

enVision A|G|A © 2024

Program Overview

Introduction



enVision™ A|G|A
Algebra 1 Geometry Algebra 2

- Program components
- Math content and practice standards
- Planning
- Differentiation
- Assessment

In this tutorial, we will explore **enVision A|G|A** - a brand-new high school mathematics program built from the ground up for Algebra 1, Geometry, and Algebra 2 courses.

First, we will look at the program components. Then we will examine how the instructional design of **enVision A|G|A** supports deep understanding of the math content and practice standards. Finally, we will explore the resources available to support planning, differentiation, and assessment in your classroom. There's a lot to explore so let's get started.

Program Components



The enVision A|G|A program components are available in print and online at SavvasRealize.com.

Student Components

Student Edition

Digital Courseware

Student Companion

Student Edition

Student Companion

Assessment Readiness Workbook

Savvas Realize™

The student components include the Student Edition, optional write-in Student Companion, Assessment Readiness Workbook, and digital courseware on Savvas Realize™.

Through Savvas Realize, students have access to a complete, interactive digital experience that includes instruction, practice, and assessments in the program. Students work in Realize Reader-Savvas' brand new interactive eText-where they can interact with activities, examples, and assignments.

Teacher Components



The teacher components include the Teacher's Edition, *Teacher's Edition Program Overview (TEPO)*, *Assessment Resources* book, and digital courseware on Savvas Realize.

Through Savvas Realize, teachers have digital access to the entire program including instructional tools powered by Desmos, Savvy Adaptive Practice, and differentiated practice powered by MathXL for School. A variety of instructional and professional development resources such as the ExamView Assessment Generator are also available for support. You can download the ExamView Assessment Generator to build tests and worksheets.

Planning and Teaching with enVision A|G|A



enVision A|G|A was designed with three program goals in mind:

- A balanced pedagogy;
- A focus on visual learning; and
- A focus on effective teaching and learning

Instructional Design

TOPIC 1		Solving Equations and Inequalities	
	Topic Overview		2A
	Topic Readiness Assessment		2I
	Topic Opener		2-3
	enVision® STEM		4
1-1	Operations on Real Numbers		5A
1-2	Solving Linear Equations		11A
1-3	Solving Equations With a Variable on Both Sides		18A
1-4	Literal Equations and Formulas		24A
1-5	Solving Inequalities in One Variable		30A
CCC	Mathematical Modeling in 3 Acts: Collecting Cans		36
1-6	Compound Inequalities		37A
1-7	Absolute Value Equations and Inequalities		43A
	Topic Review		50
	Topic Assessment		53A
	Topic Performance Assessment		53C

enVision
STEM Project

Set of lessons

Mathematical
Modeling in 3
Acts

ALGEBRA I | XIX | CONTENTS

Each course is organized into broad conceptual topics.

Each topic includes an enVision STEM Project, a set of content-focused lessons, and a Mathematical Modeling in 3 Acts task.

These lessons build students' conceptual understanding, procedural fluency, and application and modeling skills.

In addition, there are multiple opportunities throughout each topic for students to develop proficiency with the math practices.

Planning Resources

TOPIC 8
Topic Overview

Quadratic Functions

MATH BACKGROUND FOCUS

Topic 8 focuses on external quadratic functions: graphing and comparing them to linear functions.

TOPIC 8

Quadratic Functions

MATH BACKGROUND COHERENCE

Students learn best when concepts are achieved within topics, across topics, and across courses.

TOPIC 8

Quadratic Functions

MATH BACKGROUND RIGOR

A rigorous curriculum emphasizes fluency, and applications.

TOPIC 8

Quadratic Functions

MATH PRACTICES & PROCESSES

Math Practices Within Topic 8 Lessons

The math practices describe the behaviors and habits of mind that mathematically proficient students demonstrate when actively engaged in mathematics work. Opportunities to develop expertise with these important behaviors and thinking habits exist throughout the topic and program. Here we focus on *mathematical modeling and using structure*.

As students solve quadratic equations, look for the following behaviors to assess and identify students who demonstrate proficiency with these math practices.

