enVision A|G|A © 2018 Program Overview

Introduction

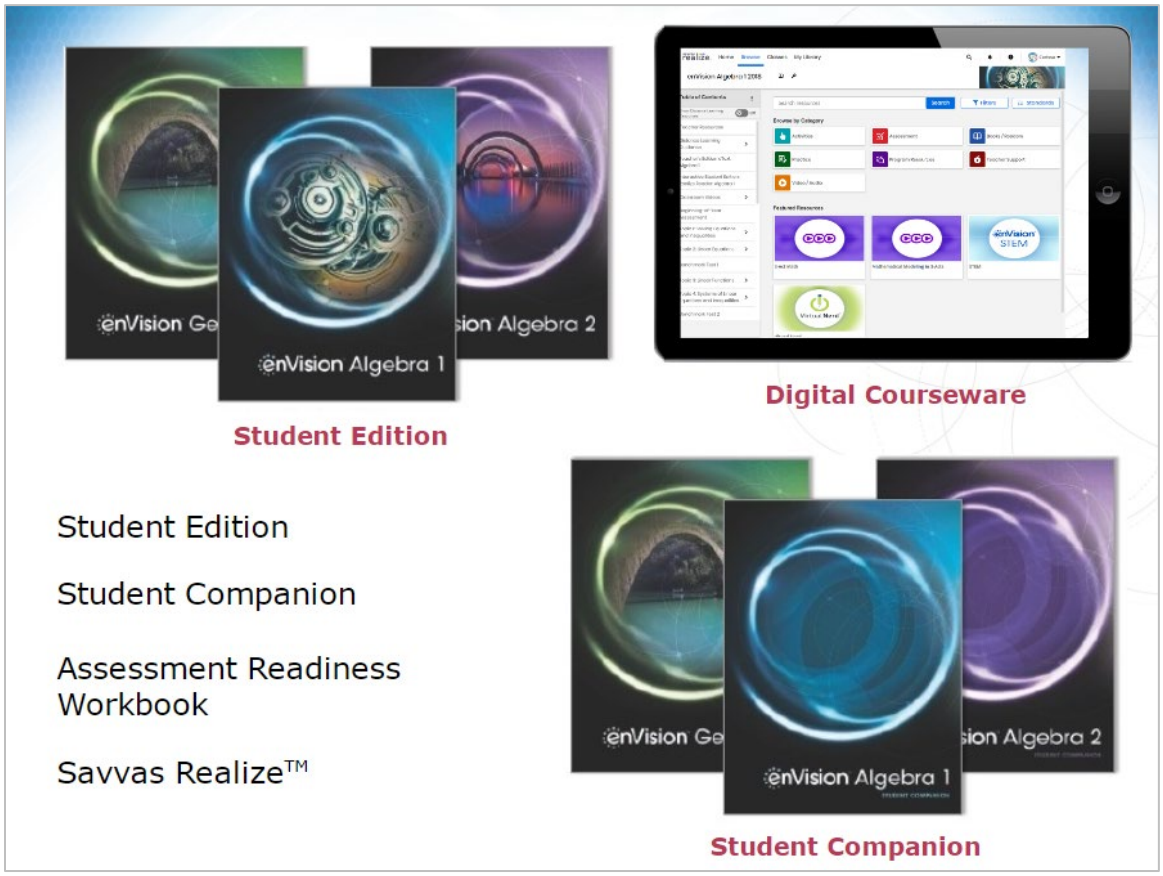
In this tutorial, we will explore **enVision A|G|A** - a brand-new high school mathematics program built from the ground up for Algebra 1, Geometry, and Algebra 2 courses.

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.

