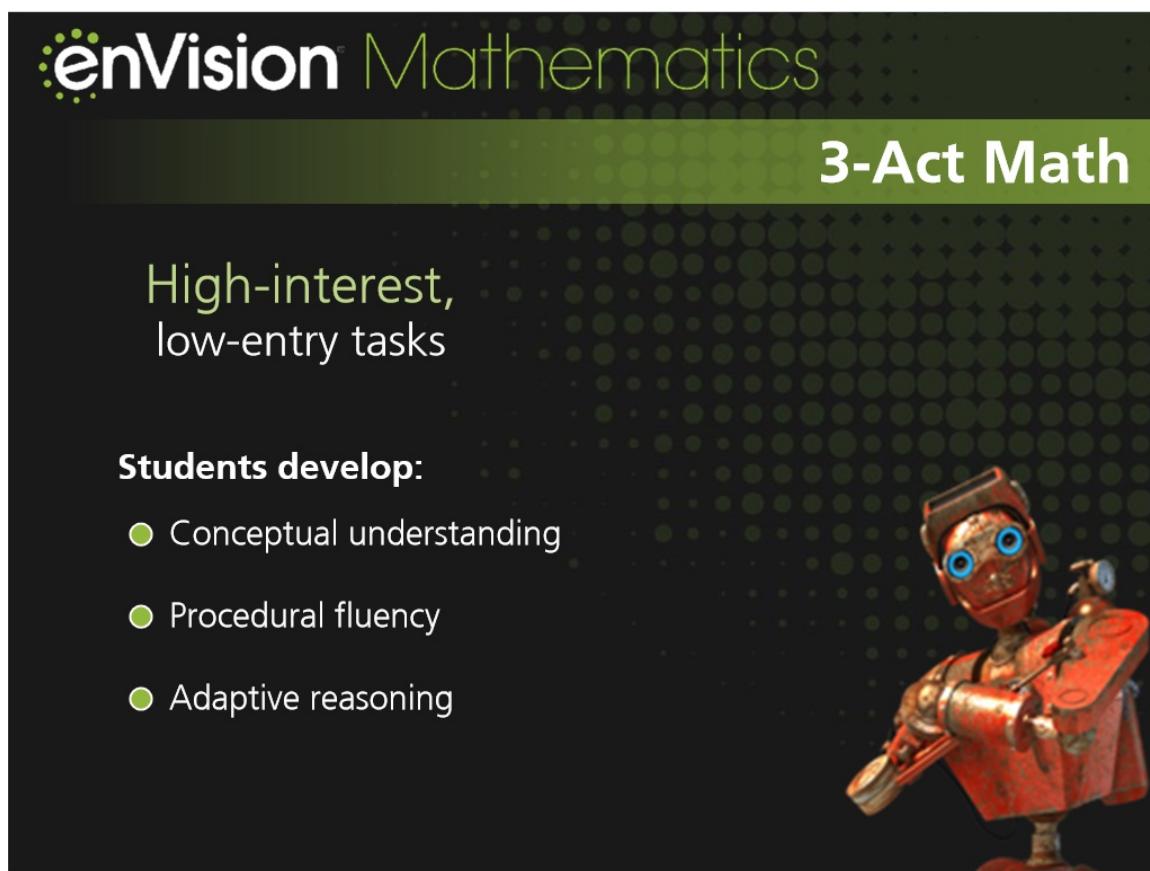


# enVision Mathematics © 2021 Grades 6–8

## 3-Act Math

### *Introduction*

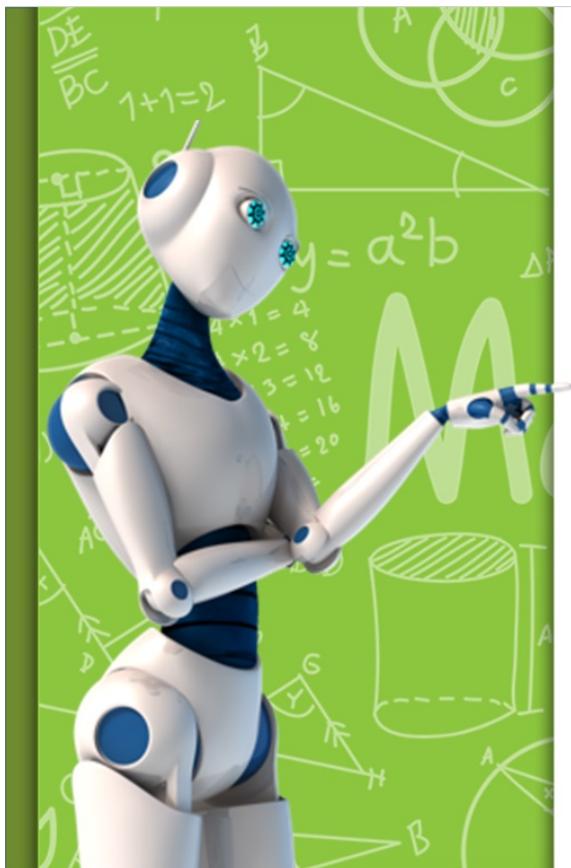


The slide features the enVision Mathematics logo at the top left. To the right, the title "3-Act Math" is displayed in large, bold, white letters. Below the title, the text "High-interest, low-entry tasks" is written in a light green font. On the left side, under the heading "Students develop:", there is a bulleted list of three items: "Conceptual understanding", "Procedural fluency", and "Adaptive reasoning", each preceded by a green circular bullet point. To the right of the text, there is a small, stylized illustration of a red robot or automaton figure with blue eyes and mechanical arms.

Hi, enVision teachers! I'm glad you want to learn about 3-Act Math lessons.

These high-interest, low-entry tasks help all students develop conceptual understanding, procedural fluency, and adaptive reasoning as they test out different models and conjectures.

Let's dig in so you can see how these lessons help students learn to use mathematical models to solve real-world problems.

**Quick Tip****QUICK  
TIP**

Students gain experience with mathematical modeling in each 3-Act Math lesson as they complete these steps:

- Pose a mathematical question about a situation
- Identify information needed to solve a problem
- Develop a model that represents the situation
- Use the model to propose a solution
- Test the appropriateness of the model

## Planning and Pacing

The screenshot shows the Savvas Realize interface for enVision Mathematics 2021 Grade 7. At the top, there are tabs for BROWSE, CLASSES, DATA, and MY LIBRARY, along with search and user icons. Below the tabs, it says "enVision Mathematics 2021 Grade 7 ▾". Underneath are links for Table of contents, Resources, Standards, eText, and Tools.

**Topic 1: 3-Act Mathematical Modeling: Win Some, Lose Some**

On the left, there's a "Select all" checkbox followed by two items:

- Teacher's Edition eText: Grade 7, Topic 1: 3-Act Math Modeling**: Includes a thumbnail of a robot and a cat, and buttons for Assign, Add to Playlist, and Info.
