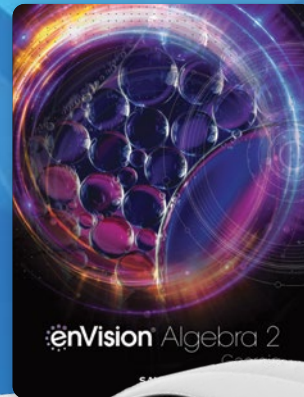
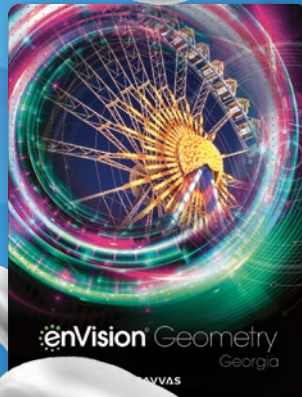
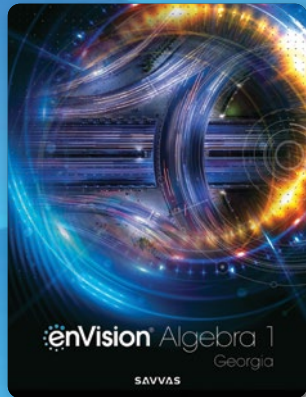


# SAVVAS

## Program Overview

Algebra 1, Geometry,  
& Algebra 2



Kids See the Math. Teachers See Results.

**enVision**<sup>®</sup> A | G | A  
Georgia

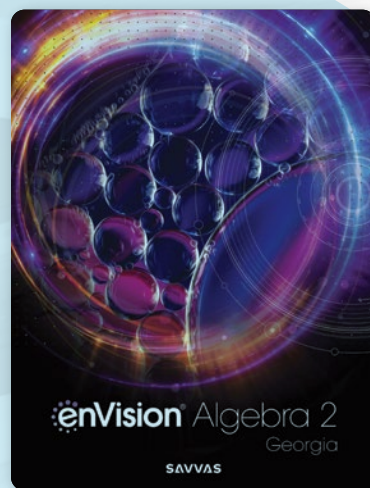
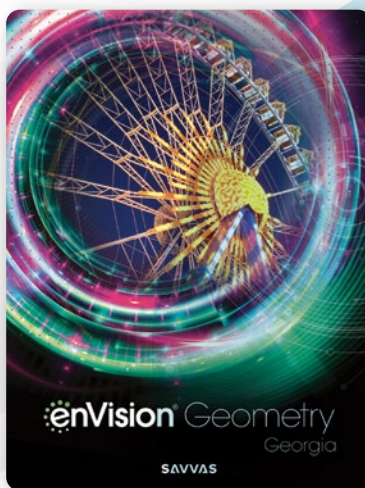
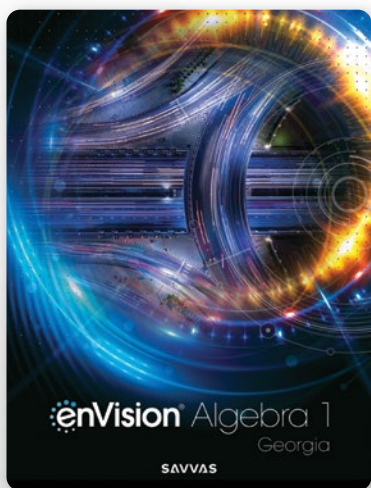
# enVision<sup>®</sup> A|G|A Georgia

Developed just for you, the new *enVision<sup>®</sup> A|G|A Georgia*

© 2024 helps you teach with confidence and engage your students.

## Kids See the Math. Teachers See Results.

Made for Blended, Print, or Digital Delivery



1

### **Student Centered**

ALL students are invited to engage in meaningful mathematics.

2

### **Intentionally Designed**

The pedagogical approach and flexible resources necessary to support in-person and digital learning.

3

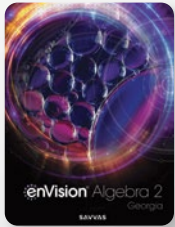
### **Informed Instruction**

Identify, adapt, and share with built-in program teacher support.



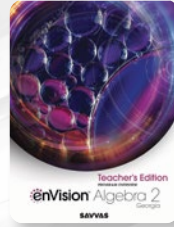
However you want to teach, *enVision® A/G/A Georgia* has you covered. The program is designed to grow with you and can be taught completely digitally, in print, or anywhere in between.

## Georgia Print and Online Resources!



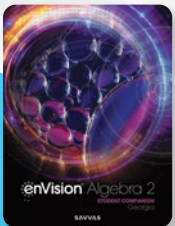
### Georgia Student Edition

Includes all instructional content. Available digitally with the Student Companion at point of use through the Realize Reader™. Available in Spanish for Algebra 1.



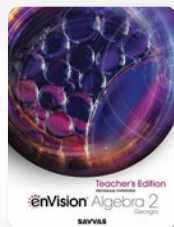
### Georgia Teacher's Edition Program Overview

It's a user guide and professional learning resource in one! Explore pacing, lessons, differentiated instruction, components, and program implementation guidance.



### Georgia Student Companion

The two-color consumable student worktext offers exercises, activities, and practice and problem solving that can be used by students for in-class note-taking or work at home. Available in Spanish for Algebra 1.



### Teacher's Edition

Topics and lessons include all support for teaching the program in print or digitally.

## Georgia Online Resources

**Georgia Teacher Resource Masters** are editable and will support vocabulary, remediation, additional practice, enrichment, graphing calculator activities, assessments, and more!

**Robust suite of digital math tools powered by Desmos™ Calculator** include a graphing calculator, scientific calculator, and geometry tools available online and offline.

**Ready-to-go, easily customizable auto-scored MathXL® for School from Pearson assignments** provide for daily practice, mixed review, remediation, additional practice, and enrichment.

**Classroom Videos** show a classroom in action. Interviews with the teacher cover planning and reflection.

**Skills Review & Practice** two-page skills-based scaffolded instruction can be used as intervention, practice, and/or review of critical prerequisite concepts and skills. Over 300 available!

**Interactive digital lessons** can be easily customized and easily projected.

**Savvy™ Adaptive Practice** automatically adjusts to student performance and intervenes with instructional support as needed.

**Technology-enhanced items** throughout the program prepare for the EOC, ACT® and SAT®.

**Ready-made, auto-graded assessments** provide auto-assigned remediation.

**Wealth of reporting options** include Mastery, Progress, and Usage.

**Additional Examples** are available for students in need of more instruction.

**Enrichment Examples** enhance student understanding of lesson concepts and applications in Algebra 2.

**Mathematical Modeling in 3 Acts lesson videos** accompany Mathematical Modeling in 3 Acts lessons.

**enVision® STEM Projects** include videos and blackline masters.

**Answers and Solutions** software application provides answers and solutions to textbook problems.

**ExamView®** test generator software includes test banks with thousands of additional questions.

**Editable Lesson Plans** are available for every lesson.

**Author Professional Learning videos** offer practical tips on implementing the program in a high school math classroom.

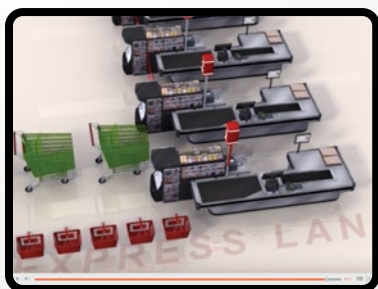
# See What They Can Do

Mathematical thinking and reasoning is an integral part of developing conceptual understanding. Mathematical Modeling in 3 Acts builds students' confidence to think mathematically and solve problems on their own.

## Mathematical Modeling in 3 Acts

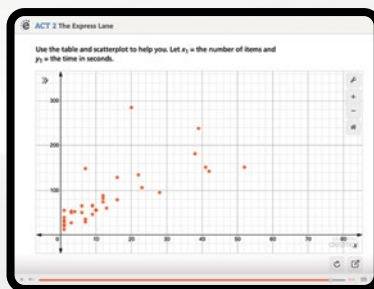
Students are encouraged to be problem posers and problem solvers. Engaging videos are available on SavvasRealize.com.