Program Components

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

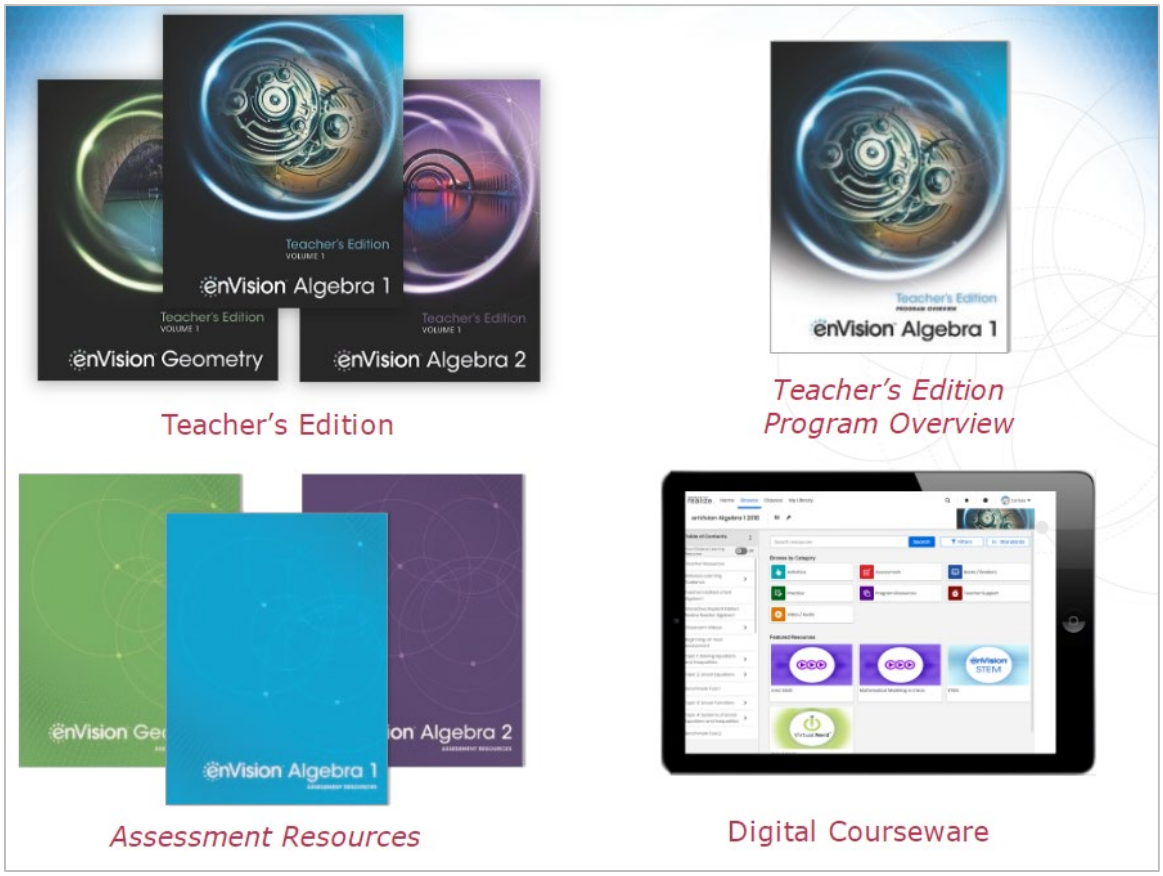
Student Components



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.

