

enVisionmath2.0 Grades 6-8

3-Act Math

Introduction



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SCOTT FORESMAN • ADDISON WESLEY

3-Act Math

These high-interest, low-entry tasks help students develop:

- Conceptual understanding
- Procedural fluency
- Adaptive reasoning

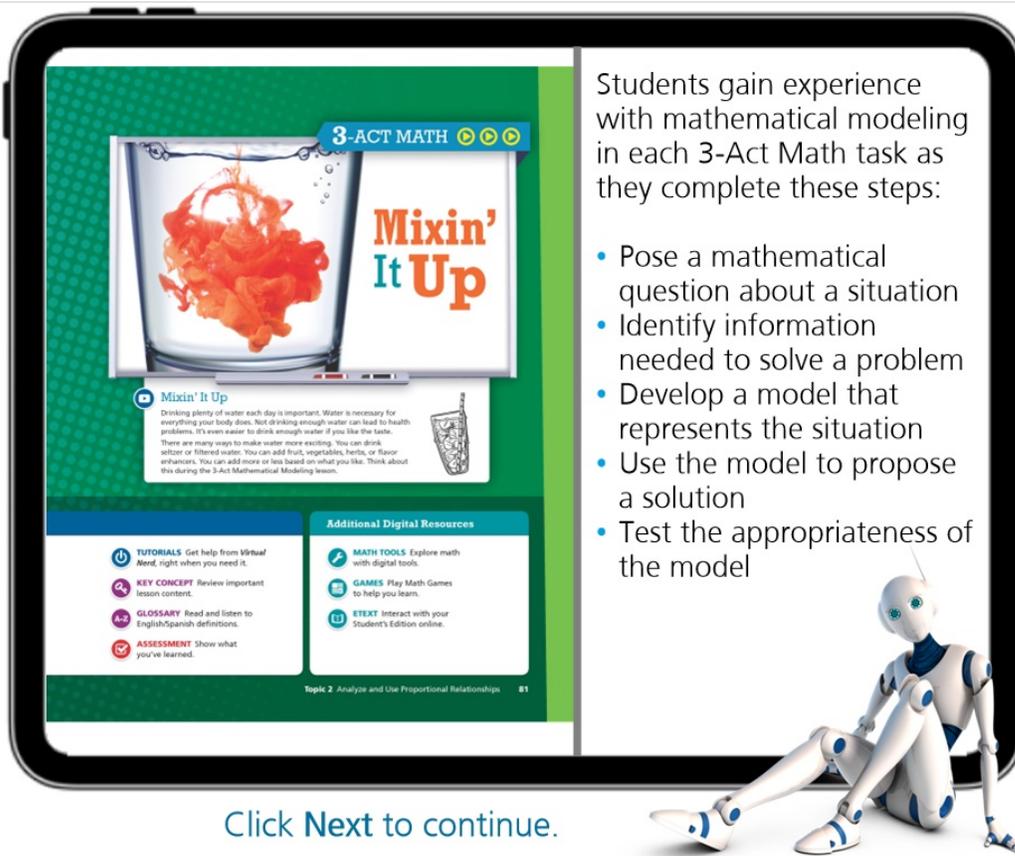


Hi, enVision teachers! I'm glad you want to learn about 3-Act Math tasks.

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 tasks help students learn to use mathematical models to solve real-world problems.

Quick Tip



3-ACT MATH

Mixin' It Up

Drinking plenty of water each day is important. Water is necessary for everything your body does. Not drinking enough water can lead to health problems. It's even easier to drink enough water if you like the taste. There are many ways to make water more exciting. You can drink seltzer or filtered water. You can add fruit, vegetables, herbs, or flavor enhancers. You can add more or less based on what you like. Think about this during the 3-Act Mathematical Modeling lesson.

TUTORIALS Get help from Virtual Ned, right when you need it.

KEY CONCEPT Review important lesson content.

GLOSSARY Read and listen to English/Spanish definitions.

ASSESSMENT Show what you've learned.

MATH TOOLS Explore math with digital tools.

GAMES Play Math Games to help you learn.

ETEXT Interact with your Student's Edition online.

Topic 2: Analyze and Use Proportional Relationships 81

Click Next to continue.

Students gain experience with mathematical modeling in each 3-Act Math task 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

3-Act MATH Mixin' It Up

ACT 1

1. After watching the video, what is the first question you ask?
2. Write the Main Question you will answer.
3. **Construct Arguments** Predict an answer to this question. Explain your prediction.
4. On the number line below, write a number that is too small and a number that is too large.
5. Plot your prediction on the same number line.