Highlighted Math Practices Within Topic 8 Lessons	
Model with Mathematics Mathematically proficient students: <ul style="list-style-type: none"> Use quadratic functions to model the trajectory of projectiles. Solve a vertical motion problem by writing a quadratic function to represent the height h of a diver at time t. 	Look For and Make Use of Structure Mathematically proficient students: <ul style="list-style-type: none"> See the standard form of a quadratic function as being composed of several objects, including values of a, b, and c that they can use to graph the intercepts, the axis of symmetry, and the vertex of the parabola that represents the function $ax^2 + bx + c$. Analyze the effect of changes to the values of h and k in the vertex form of a quadratic function on the graph of the quadratic function. Apply what they have learned about the overall structure of linear and absolute value functions to the structure of

MAKING MATHEMATICAL CONNECTIONS
Looking Back

How does Topic 8 connect to what students learned earlier?

GRADE 8

- Analyzing Graphs of Functions** Students compared linear and nonlinear functions, learned about increasing and decreasing intervals, and sketched functions from a verbal description. Students explored key features of linear functions including slope and rate of change. Students build on this understanding when they compare quadratic functions, identify key features of quadratic functions, and sketch a graph.

TOPIC 3

- Use Functions to Model Relationships** Students modeled real-world situations with functions, tables, and graphs. Students will expand on their understanding of modeling problems with functions by using quadratic models.

TOPIC 6

- Transformations of Graphs** Students graphed exponential functions and explored key features. Students transformed exponential functions through vertical and horizontal translations and reflections. Students will expand on their understanding of transformations of exponential functions to explore the graphs of quadratic functions using translations and reflections.

Graphing Quadratic Functions

Key Features of a Quadratic function is of the form $y = ax^2 + bx + c$. In Lesson 8-1, students should recognize that every parabola has an axis of symmetry of the graph then look at the effect of the coefficient a on the graph.



The graph of $f(x) = 0.5x^2$ is wider than the graph of $f(x) = 2x^2$.

Different Forms of Quadratic Functions Vertical and horizontal translations of a parent function. In studying the graphs, students understand function and its usefulness in a quadratic function, specifically



In Lesson 8-3, students study function and its usefulness in a quadratic function, specifically symmetry, which is also the compare the standard and vertex form to determine which form is most useful in a given situation.

enVision A|G|A provides a variety of resources to help you plan for instruction. Start by reviewing the course-long Pacing Guide in the *Teacher's Edition Program Overview*.

In the Teacher's Edition, each topic begins with a Topic Overview which includes the content focus, coherence, rigor, and math practices. Together, these elements help build students' in-depth understanding of the content.

Each topic also has a helpful Topic Planner that presents the key vocabulary, objectives, and essential understandings for each lesson in the topic.

Each lesson begins with a Lesson Overview containing these sections: objectives, essential understandings, connections to prior and upcoming content, important skills, Vocabulary Builder, and Mathematics Overview.

Note the Digital Resources icon at the top of the page. Throughout the Teacher's Edition this icon directs you to the corresponding digital resources available on SavvasRealize.com. Make sure to access the interactive tools and activities available to further support your students' understanding of the lesson content.

Four-Step Lesson Structure

STEP 1: EXPLORE
Introduce concepts and procedures informally with a problem-solving experience.

STEP 2: UNDERSTAND & APPLY
Make the important mathematics explicit with enhanced direct instruction that connects back to the problem in Step 1.

STEP 3: PRACTICE & PROBLEM SOLVING
Offer robust and balanced practice to solidify understanding.

STEP 4: ASSESS & DIFFERENTIATE
Check for understanding and provide differentiation.

Four-Step Lesson Structure

Click each step to learn more.
When you're done, click **Next**.

The **enVision A|G|A** instructional model is built on the interaction between problem-based learning and explicit visual instruction. These components are reflected in the four-step instructional design of each lesson.

Let's take a brief look at each step.

Step 1: Explore

Step 1: Explore
Close

8-1

Key Features
of a Quadratic
Function

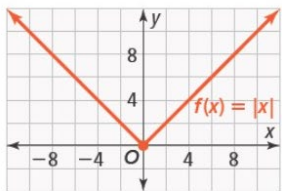
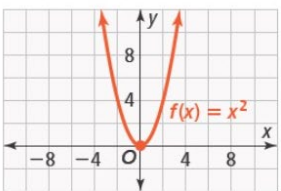
PearsonRealize.com

I CAN... identify key features of the graph of the quadratic parent function.

VOCABULARY

- parabola
- quadratic parent function

↓
EXPLORE & REASON

A. Look for Relationships How is the graph of $f(x) = |x|$ similar to the graph of $f(x) = x^2$? How is it different?

B. What do you notice about the axis of symmetry in each graph?

?