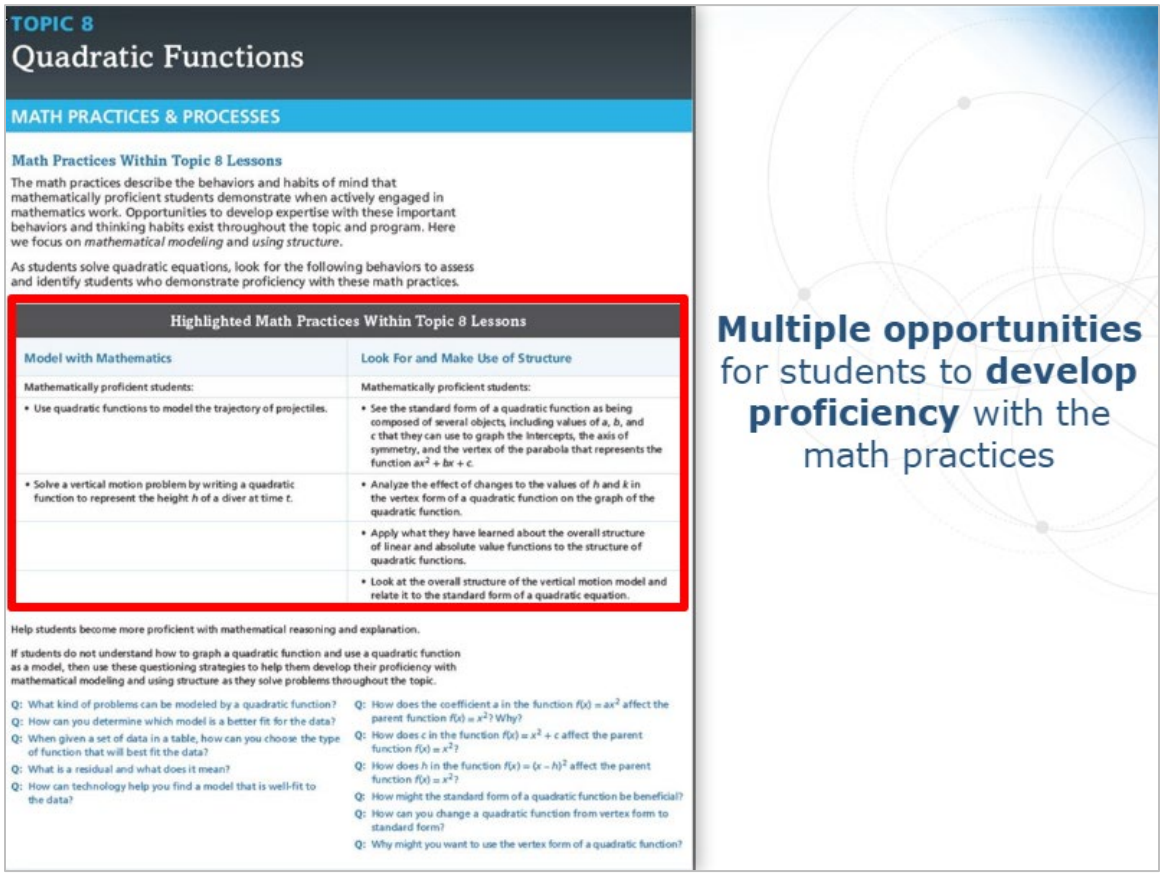
Through Savvas Realize, teachers have digital access to the entire program including instructional tools powered by Desmos, Savvy Adaptive Practice, and differentiated practice powered by MathXL for School. A variety of instructional and professional development resources such as the ExamView Assessment 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 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	Look For and Make Use of Structure
Mathematically proficient students:	Mathematically proficient students:
• Use quadratic functions to model the trajectory of projectiles.	• 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 $ax^2 + bx + c$.
• Solve a vertical motion problem by writing a quadratic function to represent the height *h* of a diver at time *t*.	• 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 quadratic functions.
	• Look at the overall structure of the vertical motion model and relate it to the standard form of a quadratic equation.

Help students become more proficient with mathematical reasoning and explanation.

If students do not understand how to graph a quadratic function and use a quadratic function as a model, then use these questioning strategies to help them develop their proficiency with mathematical modeling and using structure as they solve problems throughout the topic.

Q: What kind of problems can be modeled by a quadratic function?
Q: How can you determine which model is a better fit for the data?
Q: When given a set of data in a table, how can you choose the type of function that will best fit the data?
Q: What is a residual and what does it mean?
Q: How can technology help you find a model that is well-fit to the data?
Q: How does the coefficient *a* in the function $f(x) = ax^2$ affect the parent function $f(x) = x^2$? Why?
Q: How does *c* in the function $f(x) = x^2 + c$ affect the parent function $f(x) = x^2$?
Q: How does *h* in the function $f(x) = (x - h)^2$ affect the parent function $f(x) = x^2$?
Q: How might the standard form of a quadratic function be beneficial?
Q: How can you change a quadratic function from vertex form to standard form?
Q: Why might you want to use the vertex form of a quadratic function?