### ACT 1: THE HOOK



*A video or photo hooks students with the task and provokes questions.*

### ACT 2: THE MODEL



*Students develop mathematical models to arrive at a solution that makes sense to them.*

### ACT 3: THE RESOLUTION



*Visuals help students explain differences between their own conjectures and a possible solution.*

**MATHEMATICAL MODELING IN 3 ACTS**

**The Express Lane**

Some supermarkets have self-checkout lanes. Customers scan their items themselves and then pay with either cash or credit when they have finished scanning all of the items. Some customers think these lanes are faster than the checkout lanes with cashiers, but others don't like having to bag all of their purchases themselves.

What's your strategy for picking a checkout lane at the grocery store? Think about this during the Mathematical Modeling in 3 Acts lesson.

**MATHEMATICAL MODELING IN 3 ACTS**

**The Express Lane**

Some supermarkets have self-checkout lanes. Customers scan their items themselves and then pay with either cash or credit when they have finished scanning all of the items. Some customers think these lanes are faster than the checkout lanes with cashiers, but others don't like having to bag all of their purchases themselves.

What's your strategy for picking a checkout lane at the grocery store? Think about this during the Mathematical Modeling in 3 Acts lesson.

**ACT 1 - Identify the Problem**

1. What is the first question that comes to mind after watching the video?
2. Write down the main question you will answer about what you saw in the video.
3. Make an initial conjecture that answers this main question.
4. Explain how you arrived at your conjecture.
5. What information will be useful to know to answer the main question? How can you get it? How will you use that information?

## Focus on Mathematical Modeling

- **Mathematical Modeling in 3 Acts Preview** poses mathematical questions and generates interest.
- **Mathematical Modeling in 3 Acts Student Pages** organize students' thinking to actively develop a model.

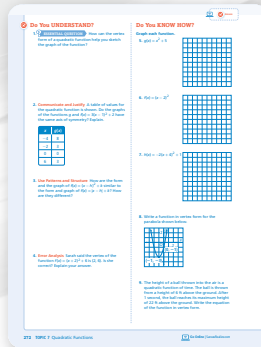
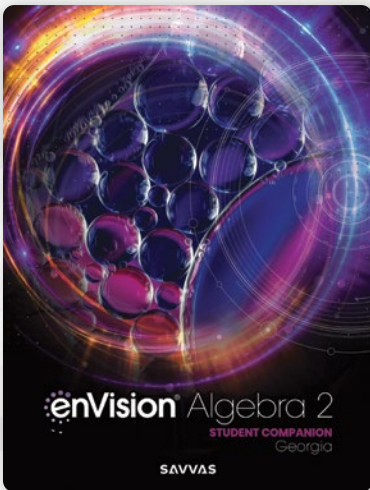


Launch Mathematical Modeling in 3 Acts videos from the student page with embedded QR codes.

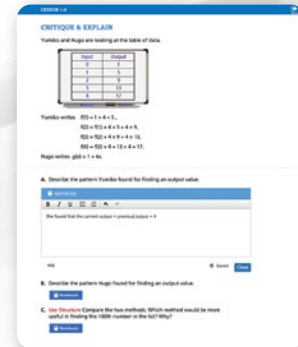
# Prepare Students for Success

Flexible student learning materials ensure that no matter the delivery, *enVision® A/G/A Georgia* will meet each student's needs. Students will build success and college preparedness with engaging and meaningful math.

## Georgia Student Companion



A write-in Student Companion actively engages students during class and at home.



The Realize Reader™ Interactive Student Edition includes dynamic instructional content available for offline or online use.

## Encourage Personal Connections

Foster an environment to promote learning and growing together with the kind of meaningful topics that activate today's students.



**enVision® STEM Projects** Encourage all students to apply mathematics to real-world contexts and make cross-discipline connections. The projects fuel discussions, group work, and inclusive STEM practices for all learners.

**Varied Contexts** Opportunities to reflect students' lives and experiences are embedded throughout problem-based learning, examples, and exercises. Students encounter problems involving real-world scenarios as they are invited to share their own unique experiences.

### Cultivate a Community of Growth Mindset Learners

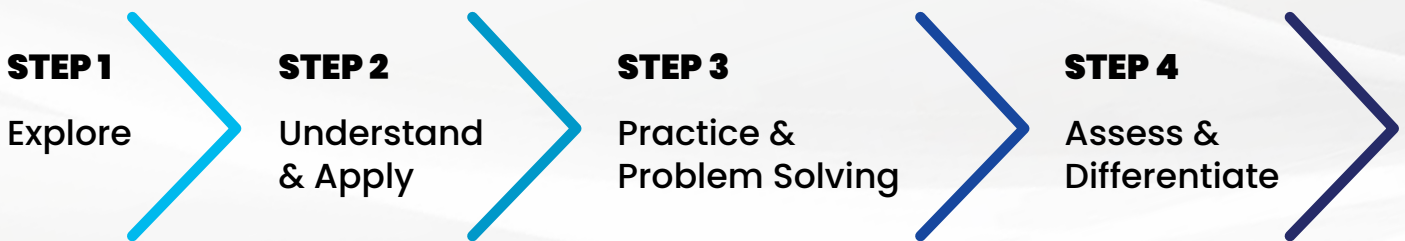
Engaging prompts in the Teacher's Edition support students learning together and having a growth mindset.



# I Can See Clearly Now!

Starting on a firm foundation of conceptual understanding, students can connect and apply math ideas in amazing ways.

A simple lesson design provides a clear, intentional pathway.



## STEP 1: EXPLORE

Lesson-opening explorations foster the development of conceptual understanding through a problem-solving experience.

### Explore & Reason

Students explore a mathematical concept and use reasoning to draw conclusions.

### Model & Discuss

Students develop proficiency with the full modeling cycle by focusing deeply on aspects of the modeling cycle.

### Critique & Explain

Students are required to construct mathematical arguments. They may also be asked to evaluate examples of mathematical reasoning and correct the reasoning if necessary.

A catering company has been asked to design meal boxes for entrees and side dishes, like the one shown at the right. The sections for the side dishes are half the length and width of the entree sections. The sections for the entrees must be square.

A. Drag the squares at the right to design meal boxes that fulfill these requirements:

side dishes      entrees

a. Equal numbers of sections for entrees and side dishes.

b. More sections for entrees than for side dishes.

c. More sections for side dishes than for entrees.

**7-4**  
Factoring Polynomials

I CAN... factor a polynomial.

**MODEL & DISCUSS**

A catering company has been asked to design bento boxes for entrees and side dishes.

The sections for the side dishes are half the length and width of the entree sections.

The sections for the entrees must be square.

A. Design a bento box that meets each of these requirements:

- Equal numbers of sections for entrees and side dishes
- More sections for entrees than for side dishes
- More sections for side dishes than for entrees

B. **Use Structure** For each bento box from Part A, write an algebraic expression to model the area of the bento boxes.



## STEP 2: UNDERSTAND & APPLY

*enVision* A/G/A Georgia helps you teach mathematics through problem solving. Multiple examples support a balanced pedagogy: Conceptual Understanding, Proof, Skill, and Application.



Embedded digital interactives powered by the Desmos™ Calculator help students make graphical, numerical, and algebraic connections.

The concept summary provides multiple representations to consolidate student understanding.

## Increasing Coherence Using Plus(+) Standards

All Plus(+) Standards are addressed in *enVision* A/G/A. These advanced concepts are embedded in lessons throughout the program where appropriate.

**COHERENCE**

Previously in this course, students:

- Create, graph, and transformed polynomial function.
- Identified the key features of the graph of a polynomial function.

In this lesson, students:

- Graph and transform the reciprocal function.
- Identify how the values of  $a$ ,  $h$ , and  $k$  affect the key features of a transformation of the reciprocal function.

