digital features help students make strategic decisions about using tools appropriately, which is an important skill in the standards.

Differentiated Instruction

8-7 Lesson Resource

Additional Instructional Support

Algebra 1 Comparison
Students can use the Algebra 1 Comparison worksheet to prepare or practice for the lesson.
Use the Comparison to support:
• New vocabulary
• Key Concepts
• Q&A for each problem
• Lesson Check

5 Assess & F
Lesson Quiz
1. What is the factor of $x^2 - 12x + 36$?
2. Do you know how to find a square of a number? Use the Comparison to support.
3. Do you know how to find the square of a number?
4. What is the factored form of $x^2 - 10x + 25$?
5. What is the factored form of $x^2 - 20x + 100$?

Intervention

- **Reteaching** (2 pages) Provides reteaching and practice exercises for the key lesson concepts. Use with struggling students or absent students.
- **English Language Learner Support** Helps students develop and reinforce mathematical vocabulary and key concepts.

Extension

- **Enrichment** Provides students with interesting problems and activities that extend the concepts of the lesson.
- **Activities, Games, and Puzzles** Worksheets that can be used for concepts development, enrichment, and for fun!

ELL Support

Connect to Prior Knowledge Review perfect squares. Write 1, 4, and 9 on the board. Ask students what they have in common. Then encourage students to guide you as you list more perfect squares on the board.

Use Manipulatives Model to students how to use grid paper to show a trinomial is a perfect square. One unit on the grid paper is "1", two vertical units is x , and a 2×2 square unit is x^2 . $4x^2 + 4x + 1$ can be arranged into a perfect square. Challenge students to arrange other trinomials into squares and write the factors.

Teaching tips

Vocabulary support for English language learners

Built-in lesson support for Response to Intervention

The fifth essential component of learning is Differentiated Instruction. The Common Core standards require that all students have the instructional support they need in order to meet all of the standards.

Differentiating instruction helps students achieve this goal. Consider some of the program's options for differentiating instruction.

For example, the Student Companion includes visuals and other learning aids, such as graphic organizers and vocabulary builders, that can help all students be successful.

In addition, you can find teaching tips, vocabulary support for English language learners, and built-in lesson support for Response to Intervention.

Assessment

Assessing the Common Core State Standards

The adoption and implementation of the Common Core State Standards for Mathematics is an important and critical step to improving students' math achievement in the United States. An equally important step is creating assessments grounded in these standards to measure students' progress against these new standards. These common assessments can also ensure that all students have access to these new standards.

The Race to the Top Assessment Program, funded by the American Recovery and Reinvestment Act of 2009 (ARRA) awarded funding to two state consortia to **develop next generation assessment and accountability systems**. These assessments will be used to measure students' progress against the Common Core State Standards, provide a common measure of college and career readiness, and make use of new technologies in assessment and reporting so that parents and teachers have timely information about student performance.

These common assessments can also ensure that all students have access to these new standards.

These Next Generation Assessment System, which are to be operational by 2014-2015, are to meet the dual needs of accountability and instructional improvement. With these common assessments, state and local school officials can get an accurate view of how their students' performance compare to those of students in other districts or states. They can also reduce challenges associated with student mobility. Students in over 40 states will be expected to learn the same content and will take the same or similar assessments.

These new assessments will focus on assessing the major content that the Assessment Consortia have identified. These assessments will also include tasks to measure students' mathematical proficiency as described in the Standards for Mathematical Practice.

The two state consortia are the **Partnership for Assessment of Readiness for College and Careers (PARCC)** and the **SMARTER Balanced Assessment Consortium (SBAC)**.

28 Assessing the Common Core State Standards

Ensure mastery of the CCSSM

Prepare for the Next Generation Assessments

Think about how you will assess your students' learning. How will you ensure their mastery of the CCSSM and prepare them for the Next Generation Assessments?

Note that each chapter in your Teacher's Guide states the specific Standards for Mathematical Content that the chapter addresses. Your guide also includes a variety of formative and summative assessments to evaluate your students' mastery of the Standards for Mathematical Content as well as the Standards for Mathematical Practice.

Earlier, we looked at the Observation Protocol and Rubric for Formative Assessment. Use the rubric to assess the Common Core performance tasks that are found throughout each chapter. Start with the Chapter Opener by introducing the Performance Task. Throughout the chapter, have students re-examine portions of the task with Apply What You've Learned. At the end of the chapter, ask students to complete the Performance Task with Pull It All Together. Then, have students complete a new version using the On Your Own performance task.

These rich, layered tasks apply the practices and prepare students for performance assessments.

Direct students to MathXL® Practice and Review at the middle and end of each chapter. The program automatically grades students' work and provides immediate feedback and tutorial assistance to ensure content mastery before high-stakes tests.

Closing



In this tutorial, we explored the Algebra 1, Geometry, and Algebra 2 Common Core Savvas Realize™ Edition.

We reviewed the blended print and digital curriculum, which is built on the program's five essential components of learning. We also examined how the program supports the focus and coherence of the Common Core State Standards for Mathematics -- or CCSSM. With the Savvas High School Math Common Core Edition, you have all the tools that you need to fully embrace the standards and help your students be college and career ready by the completion of high school.

For additional resources, please visit MySavvasTraining.com.