ESSENTIAL QUESTION

What is the quadratic parent function and how can you recognize the key features of its graph?

Lesson begins with a problem-based learning activity

In Step 1: Explore, the lesson begins with a problem-based learning activity that connects students' prior knowledge to new mathematical concepts. As you and your students discuss the different strategies used to solve the problem, students make connections, explain their reasoning, and communicate their understanding. The Teacher's Edition provides support to facilitate these conversations before, during, and after the activity.

Step 2: Understand & Apply

Step 2: Understand & Apply
Close

EXAMPLE 3 Interpret Quadratic Functions from Tables

Over what interval is $f(x) = 4x^2$ increasing? Over what interval is it decreasing?

Use the function to make a table of values.

x	$f(x) = 4x^2$	(x, y)
-2	16	(-2, 16)
-1	4	(-1, 4)
0	0	(0, 0)
1	4	(1, 4)
2	16	(2, 16)

The function values are **decreasing**.

The vertex (0, 0) is the turning point of the function, where it changes from decreasing to increasing.

The function values are **increasing**.

The function is decreasing over the interval $x < 0$ and increasing over the interval $x > 0$.

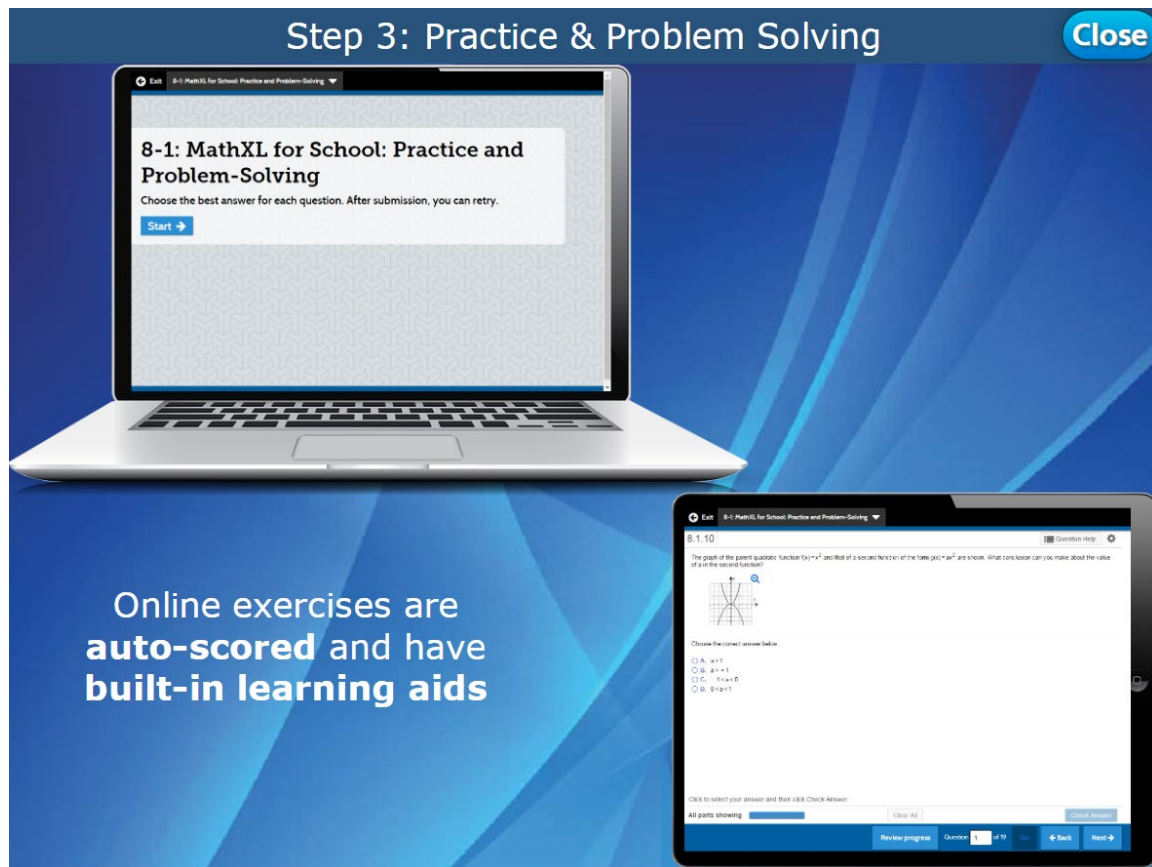
Try It! 3. A function of the form $g(x) = ax^2$ increases over the interval $x < 0$ and decreases over the interval $x > 0$. What is a possible value for a ? Explain.