Later in this topic, students will:

- Extend their understanding of the reciprocal function and its transformations to create, graph, and transform rational functions.

### Conceptual Understanding

examples are designed to help students focus deeply on mathematical understanding of lesson content.

**Proof** examples require students to build, justify, and analyze formal and informal proofs in *enVision Geometry*.

**Skill** examples help students build fluency with the lesson content.

**Application** examples show students how the lesson's mathematical content can be applied to solve real-world problems.

# Practice with a Purpose

Personalized and adaptive learning encourages students to build their mathematical understanding and demonstrate proficiency.

## Step 3: Practice & Problem Solving

enVision® A/G/A features a uniquely balanced exercise set. Meet the rigor of standards with assessment practice in every lesson.

### Understand

Develops conceptual understanding of lesson content by having students explain their reasoning, construct arguments, and analyze errors.

### Apply

Requires students to apply math to solve real-world problems.

### PRACTICE & PROBLEM SOLVING

#### UNDERSTAND

- Generalize** How does changing the sign of the constant  $a$  from positive to negative affect the domain and range of  $f(x) = a|x|$ ?
- Communicate and Justify** Compare and contrast the graph of  $f(x) = |x|$  and the graph of  $f(x) = x$ . How are they alike? How do they differ?
- Error Analysis** Describe and correct the error a student made in determining the relationship between the domain and range of  $f(x) = 10|x|$  and  $f(x) = |x|$ .

The domain of  $f(x) = 10|x|$  is the same as the domain of  $f(x) = |x|$ .  
The range of  $f(x) = 10|x|$  is 10 times the range of  $f(x) = |x|$ .

- Higher Order Thinking** For which values of  $a$  would the graph of  $f(x) = a|x|$  form a right

#### PRACTICE

Tell whether each point is on the graph of  $f(x) = |x|$ . If it is, give the coordinates of another point with the same  $y$  value. SEE EXAMPLE 1

- (11, 11)
- (-2.3, -2.3)
- (0, 1)
- (15, -15)

Describe the key features of each absolute value function. Identify the vertex, axis of symmetry, and the domain and range. SEE EXAMPLES 1 AND 2

$x$	$g(x)$	$x$	$h(x)$
-2	-6	0	1
-1	-3	1	0
0	0	2	1
1	-3	3	2
2	-6	4	3

Graph each function. What is the domain and range of each function? Describe the intervals over which each function is positive and over which it is negative. SEE EXAMPLE 2

- $g(x) = -\frac{1}{2}|x|$
- $h(x) = 3.5|x|$



### Practice

Builds procedural fluency with lesson content.

### PRACTICE & PROBLEM SOLVING

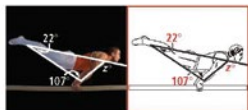
#### APPLY

- Model With Mathematics** Pilar is making a replacement set of sails for a sailboat.

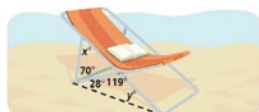


- What equation can Pilar use that relates the values of  $w$  and  $x$ ?
- What equation can Pilar use that relates the values of  $y$  and  $z$ ?

- Reason** An artist painting from a photo begins with a geometric sketch to match angle measures. What is the value of  $z$ ?



- Look for Relationships** Use the drawing of a beach chair.



- What is the value of  $x$ ?
- What is the value of  $z$ ?

### ASSESSMENT PRACTICE

- What are the values of  $x$ ,  $y$ , and  $z$ ?



- SAT/ACT** What is the value of  $x$ ?



- 98
- 106
- 102
- 176

- Performance Task** A tablet case is supported at the back. The measure of the slant angle of the tablet,  $m\angle 1$ , can be changed, but  $m\angle 2 = m\angle 3$  for any slant that is chosen.



**Part A** A user adjusts the case so that  $m\angle 2 = 42$ . What are the measures of the other angles?

**Part B** Is it possible to slant the tablet case so that  $m\angle 1 = m\angle 5$ ? If so, explain how. If not, explain why it is not possible.

**Part C** A user wants to slant the tablet case so that  $m\angle 1 = 2(m\angle 5)$ . What should the measure

arity walk. The graph is from the water. How many miles did answer. SEE EXAMPLE 3



rate of change over



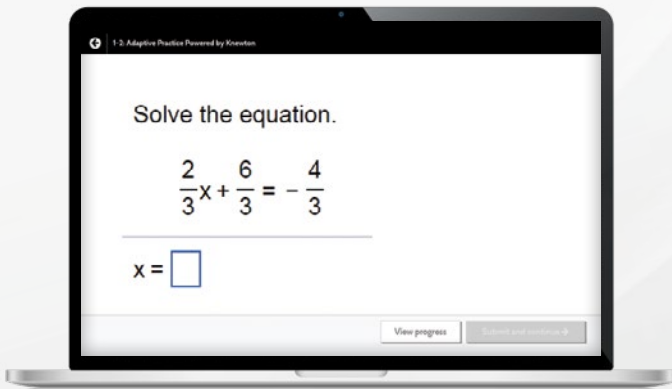
$7 \leq t \leq 10$

### Assessment Practice

Every lesson includes:

- Assessment Practice
- ACT®/SAT® Practice
- Performance Task





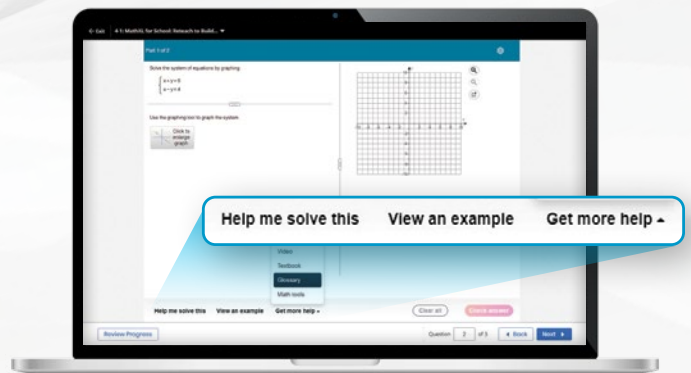
## Robust Practice Powered by MathXL® for School from Pearson

Embedded MathXL® for School in Savvas Realize™ provides a seamless experience for students and teachers with instant feedback, powerful interactive learning aids, and auto-graded assignments on ONE platform.

- Daily homework and practice
- Mixed review
- Differentiated Learning for remediation, additional practice, and enrichment

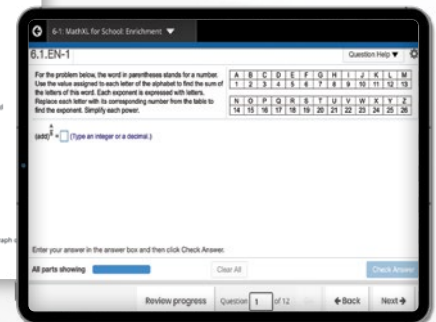
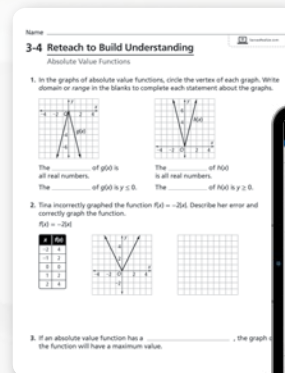
### Savvy™ Adaptive Practice

- Personalized practice in real time focuses on key concepts for each lesson.
- A brand new, transparent engine informs students when and why they are receiving specific practice items or instructional support resources.
- Students dial back into prerequisite concepts or accelerate forward as they practice.



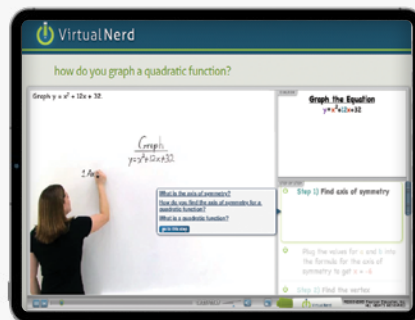
### Step 4: Assess & Differentiate

Ensure content mastery through multiple daily formative assessments. The differentiation library has print and digital resources to meet the needs of a wide range of learners.