- Interactive Student Edition: Grade 7, Topic 1: 3-Act Math Modeling**: Also includes a thumbnail of a robot and a cat, and buttons for Assign, Add to Playlist, and Info. This item is highlighted with a red border.

**Mathematical Modeling**

Three items under this heading are shown, each with a "3-ACT MATH" icon:

- Topic 1: Math Modeling: Win Some, Lose Some, Act 1**: Buttons for Assign, Add to Playlist, and Info.
- Topic 1: Math Modeling: Win Some, Lose Some, Act 2**: Buttons for Assign, Add to Playlist, and Info.
- Topic 1: Math Modeling: Win Some, Lose Some, Act 3**: Buttons for Assign, Add to Playlist, and Info.

**Spanish Resources**

A single item is listed here:

- Tema 1: Representación matemática en 3 actos: Se**

To the right of the main content area, there's a large image of a book titled "enVision Mathematics VOLUME 1" showing a robot and a cat working on a project.

A 3-Act Math lesson is an important part of each topic. Teach the 3-Act Math task as the lesson for the day.

The 3-Act Math lesson can be at the beginning, in the middle, or at the end of a topic, depending on when students will have learned the relevant content. Find pacing details in the Topic Planners in your Teacher's Edition.

Use the Topic Opener to preview and plan for the lesson. Use the 3-Act Math Preview page in the Student's Edition to generate student interest at the beginning of the topic.

When teaching the lesson, ask students to record their ideas at each step. Students can write in their Student Editions or record their ideas digitally in the Interactive Student Edition Realize Reader on Savvas Realize.

## Act 1: The Hook

- Play the Act 1 video on Savvas Realize
- Give students time to brainstorm questions
- Discuss students' questions
- Reveal the Main Question
- Give students time to make predictions
- Record student predictions

In Act 1: The Hook, play the Act 1 video. The video presents a problem situation and provides just enough information to get students thinking and talking.

Give students time to brainstorm possible questions they have about the Act 1 video.

Have students share some of their questions, and then reveal the Main Question. Give students time to predict answers to the Main Question. Finally, ask them to share their ideas and record their predictions for the whole class to see.