Next, in Step 2: Understand & Apply, teachers make the mathematics explicit with enhanced direct instruction that connects back to the problem in Step 1.

In this section, a series of visual examples build conceptual understanding by connecting students' thinking from Step 1 to the new mathematical ideas of the lesson.

Students can interact with these examples online through Savvas Realize. Then a Concept Summary brings the multiple representations together. Finally, the Do You Understand? and Do You Know How? exercises serve as formative assessment opportunities to check for conceptual understanding and procedural fluency.

Step 3: Practice & Problem Solving



Online exercises are
auto-scored and have
built-in learning aids

Then, in Step 3: Practice & Problem Solving, students work through a variety of practice exercises to solidify their understanding.

Students can complete the Practice and Problem Solving items online with embedded MathXL for School assignments. These exercises are auto-scored and have built-in learning aids to help provide support.

Step 4: Assess & Differentiate

Step 4: Assess & Differentiate
Close

STEP 4
Assess & Differentiate

LESSON QUIZ

Use the Lesson Quiz to assess students' understanding of the mathematics in the lesson.

Students can take the Lesson Quiz online or you can download a printable copy from [SavvasRealize.com](https://www.savvasrealize.com). The Lesson Quiz is also available in the *Assessment Sourcebook*.

Item Analysis

Item	DOK	Skills Review and Practice
1	1	F15
2	1	F15
3	2	F05
4	1	F15
5	2	F15

RtI Use the student scores on the Lesson Quiz to prescribe differentiated assignments.

If students take the Lesson Quiz online, it will be automatically scored and appropriate differentiated practice will be assigned based on student performance.

Intervention	Points	Activities
I Intervention	0-3 points	<ul style="list-style-type: none"> • Reteach to Build Understanding • Mathematical Literacy and Vocabulary • Lesson Virtual Nerd videos
O On-Level	4 points	• Enrichment
A Advanced	5 points	• Enrichment

SavvasRealize.com

Lesson Quiz is available at [SavvasRealize.com](https://www.savvasrealize.com).

enVision Algebra 1
SavvasRealize.com

8-1 Lesson Quiz

Key Features of a Quadratic Function

1. Adam graphs $f(x) = x^2$ and $g(x) = 3x^2$. Which of the following is NOT the same for the graphs of functions f and g ?

Ⓐ location of the vertex
Ⓑ axis of symmetry
Ⓒ y -value when $x = 5$
Ⓓ direction parabola opens

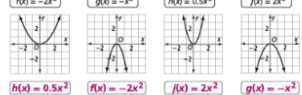
2. Match each graph with its function.

$f(x) = -2x^2$

$g(x) = -x^2$

$h(x) = 0.5x^2$

$f(x) = 2x^2$



$h(x) = 0.5x^2$

$f(x) = -2x^2$

$f(x) = 2x^2$

$g(x) = -x^2$

3. For which function is the average rate of change over the interval $1 < x < 5$ greater than the average rate of change over the same interval for the function $g(x) = 1.8x^2$?

Ⓐ $f(x) = x^2$ Ⓑ $g(x) = 1.2x^2$ Ⓒ $h(x) = 1.5x^2$ Ⓓ $k(x) = 2x^2$

4. Over what interval is the function shown in the table decreasing?

x	f(x) = 3x ²	h(x)
-2	12	(-1, 12)
-1	3	(-1, 3)
0	0	(0, 0)
1	3	(1, 3)
2	12	(2, 12)

Ⓐ $x > -2$
Ⓑ $x < 0$
Ⓒ $x > 0$
Ⓓ $x < 2$

5. Cindy's square garden has a side length of x ft. She will plant 5 tulip bulbs per square foot. Write a function g to model the number of bulbs she will plant. How many bulbs will she plant if the garden has a side length of 8 feet?