### Virtual Nerd® Tutorial Videos

- Tutorial videos are provided for every lesson in the program.
- Three different viewing windows let students review math concepts in the visual way that best helps them learn.
- Students can easily drill down to another video to review prerequisite content.
- Available with Spanish closed captioning!



Launch Virtual Nerd videos from the student page with embedded QR codes.

# Focus on Each Learner



Differentiation options for each lesson and every standard encourage and challenge students of all learning levels.

*enVision® A/G/A Georgia* provides both a fully adaptive system for Response to Intervention and a library of resources to support a wide range of students.



**Give all students what they need for success.**

**Each lesson includes:**



**Reteach to Build Understanding**

Guided reteaching offers a fresh approach. Stepped-out, scaffolded support solidifies understanding.  


**Enrichment**

Higher-order thinking activities help students develop deeper understandings.  

**Additional Practice**


More practice for each lesson.  


**Mathematical Literacy & Vocabulary**

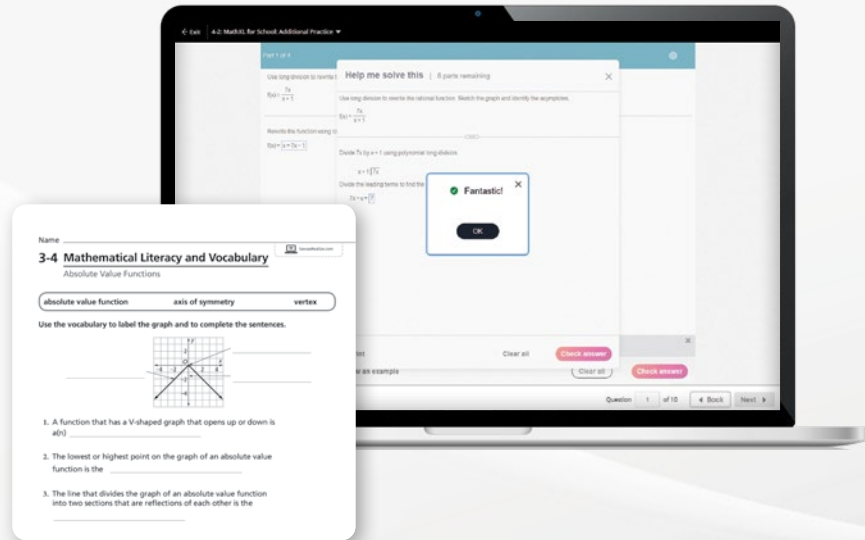
Scaffolded support helps students build vocabulary. 

**Virtual Nerd Videos**

Tutorials are available for every lesson.

 Available as an editable worksheet.

 Available as a MathXL® for School digital assignment.



Name \_\_\_\_\_ A25

### Solving Systems by Graphing

**EXAMPLE** Solve by graphing.  $y = 3x - 9$   
 $x + y = -1$

**STEP 1** Graph each equation on the same coordinate plane.

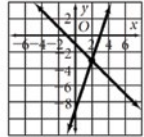
You can use what you know about slope-intercept form.

$y = 3x - 9$      $m =$      $b =$

You can also make a table of values.

$x + y = -1$

x	0	-1
y	-1	0



**STEP 2** Determine the point of intersection of the two lines.

The point of intersection lies on both lines, so it is a solution of both equations.

The lines intersect at the point (  ,  ).

**Skills Review & Practice**

Scaffolded instruction can be used for intervention, practice, and/or review of critical prerequisite concepts and skills.

**Additional Examples**

- Additional explicit instruction assists teachers in meeting their classroom needs.
- The “Try Another” feature, which algorithmically generates new problem statements, allows for endless classroom instruction and practice opportunities.

**Enrichment Examples**

Extend the learning to enhance Algebra 2 students’ understanding and application of lesson concepts.




**A Complete Library of Resources for English Language Learner Support**

**English Language Learner Support**

A complete library of resources supports English language learners:

- ELL instruction aligned to WIDA specifications in every lesson
- Spanish closed captioning for video tutorials
- Spanish text and audio for Algebra I problem statements
- English/Spanish Glossary
- Multilingual Handbook

**Visual Glossary**

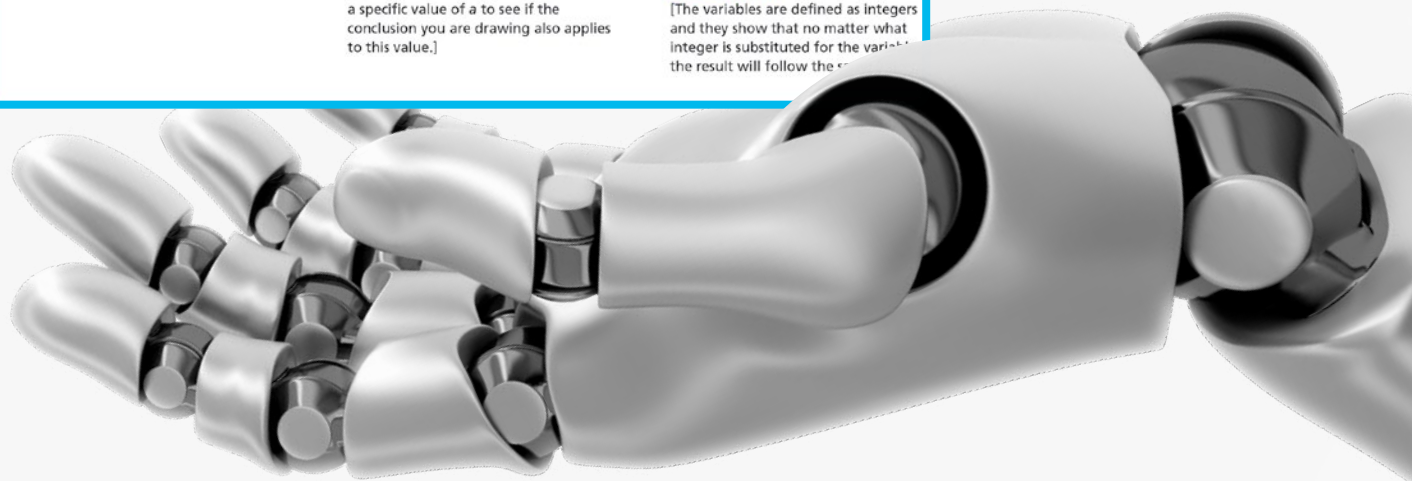
English	Spanish
<p><b>Acute angle</b> An acute angle is an angle whose measure is between <math>0^\circ</math> and <math>90^\circ</math>.</p> <p>Example </p>	<p><b>Ángulo agudo</b> Un ángulo agudo es un ángulo que mide entre <math>0</math> y <math>90</math> grados.</p>
<p><b>Acute triangle</b> An acute triangle has three acute angles.</p> <p>Example </p>	<p><b>Triángulo acutángulo</b> Un triángulo acutángulo tiene los tres ángulos agudos.</p>
<p><b>Adjacent angles</b> Adjacent angles are two coplanar angles that have a common side and a common vertex but no common interior points.</p> <p>Example </p>	<p><b>Ángulos adyacentes</b> Los ángulos adyacentes son dos ángulos coplanarios que tienen un lado común y el mismo vértice, pero no tienen puntos interiores comunes.</p>

**Solución de un sistema de ecuaciones lineales**

Todo par ordenado de un sistema que hace verdaderas todas las ecuaciones de ese sistema.