## Act 2: The Model

- Ask students to identify the information they need
- Reveal the information using the Act 2 images or video
- Have students discuss the information
- Give students time to individually develop a model and answer to the Main Question
- Have students share and discuss a variety of strategies, models, and solutions

The screenshot shows the '3-Act Mathematical Modeling' unit on the Savvas Realize platform. The main title '3-Act Mathematical Modeling' is at the top, followed by 'continued'. Below it is a section titled 'ACT 2: The Model' with a blue header. The first part, 'Identify Important Info', contains questions for students to consider. The second part, 'Reveal the Information', shows two images: one of a person sitting at a table and another of a person standing. The third part, 'Develop a Model', includes a number line from -10 to 10 with arrows pointing to 'Audrey' and 'Dominic'. Below the number line is the equation  $-10 + 50 = 40$ . The fourth part, 'Use the Model to Propose a Solution', features a table comparing student work for Calvin and Lena.

	Audrey	Dominic
Correct answer	40	20
didn't answer	-10	30
incorrect answer	-100	20

**Calvin's Work:**  
Calvin uses a number line to represent the situation. He considers how one player can use strategy to win.  
 $-10 + 50 = 40$   
Audrey can't beat Dominic even if she gets the last equation right.

**Lena's Work:**  
Lena makes a table to represent possible final scores for each contestant. She analyzes the table to decide who is more likely to win.  
I think Dominic will win. If he doesn't answer, he automatically wins.

In Act 2: The Model, ask students to identify information they need to answer the Main Question.

After you collect students' ideas, reveal the information in Act 2 on Savvas Realize. Ask students to discuss whether this information matches their expectations and predictions.

Then ask students to work individually to develop a model and solution to the Main Question. Encourage them to use any model to arrive at a solution that makes sense to them.

Have students share and discuss their strategies. Make sure to discuss a variety of different models and solutions. You can project sample student work shown in the Teacher's Edition.

## Act 3: The Solution

- Reveal an answer to the Main Question
- Give students time to reflect, analyze, explain, and/or revise their models
- Assign the Sequel as classwork or homework

## Act 3: The Solution

The Solution and Sequel

3-Act Math Video is available online.

**ACT 3** The Solution and Sequel

1. Write the answer you had in the video.

2. Reasoning: Does your answer match the answer in the video? If so, determine the total cost of the difference.

3. Make Sense and Persevere: What you change your mind about the answer?

**ACT 3** Sequel

1. Reasoning: Dominic has played a tournament model. Calculate the difference. How did the model help you determine the answer?

2. Reasoning: How much money did each person start with if they had the same amount?

3. Generalize/Patterns: If there were ten people instead of five, how much would each person get for participating?

4. Math 1 | 3-Act Mathematical Modeling

Use the Video to Reveal the Answer

The final part of the video shows the last question of the game. Have students complete Question 9. Congratulate the students who were closest to the actual answer.

**Main Question Answer**

Audrey wins by a score of 40 to 20.

**Validate Conclusions**

After students complete Questions 10 and 11, encourage them to discuss potential sources of error inherent in using math to model real world situations. Look for students to point out that their models are still useful even though they are not perfect.

Q: Why does your answer not match the answer in the video? [Sample answer: I didn't think Dominic would answer, to protect his lead.]

Q: How useful was your model at predicting the answer?

Q: How could your model better represent the situation?

Reflect on Thinking

**Reason Quantitatively** If time allows, have students complete Questions 12 and 13 as an extension. Use this opportunity to discuss how students incorporate mathematical processes during the task.

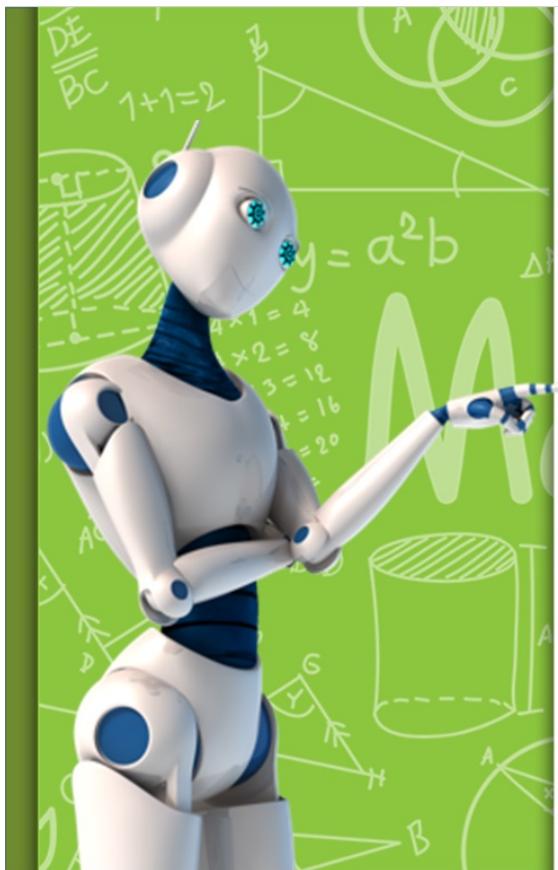
**Construct Arguments** Use Questions 14 to present a similar problem situation involving integer operations. You can assign to early finishers or as homework so students can test the usefulness of their models.