$g(x) = \underline{5}x^2$; $\underline{320}$ bulbs

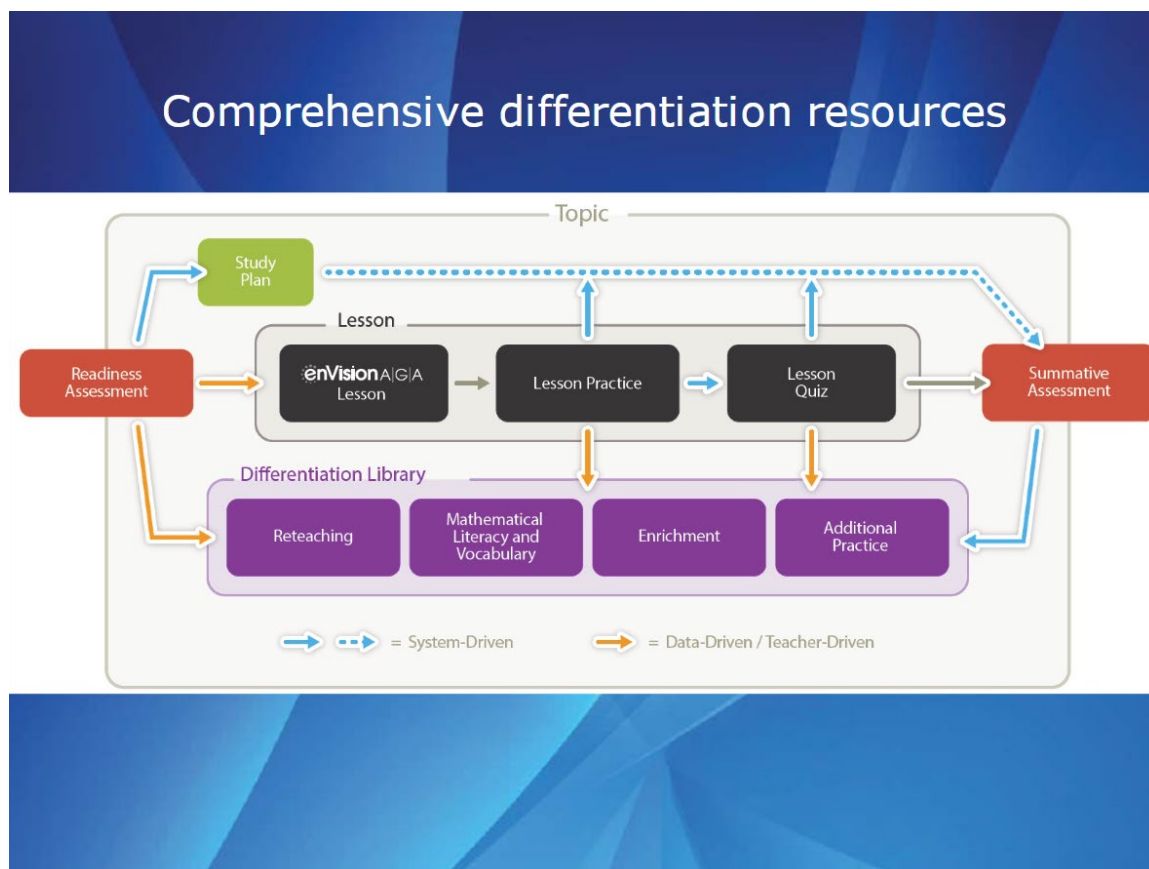
enVision® Algebra 1 • Assessment Sourcebook

Online Lesson Quiz

- Auto-scored
- Auto-assigned differentiation

Finally, in Step 4: Assess & Differentiate, you have the opportunity to check for understanding and provide differentiation. The Lesson Quiz, available in print and online, can be used to assign differentiated interventions. The online version is auto-scored, providing auto-assigned intervention or enrichment activities for students. You can also use the Item Analysis and RtI information to help you prescribe differentiated assignments for your students.