**ELL English Language Learners** (Use with EXAMPLE 4)

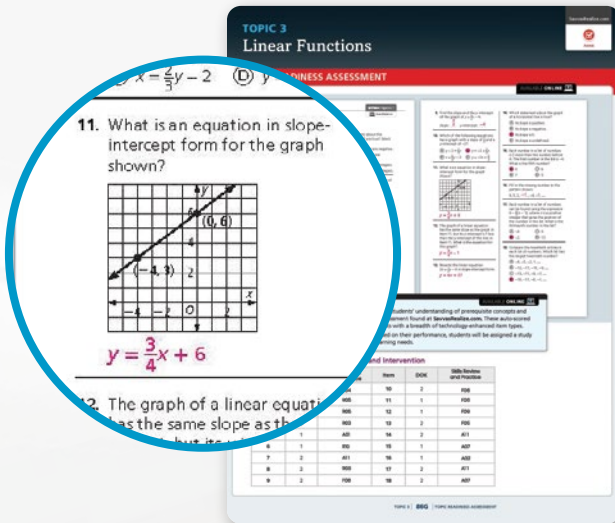
<p><b>LISTENING BEGINNING</b> Read Part A of the example aloud to students. Repeat the last sentence.</p> <p><b>Q:</b> What do you think of when you hear the word <i>assume</i>? [To think or state that something is true before you have evidence of it.]</p> <p><b>Q:</b> What do you think of when you hear the word <i>contradict</i>? [To go against something.]</p>	<p><b>SPEAKING DEVELOPING</b> Make sure students understand the everyday use of words in math. Have students talk with a partner about the word cases.</p> <p><b>Q:</b> What is a case? [Answers may vary. Sample: something that you carry or store things in; different situations]</p> <p><b>Q:</b> What does it mean to <i>address the case where <math>a = 0</math></i> in this example? [To find out what happens with a specific value of <math>a</math> to see if the conclusion you are drawing also applies to this value.]</p>	<p><b>WRITING EXPANDING</b> Talk about the difference between specific cases and general cases. Have students answer the following questions in their math journal.</p> <p><b>Q:</b> Why can't you make a conclusion after testing a few specific cases? [There could be a case you do not think of that disproves your conclusion.]</p> <p><b>Q:</b> How does the use of variables show the general case and help to establish solid conclusion? [The variables are defined as integers and they show that no matter what integer is substituted for the variable, the result will follow the...]</p>
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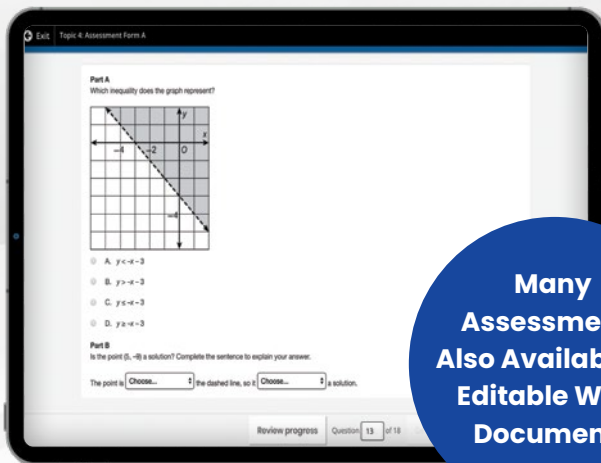
# Assess to Differentiate

The *enVision*® A/G/A Georgia Assessment Suite offers options to move students toward content mastery while driving instructional differentiation.



## Diagnostic Assessment

- Course Readiness Assessment (Print/Online)
- Topic Readiness Assessments (Print/Online)



Many  
Assessments  
Also Available as  
Editable Word  
Documents

## Summative Assessment

- Topic Assessments (Print/Online)
- Topic Performance Assessments (Print/Online)
- ExamView® Test Bank Online
- Cumulative Assessments (Print/Online)
- End-of-Course Practice Tests (Print/Online)
- Build Your Own Custom Assessment (Online)

## Do You KNOW HOW?

Find the domain and range of each function.

5.  $g(x) = 5|x|$                       6.  $h(x) = -2|x|$

Graph each function.

7.  $g(x) = 1.5|x|$                       8.  $h(x) = -0.8|x|$

9. What is the rate of change over the interval  $15 \leq x \leq 18$ ?

## Do You UNDERSTAND?

1. **ESSENTIAL QUESTION** What are the key features of the graph of the absolute value function?
2. **Communicate and Justify** How do the domain and range of  $g(x) = a|x|$  compare to the domain and range of  $f(x) = |x|$  when  $0 < a < 1$ ? Explain.
3. **Analyze and Persevere** The graph of the

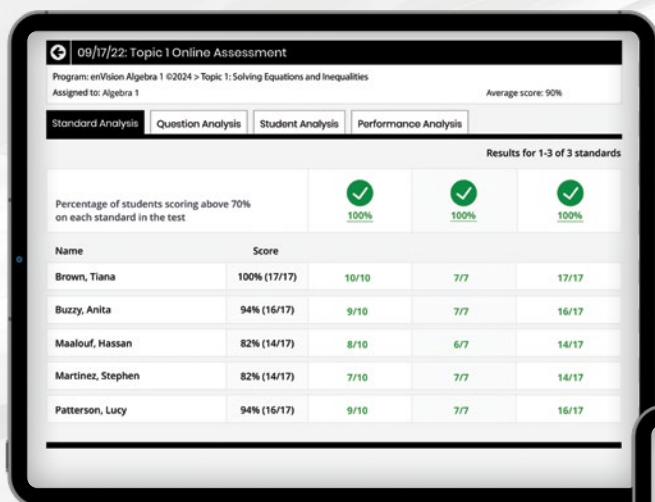
## Formative Assessment

- Common Errors (Print/Online)
- Thinking and Reasoning Questions (Print/Online)
- Try Its! (Print/Online)
- Do You Understand? (Print/Online)
- Do You Know How? (Print/Online)
- Lesson Quiz (Print/Online)

# Gain Meaningful Insight

A variety of auto-generated reports show standards mastery on assessments, overall progress, and usage data. It's all on SavvasRealize.com.

Data reports help drive differentiation.



## Data Overview

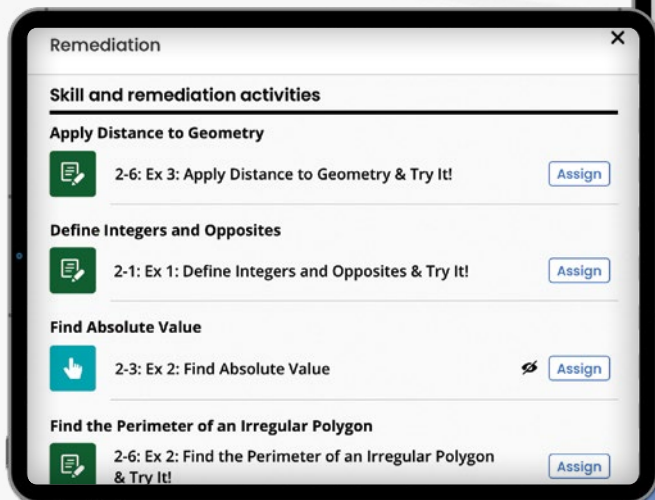
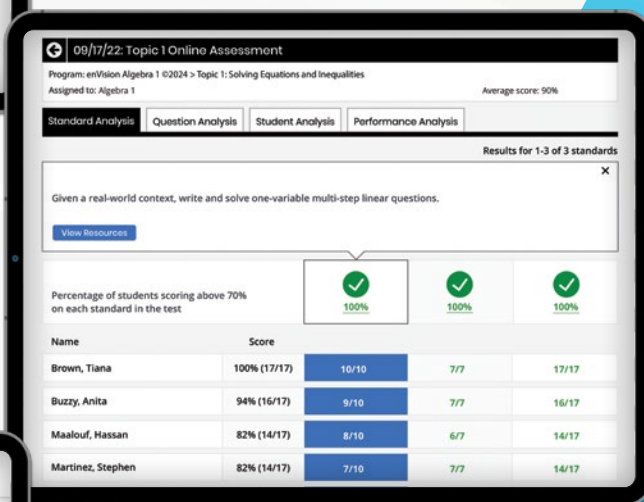
Reports including scores, progress, and usage are provided in an easy-to-view format.