3-Act Mathematical Modeling: Mixin' It Up

ACT 2

6. What information in this situation would be helpful to solve the problem? How would you use that information?
7. **Use Appropriate Tools** What tools can you use to get you started? Record the information as you find it.
8. **Model with Math** Represent the situation using the concepts, and skills from this topic. Use your representation to answer the Main Question.
9. What is your answer to the Main Question? Is it higher or lower than your prediction? Explain why.

ACT 3

10. Write the answer you saw in the video.
11. **Reasoning** Does your answer match the answer in the video? If not, what are some reasons that it might not? Explain the difference.
12. **Make Sense and Persevere** Would you change your answer? Explain.

ACT 3 Extension
Reflect

13. **Model with Math** Explain how you used a mathematical model to represent the situation. How did the model help you answer the Main Question?
14. **Critique Reasoning** Choose a classmate's model. How would you adjust that model?

ACT 3 Record

15. **Use Statistics** A faucet usually adds 8 drops to 18 ounces of water. Use your updated model to predict the number of drops she would use for the large container.

Students record their ideas at each step in the Student's Edition

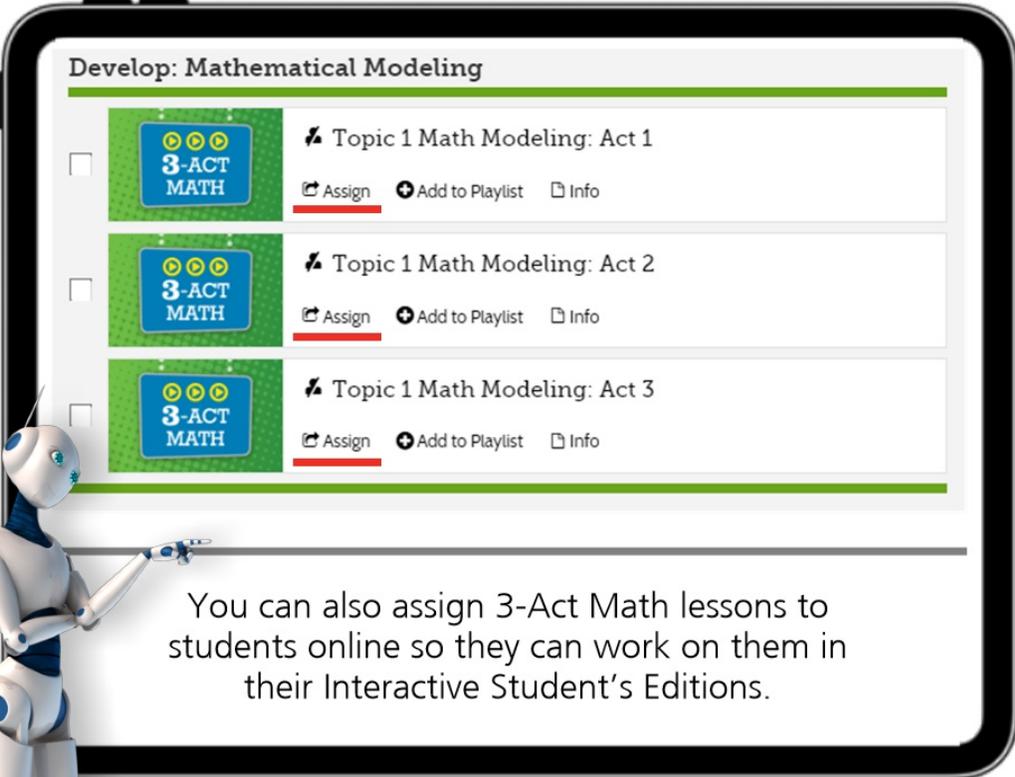
There is a 3-Act Math lesson in every topic; plan to teach it as the lesson for the day.

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 Table of Contents of your Teacher's Edition.

Use the Topic Overview to preview and plan for the task. 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, play the videos from your computer and have students record their ideas at each step in their Student's Editions.

Quick Tip



Develop: Mathematical Modeling

- 3-ACT MATH** Topic 1 Math Modeling: Act 1
[Assign](#) [Add to Playlist](#) [Info](#)
- 3-ACT MATH** Topic 1 Math Modeling: Act 2
[Assign](#) [Add to Playlist](#) [Info](#)
- 3-ACT MATH** Topic 1 Math Modeling: Act 3
[Assign](#) [Add to Playlist](#) [Info](#)

You can also assign 3-Act Math lessons to students online so they can work on them in their Interactive Student's Editions.

[Click Next](#) below to continue.

Act 1: The Hook

Act 1: The Hook

- Give students time to brainstorm questions
- Discuss students' questions
- Reveal the Main Question
- Give students time to make predictions
- Record student predictions

3-Act MATH Mixin' It Up

3-Act Mathematical Modeling: Mixin' It Up

ACT 1

1. After watching the video, what is the first question that comes to mind?
2. Write the Main Question you will answer.
3. **Construct Arguments** Predict an answer to this Main Question. Explain your prediction.
4. On the number line below, write a number that is too small to be the answer. Write a number that is too large.