Multiple opportunities for students to **develop proficiency** with the math practices

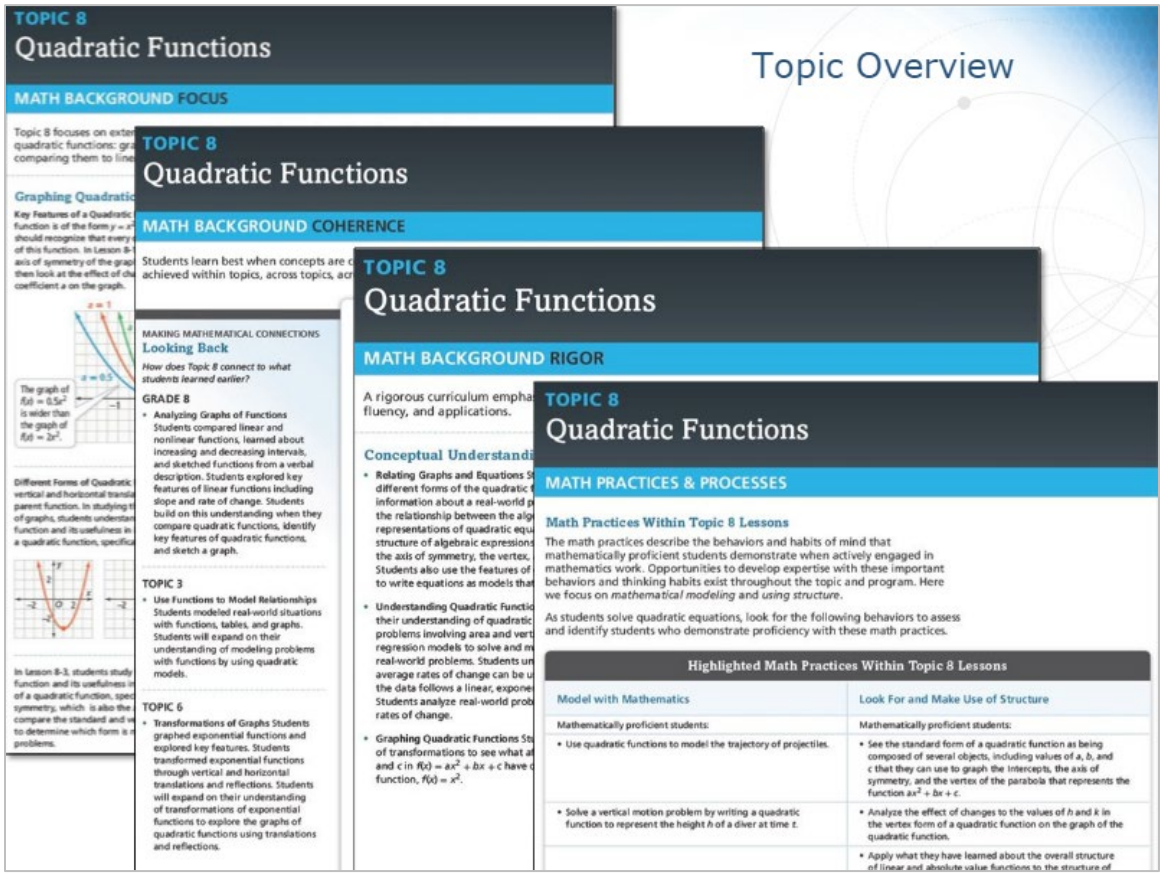
Each course is organized into broad conceptual topics.

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



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.