Q: If there were one final round in which each contestant chooses how much to wager, how much should each person wager? Explain your reasoning.

Using their models and the answer in the video, look for students to suggest Dominic wager 20 points and Aubrey wager 1 point.

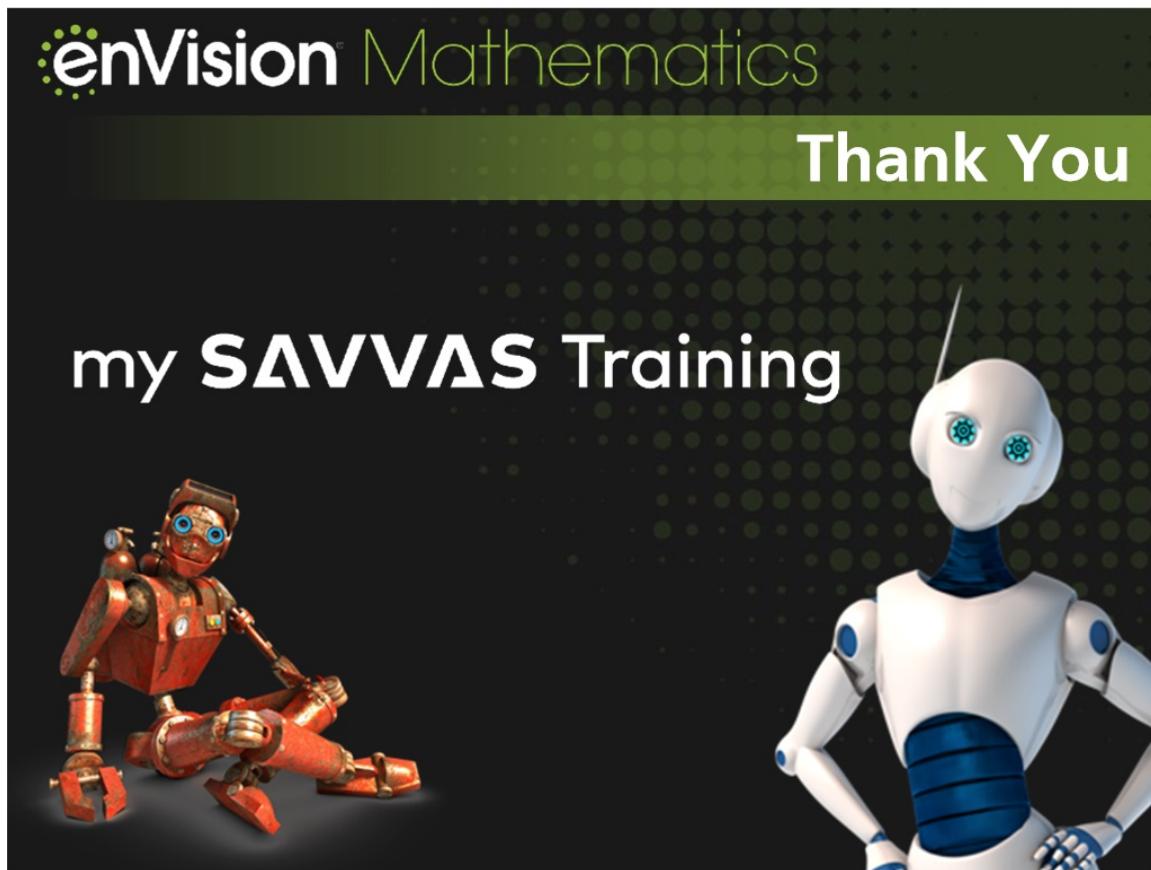
In Act 3: The Solution, play the video to reveal an answer to the Main Question.

Give students time to reflect, analyze, and explain differences between their answers and the actual solution. Lead a discussion to help students develop the math practices, and give students time to revise their models or work on the Sequel.

**Quick Tip****QUICK  
TIP**

For more information, read the article, *3-ACT MATH Tasks: Authentic Engagement with Mathematical Ideas* by **enVision** author Zachary Champagne. The article is available for download on the Getting Started tab of Savvas Realize.

***Closing***



Thanks for learning more about 3-Act Math lessons. These lessons help students learn mathematical modeling skills that they'll use throughout their lives!

Keep digging in to My Savvas Training to learn more about enVision Mathematics and Savvas Realize.