Too small
←
→
 Too large
5. Plot your prediction on the same number line.

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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 video. Students can write their questions in the Student's Edition.

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

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



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. 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.

Quick Tip

ACT 3 Extension

Reflect

13. **Model with Math** Explain how you used a mathematical model to represent the situation. How did the model help you answer the Main Question?

14. **Critique Reasoning** Choose a classmate's model. How would you adjust that model?

SEQUEL

15. **Use Structure** A classmate usually adds 6 drops to 16 ounces of water. Use your updated model to predict the number of drops she would use for the large container.

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You can use the Sequel in a variety of ways:

- Assign a challenge to early finishers in Act 2
- Assign practice to all students after Act 3
- Assign homework to the whole class

Click Next to continue.

Act 3: The Solution

Act 3: The Solution

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



Use the Video to Reveal the Answer
The final part of the video shows the entire process of adding flavoring to the water cooler. For Question 10. Congratulate the students.

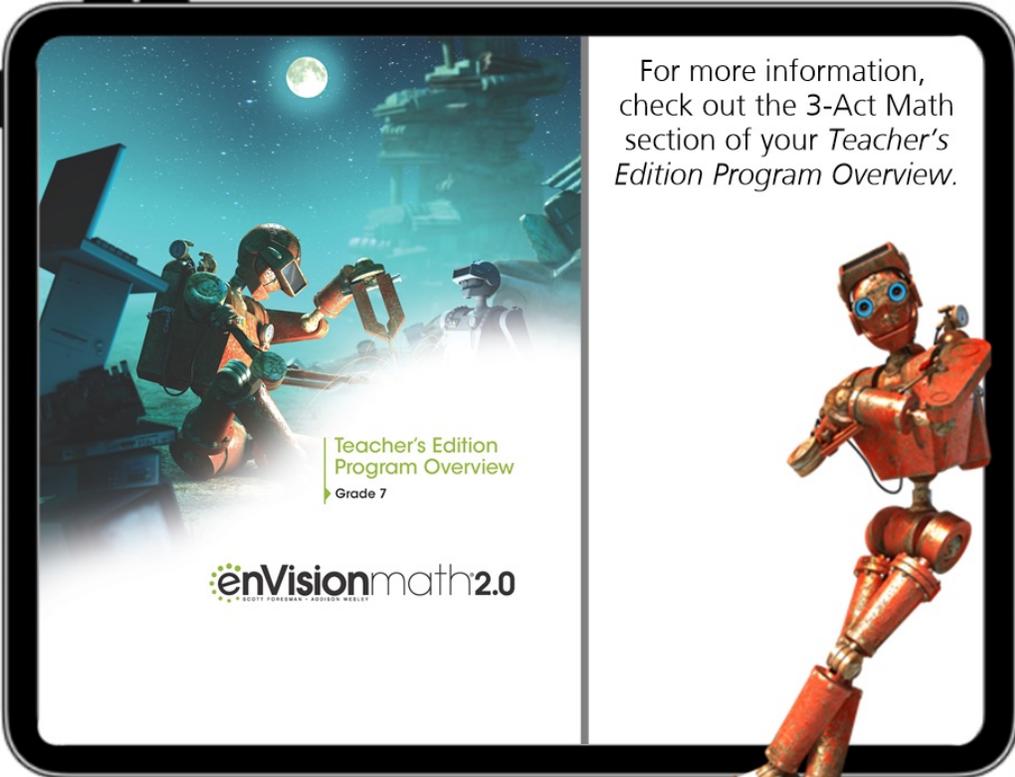
Validate Conclusions
After students complete Question 10, discuss possible sources of error in their real-world situations. Look for student models that are still useful even though they are not completely accurate.
Q: Why does your answer not match the actual solution? [Sample answer: The video was not completely full.]
Q: How useful was your model?

Pose the Sequel
Use Structure Use Question 15 to present a similar problem situation involving proportions so that they can test the usefulness of their models.
Q: A classmate usually adds 6 drops to 16 ounces of water. Use your updated model to predict the number of drops she would use for the water cooler.
Using their models and the answer in the video, look for student solutions between 450 and 480 drops.
Q: How does the flavor of this water compare to the flavor of the water in the video? [This water has a weaker flavor.]

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



For more information, check out the 3-Act Math section of your *Teacher's Edition Program Overview*.

Teacher's Edition
Program Overview
Grade 7

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Click Next to continue.

Closing



Thanks for learning more about 3-Act Math tasks! These tasks provide an engaging way for students to learn mathematical modeling skills that they'll use throughout their lives!

Keep digging in to My Savvas Training to learn more about **enVision** Mathematics!