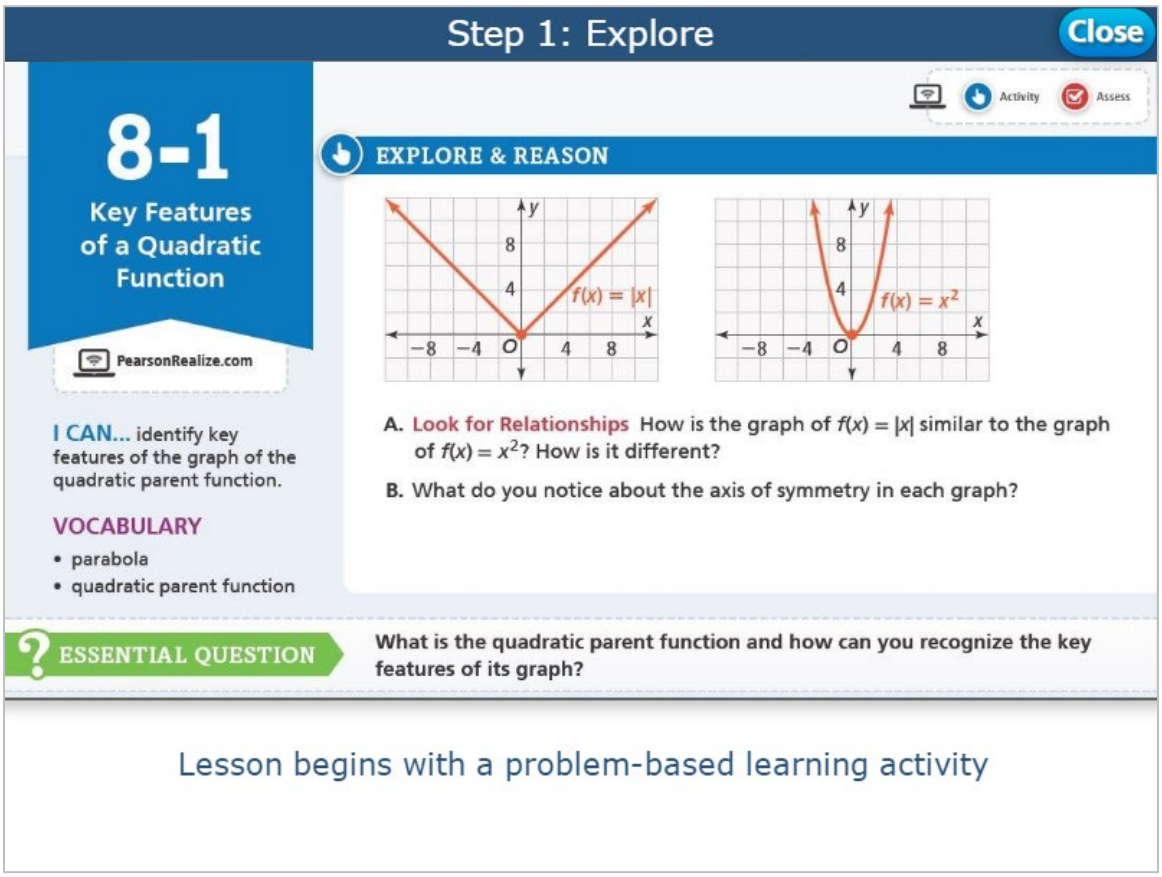
Note the Digital Resources icon at the top of the page. Throughout the Teacher's Edition this icon directs you to the corresponding digital resources available on SavvasRealize.com. Make sure to access the interactive tools and activities available to further support your students' understanding of the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

Four-Step Lesson Structure

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.