Differentiation Opportunities

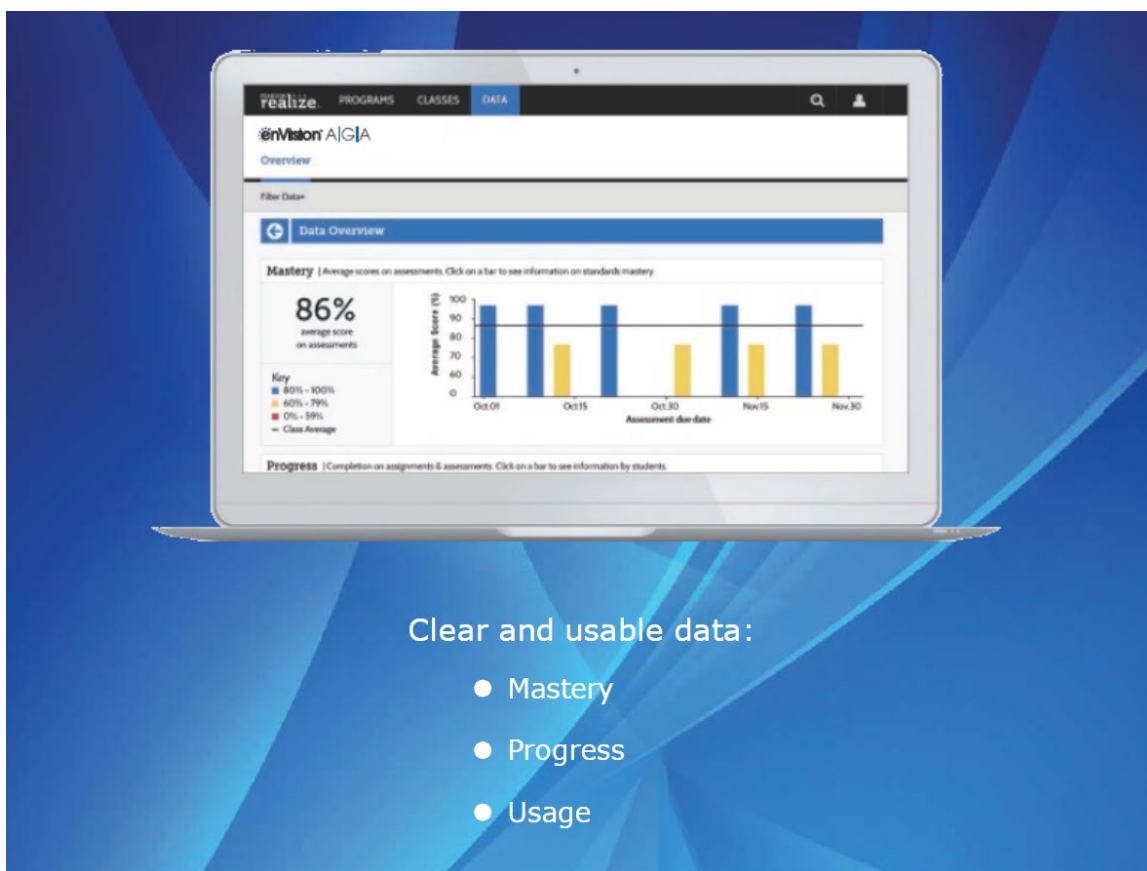


In addition to the differentiation resources in Step 4 of the lesson structure, comprehensive differentiated instruction and intervention resources are available for you to provide support for all learners. The resources include system- and teacher-driven opportunities to personalize learning for your students.

The Topic Readiness Assessment determines your students' readiness for the topic content and prescribes interventions as needed. You can administer this assessment online or in print. The online assessment is auto-scored, and a Personalized Study Plan is generated based on your students' scores. Each student receives a study plan tailored to his or her specific needs.

You can also prescribe specific interventions or enrichment via the Differentiation Library. This library of print and digital resources includes Reteach to Build Understanding worksheets, Mathematical Literacy and Vocabulary activities, enrichment activities, and additional practice. The online resources are powered by MathXL for School.

Assessment and Progress Monitoring



In addition to the Lesson Quizzes, the program has a variety of diagnostic, formative, and summative assessments embedded throughout the topics to help you monitor your students' progress.

All of the assessments are available in both print and digital formats. In addition, most of the digital assessments are auto-scored in Savvas Realize.

The assessment items use next-generation formats to help prepare students for high-stakes tests.

Auto-generated assessment reports on Savvas Realize provide clear and usable data. These reports show mastery, progress, and usage data to help you monitor students' progress and inform instruction.

Closing

enVisionTM A|G|A
Algebra 1 Geometry Algebra 2

Thank you!

- Program components
- Math content and practice standards
- Planning
- Differentiation
- Assessment

For additional enVision A|G|A tutorials, visit [MySavvasTraining.com](https://www.MySavvasTraining.com).

my **SAVVAS** Training

Thank you for watching the enVision A|G|A Program Overview tutorial.

In this tutorial, we learned about the print and digital components of the program. We saw how instruction and support in the program help students develop deep understanding of the math content and practice standards. We also reviewed planning, differentiation, and assessment resources.