## Standard Analysis

In-depth information is provided about standards coverage and mastery for an assignment.

## Standards-Aligned Resources

Individual student's mastery or classwide mastery for each standard are linked to resources that can be immediately assigned.



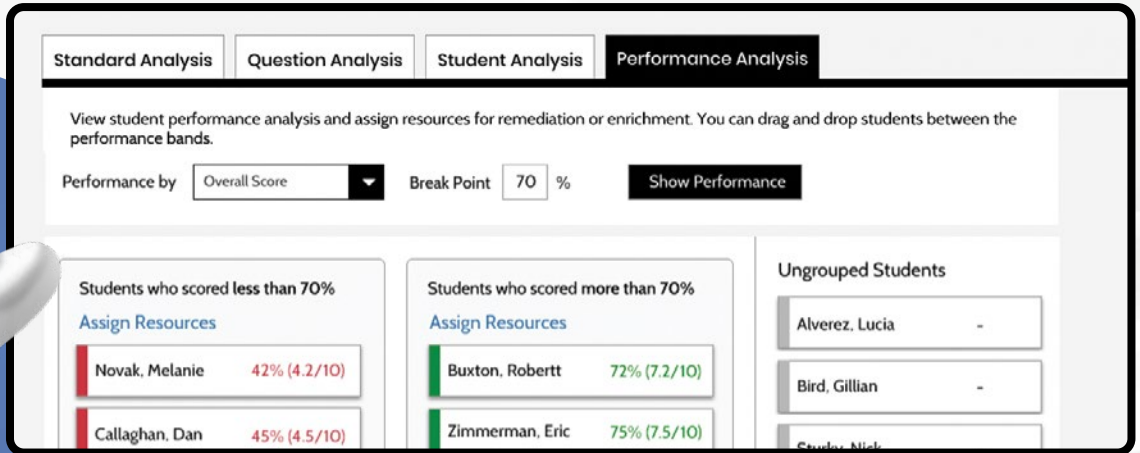
## Auto-Assign Differentiation

Differentiation is based on results of the online Lesson Quiz, Topic Readiness Assessment, Topic Assessment, and Cumulative/Benchmark Assessment.

# INTENTIONALLY DESIGNED

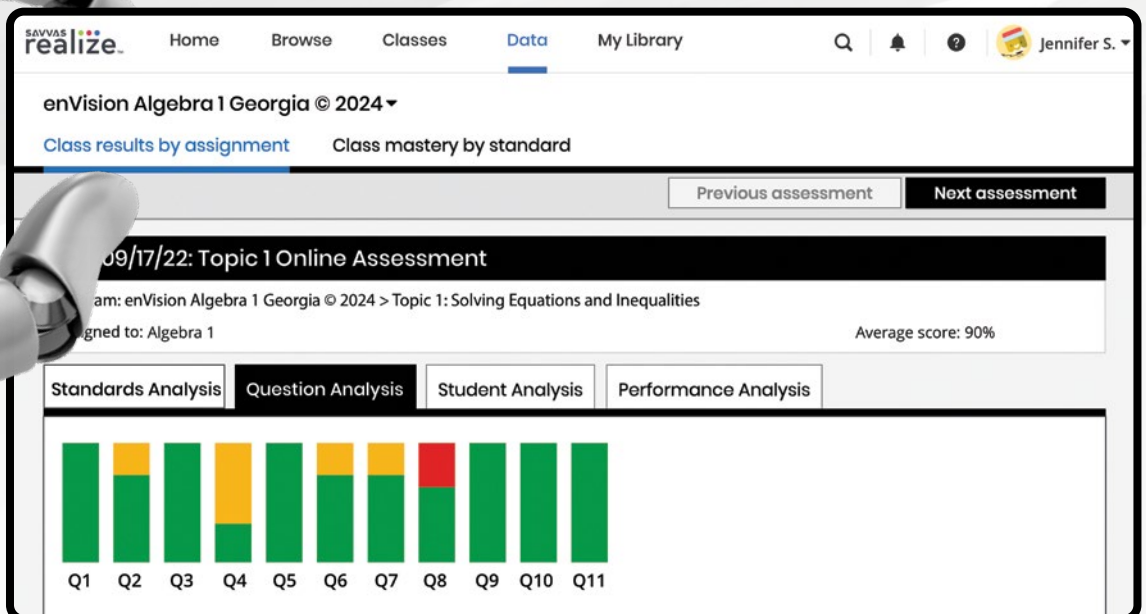
## Real-Time Data Reports

Address individual learning needs quickly with real-time data reports. **Savvy™ Adaptive Practice** drives daily instructional decisions with a student summary including skills identified as proficient, those needing review, prerequisite skills that were revisited, and those that were not practiced.



## Performance Analysis

Easily group students based on their performance on an assessment and assign targeted resources.



## Question Analysis

View individual test items across the class to gauge difficulty and make informed decisions.



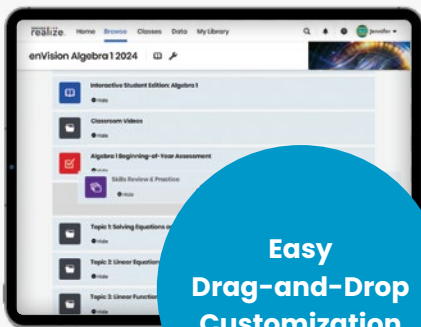
# See the Big Picture

Gain a new perspective on your teaching with embedded strategies, methods, and a wide range of professional learning opportunities.

Every math teacher is a master teacher.

**Make every lesson perfect for you.** Access all digital content, assessments, and management tools at SavvasRealize.com.

- Search by keyword or standard
- Add Open Educational Resources
- Create lesson playlists
- Customize lessons
- Reorder lessons and Topics
- Align to your district framework
- Assign to Google Classroom™
- Upload your own content
- Use online discussion boards
- Integrate with Canvas® and Schoology®
- Integrate Microsoft® OneDrive®



Easy  
Drag-and-Drop  
Customization

**TOPIC 3**  
**Linear Functions**

**MATH BACKGROUND FOCUS**

Topic 3 focuses on extending students' understanding of linear equations to linear functions. Students learn methods to write, graph, and transform linear functions. They also apply analytic methods to tabular and graphic data sets that have linear relationships.

**Understanding Linear Functions**  
Address and Functions: A relation is an association between sets of ordered pairs; the domain consists of the set of x-values, and the range consists of the set of y-values. Students are able to identify functions and relations when each type is presented on the coordinate line. Students are expected to understand the slope, in Lesson 3.1, students learn to identify functions and their components in a variety of forms, such as graphs, tables, and equations.

**Applications of Linear Functions**  
Address and Sequences: Arithmetic sequences are lists of numbers that follow a function rule. Students know that the common difference between terms in an arithmetic sequence indicates a linear function. In Lesson 3.4, students write recursive and explicit formulas for arithmetic sequences and use these formulas to solve real-world problems.  
Recursive Formula:  $a_n = a_{n-1} + d$   
Explicit Formula:  $a_n = a_1 + (n-1)d$

**Steeper Slope**: Steeper slopes are used to determine whether there is a correlation between two variables, and what that correlation might be. In Lesson 3.5, students learn how to draw a trend line that models the data and use the trend line to solve real-world problems, such as the amount of time it takes to download a given file of various internet speeds. Students learn that the correlation between two variables does not imply that a change in one variable causes a change in the other.

**Writing and Graphing Linear Functions**: Function notation provides a tool for determining the value on the range for each value in the domain. Students learn that in linear function a function where the relationship between the values on the domain and range fall on a straight line. In Lesson 3.2, students write and graph linear functions. Students also use linear functions to solve real-world problems.

**Transforming Linear Functions**: In Lesson 3.3, students learn how writing a common line a function causes the graph of the function to be constant. Students also learn how to transform a function by a constant stretches or compresses the graph of the function.

**Graphing Linear Functions**: In Lesson 3.2, students learn how to graph a linear function on a coordinate plane. They also learn how to write the equation of a line given a point and a slope, or two points.