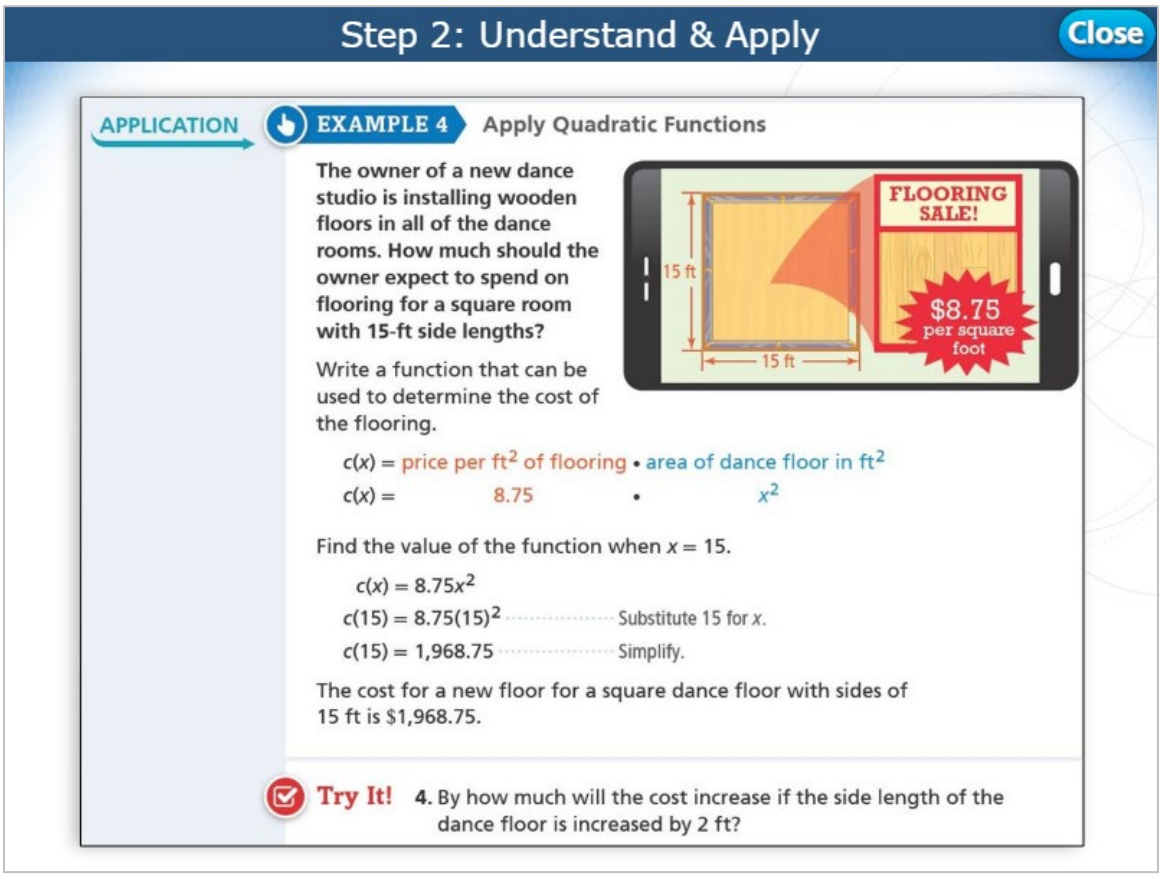
Let's take a brief look at each step.

Step 1: Explore



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



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.

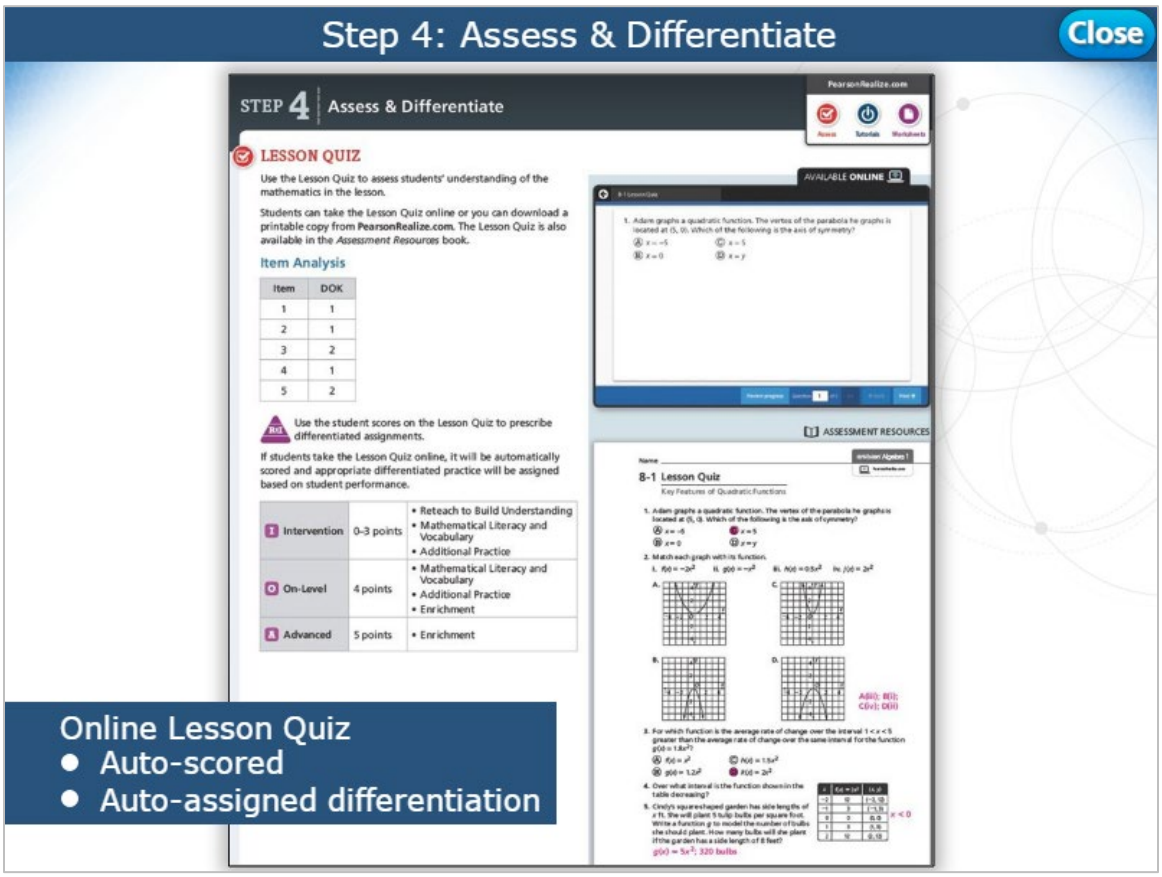
Step 3: Practice & Problem Solving

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.

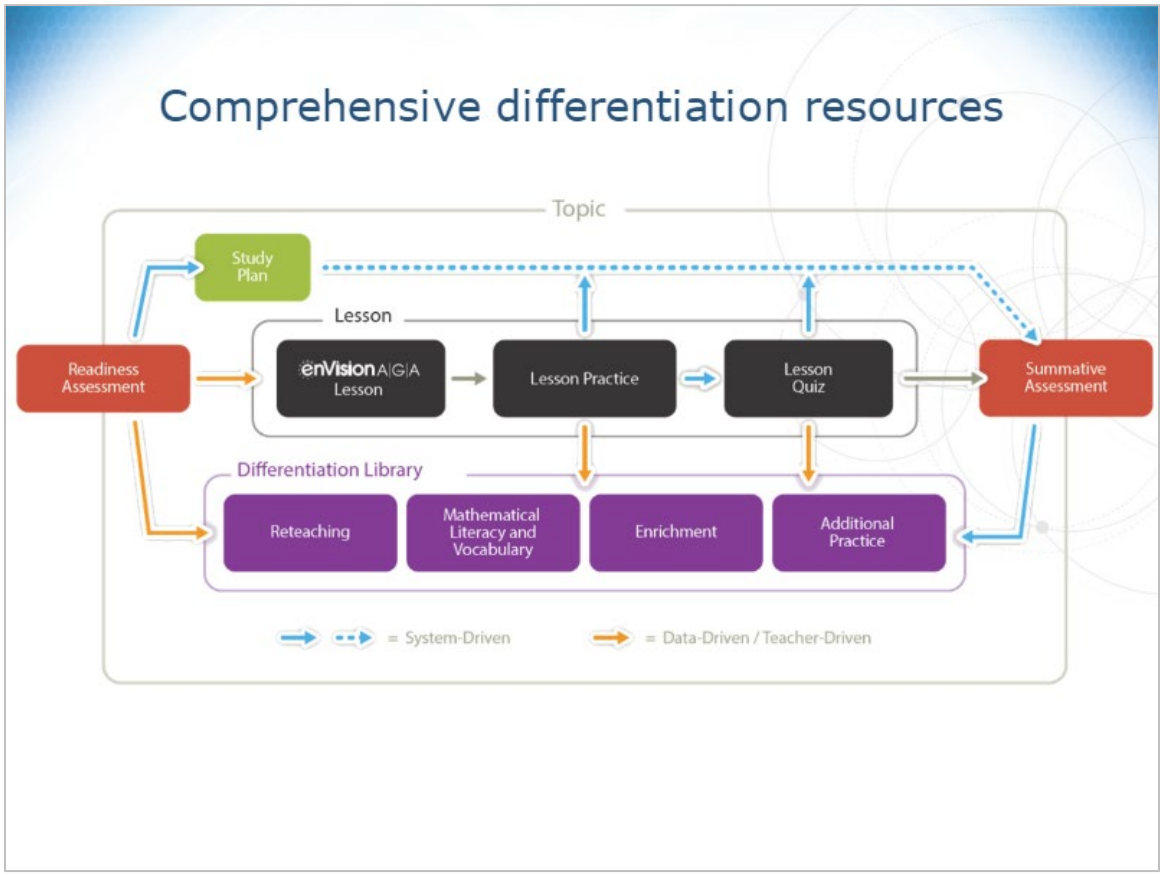
On Savvas Realize you will also find differentiated assignments powered by MathXL for School, adaptive assignments, and Video Tutorials powered by Virtual Nerd.