**Graphing Linear Functions**: In Lesson 3.2, students learn how to graph a linear function on a coordinate plane. They also learn how to write the equation of a line given a point and a slope, or two points.

**Analyze Lines of Fit**: In Lesson 3.4, students learn that residual plots and linear regression can be used to assess whether a line closely models the data and, if so, what the strength of the correlation is. Students also learn how to use the fit line to interpret and extrapolate information from data.

TOPIC 3 | 8EA | Topic Overview

**TOPIC 3**  
**Linear Functions**

**MATH BACKGROUND COHERENCE**

Students learn how when concepts are connected through the curriculum. This coherence is achieved within topics, across topics, across domains, and across grade levels.

**IN THIS TOPIC**

How is content connected within Topic 3?

**MAKING MATHEMATICAL CONNECTIONS**  
**Looking Back**  
How does Topic 3 connect to what students learned earlier?

**GRADE 8**

- **Use Functions to Model Relationships**: In Grade 8, students began to explore linear and nonlinear functions. Students learned about the key features of linear functions, including slope and rate of change. In Topic 3, students will extend this understanding as they determine the domain and range of a linear function, write linear function models, and transform linear functions.

**TOPIC 1**

- **Solving Linear Equations**: Students solved linear equations with variables on both sides. In Topic 3, students extend this skill when using and transforming between recursive and explicit formulas for arithmetic sequences. Additionally, students solve linear equations when writing linear functions.

**TOPIC 2**

- **Graphing Linear Equations**: In Topic 2, students learned how to graph a linear equation in the form  $y = mx + b$  and how to graph coordinate pairs. Students calculated the slope and graphed linear functions in different forms. In Topic 3, students use their skills to graph transformations of linear functions, determine correlations between variables, and analyze trends.

**MAKING MATHEMATICAL CONNECTIONS**  
**Looking Ahead**  
How does Topic 3 connect to what students will learn later?

**ALGEBRA 1**

- **Transformations**: In Topic 3, students will apply what they have learned about transforming linear functions to transforming absolute value functions and piecewise defined functions. In Topic 3, students will learn about transformations of exponential functions.

**ALGEBRA 2**

- **Arithmetic Sequences**: Students will extend their understanding of arithmetic sequences as they solve real-world problems using arithmetic series.
- **Quadratic Functions**: In Topic 3, students will continue to explore regression methods and bring a function to data as they use quadratic functions to model data.

**ALGEBRA 2**

- **Quadratic Functions**: In Topic 3, students will continue to explore regression methods and bring a function to data as they use quadratic functions to model data.

**Statistics**

- **Statistics**: Students will apply what they have learned about analyzing residuals to determine how well a function models data when they examine the effect of weight of error on data distribution.

**Electric Hybrid Cars Sold**

Year (starting in 2000)

Number of Cars Sold

Year (starting in 2000)

Number of Cars Sold

TOPIC 3 | 8EB | Topic Overview

**TOPIC 3**  
**Linear Functions**

**MATH PRACTICES & PROCESSES**

**Math Practices Within Topic 3 Lessons**

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

As students write, graph, and use linear functions to solve problems, look for the following behaviors to assess and identify students who demonstrate proficiency with these math practices.

**Highlighted Math Practices Within Topic 3 Lessons**

Use Appropriate Tools Strategically   <b>MPS</b>	Attend to Precision   <b>MP6</b>
<p><b>Mathematically proficient students:</b></p> <ul style="list-style-type: none"> <li>• Use a scatter plot to understand the direction and strength of a linear relationship.</li> <li>• Make a scatter plot of data that has a break in the x-axis to visualize the trend line over the entire domain.</li> <li>• Combine entering data into a graphing calculator and use linear regression as a method to calculate the line of best fit.</li> <li>• Use mathematical models for reasoning and analyzing information when they create a plan to analyze residuals.</li> </ul>	<p><b>Mathematically proficient students:</b></p> <ul style="list-style-type: none"> <li>• Understand the meanings of the symbols used in function notation and use the advantage of choosing letters that relate to the problem, such as using <math>d</math> for distance or <math>t</math> for time.</li> <li>• Communicate precisely by using definitions and formulas to compare and contrast a recursive and an explicit formula for an arithmetic sequence.</li> <li>• Use precision when entering each element of the domain to one element of the range.</li> <li>• Communicate precisely when relating the quantities used in linear functions to the real-world situation that represents.</li> </ul>

Help students become more proficient with using tools and attending to precision.

If students do not understand how to identify and use appropriate strategies for understanding and solving problems involving linear functions, use these questioning strategies to help them develop their proficiency with using tools and attending to precision as they solve problems throughout the topic.

What mathematical tools could you use to describe whether a function is a function?

Why is using the linear regression function on a graphing calculator to find the equation of the line of best fit preferable to calculating the equation by hand?

Why is a point of residuals helpful when determining whether a linear model is a good fit for a data set?

What mathematical language or definition do you use to explain the relationship between the value of  $k$  and the direction of the line in a linear function?

What symbols or mathematical notations are important when entering the equation by hand?

How can you explain the meaning of the difference in recursive and explicit formulas?

Explain how you might show that your solution is reasonable when using interpretation or extrapolation to answer a question.

TOPIC 3 | 8ED | Topic Overview

**Ideas, Inspiration, and Teaching Methods**  
Math background for every Topic and lesson serves as an easy-to-access math methods course.

**Classroom Videos**  
show a classroom in action. Interviews with the teacher cover planning and reflection.

# INFORMED INSTRUCTION

## Implement Tasks that Promote Reasoning and Problem Solving **2.P.7**

**Q:** How would you describe this design?

[Answers may vary. Sample: The design is an arrangement of seven circles in a pattern like a hexagon.]

**Q:** Does it matter how large you make the circles? Can you match the diagram exactly?

[The problem doesn't say to match exactly, but you could open the compass to exactly the size in the diagram.]

**Professional Learning Videos on SavvasRealize.com** give important perspectives on math concepts and show the program in action.

**MySavvasTraining.com** features many online tutorials and quick-start guides for *enVision® A|G|A*. Available 24/7!

## Research-Based Practices

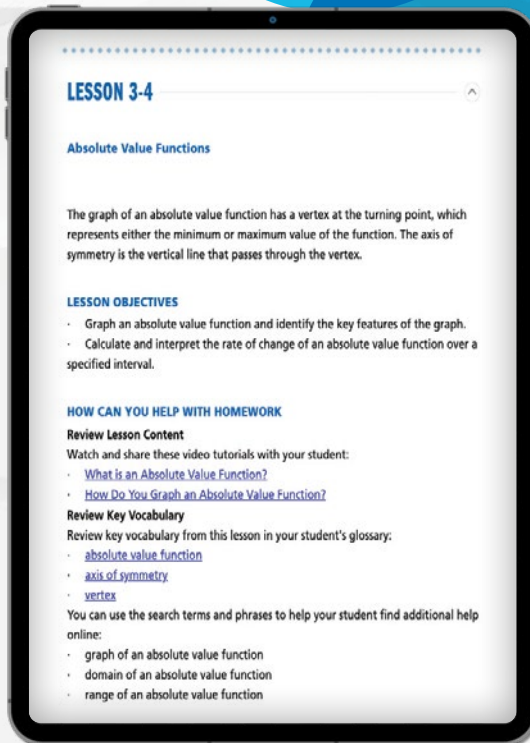
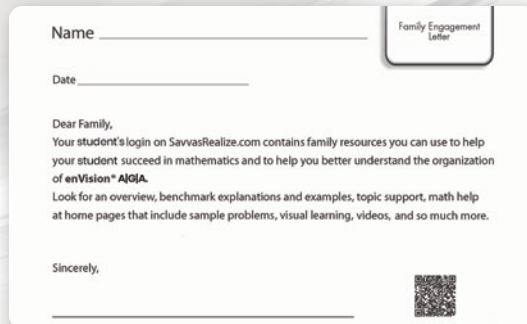
The *enVision A|G|A* Teacher's Edition features embedded professional learning. Effective Teaching Practices (ETP) are based on NCTM's Principles to Action.