Step 4: Assess & Differentiate



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

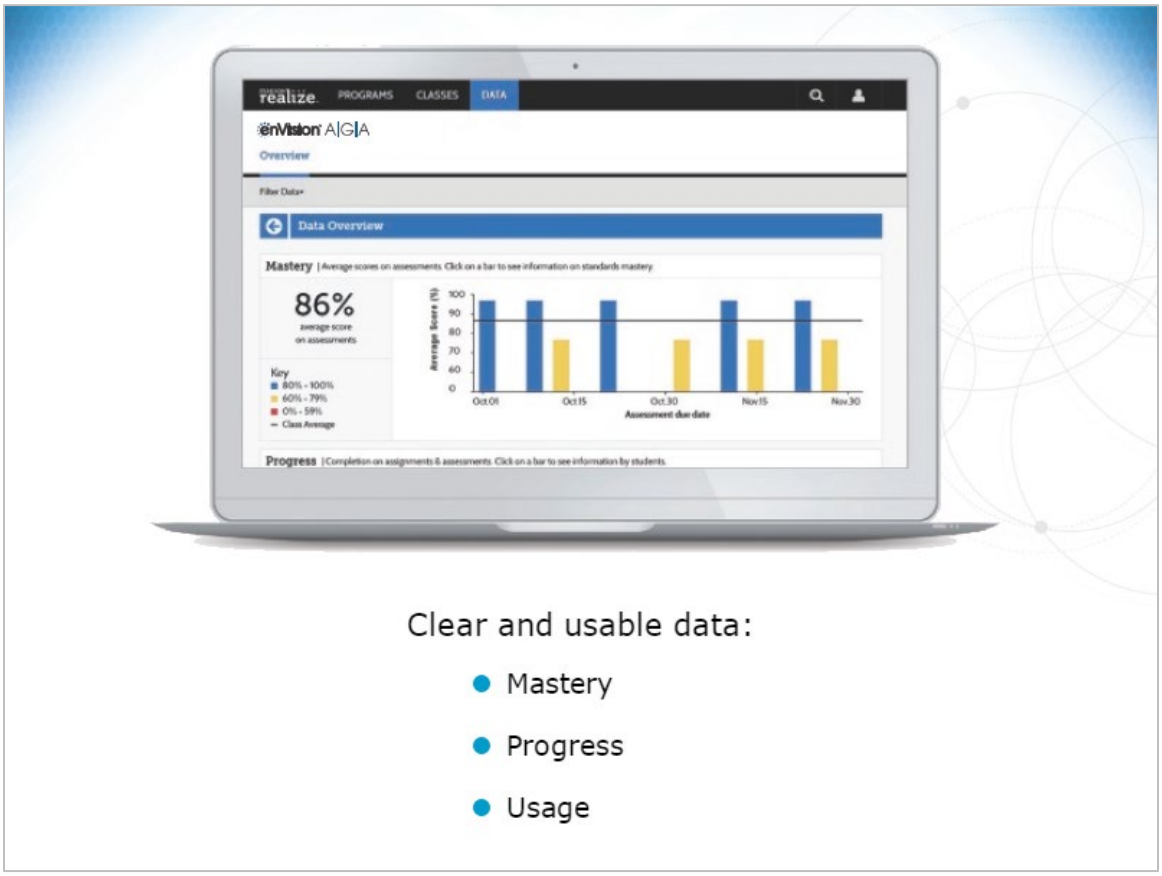


In addition to the differentiation resources in Step 4 of the lesson structure, comprehensive differentiated instruction and intervention resources are available for you to provide support for all learners. The resources include system- and teacher-driven opportunities to personalize learning for your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

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.