# It Takes a Village

Students only grow stronger with an empowered collaborative community to support their learning. Family Engagement materials provide teachers with easy-to-share tools that inform students' support networks.

## Family Engagement Letter

Families are provided with an overview of the Family Engagement resources available on SavvasRealize.com.



## Topic Support

The Topic Overview gives families a preview of upcoming content with visuals to support understanding.

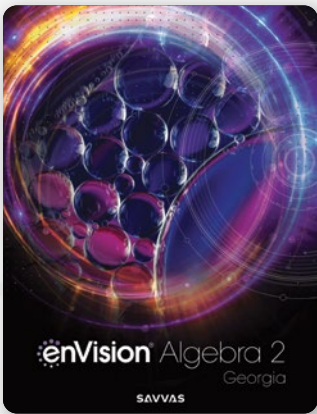
## Lesson-Level Support

Families are provided with video tutorials and vocabulary review that support math skills and content standards.



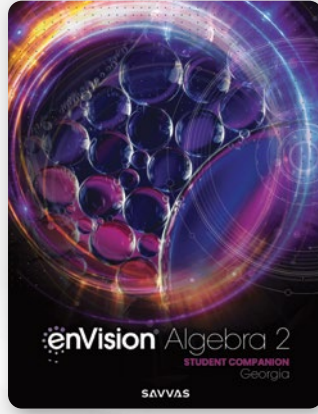
# Comprehensive Resources

Teach using multiple modalities and tiers. All components offer comprehensive support and prepare students for success. You don't have to look anywhere else!



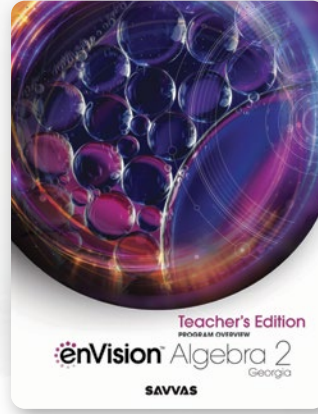
## Georgia Student Edition

Includes all instructional content. Available digitally with the Student Companion at point of use through the Realize Reader™. Available in Spanish for Algebra 1.



## Georgia Student Companion

The two-color, consumable student worktext increases in-class and at-home engagement as students explain their thinking, solve problems, and make it their own.

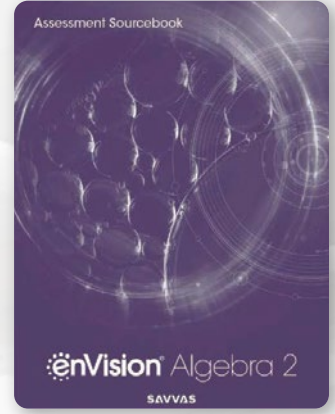


## Georgia Teacher's Edition Program Overview

Provides a program overview, custom Georgia lessons, and tips for teaching the program.

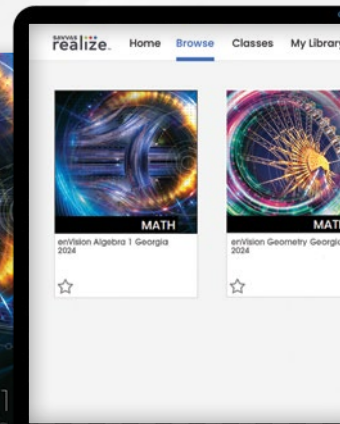
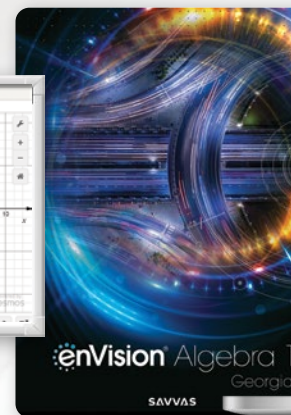
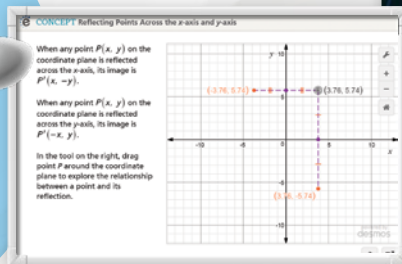
## Teacher's Edition

Topics and lessons include all support for teaching the program in print or digitally.



## Assessment Sourcebook

Includes an Assessment Guide, Readiness Test Masters, Topic Assessment Masters, Topic Performance Task Masters, Lesson Quizzes, Cumulative Assessment Masters, and Progress-Monitoring Assessment Masters.



**Savvas Realize™ Learning Management System** offers a full suite of personalized teaching and learning tools to help students master content skills and standards.

**Robust Math Tools Powered by Desmos™ Calculator** include a graphing calculator, scientific calculator, and geometry tools available online and offline.

**Author Professional Development Videos** provide practical tips on implementing the program in a high school math classroom.

**Classroom Videos** show a classroom in action. Interviews with the teacher cover planning and reflection.

**Skills Review & Practice** Skills-based scaffolded instruction can be used as intervention, practice, and/or review of critical prerequisite concepts and skills.

**Mathematical Modeling in 3 Acts** videos accompany Mathematical Modeling in 3 Acts lessons.

**enVision® STEM Projects** include videos and blackline masters.

**Interactive Digital Lessons** are easily projected to bring concepts to life, available online and offline.

**Additional Examples** help students in need of more instruction.

**Enrichment Examples** extend the learning and enhance student understanding in Algebra 2.

**Family Engagement** Easily-accessible resources provide families with Topic and lesson support, including video tutorials and key vocabulary review.

**Ready-to-Go, Easily Customizable and Auto-Scored MathXL® for School from Pearson Assignments** support daily practice, mixed review, remediation, additional practice, and enrichment.

**Savvy™ Adaptive Practice**

- Personalized practice in real-time, focusing on key concepts in each lesson.
- A brand new, transparent engine, informs students when and why they are receiving specific practice items or instructional support resources.
- Students dial back into prerequisite concepts or accelerate forward as they practice.
- Automatically adjusts to student performance and intervenes with instructional support as needed.

**Virtual Nerd® Tutorial Videos** act as a 24/7 personal tutor with closed captioning in Spanish.

**Editable Teacher Resource Masters** for vocabulary support, remediation, additional practice, enrichment, graphing calculator activities, assessments, and more!

**Ready-Made, Auto-Scored Assessments** provide auto-assigned remediation.

**Technology-Enhanced Items** throughout the program prepare students for standardized testing.

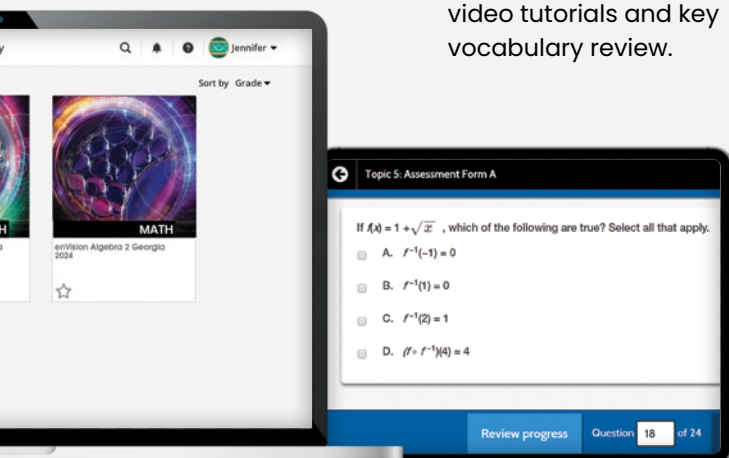
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ExamView®

**Ready-Made Presentation Slides** make in class presenting quick and easy.



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and learn more at: [Savvas.com/GAmath](https://Savvas.com/GAmath)

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