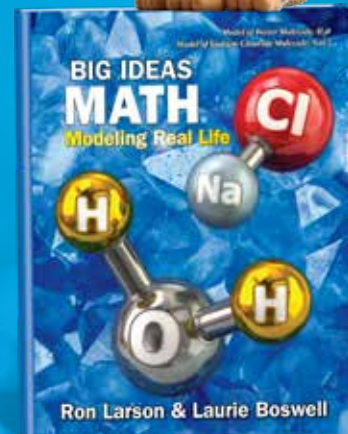
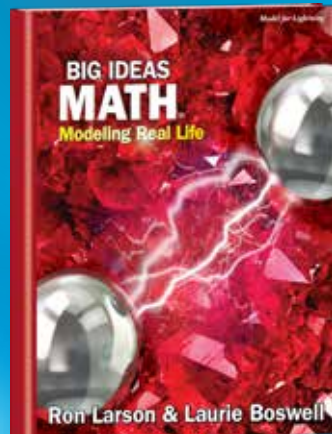
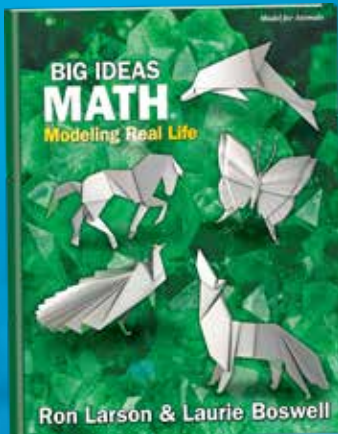
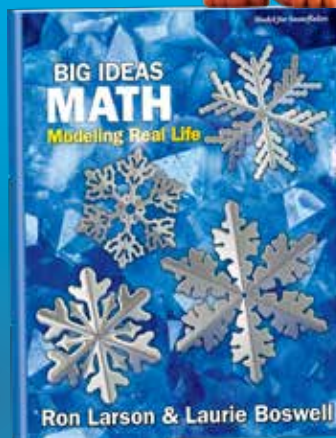
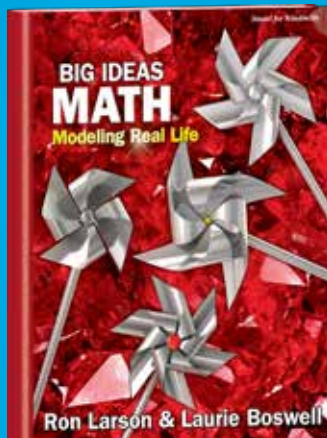
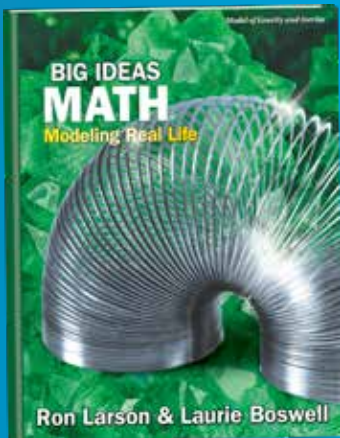


# BIG IDEAS MATH<sup>®</sup>

Grades K-5

Ron Larson & Laurie Boswell



## Modeling Real Life





# Authors and Research

Big Ideas Learning is pleased to introduce a new, research-based K–8 series, **Big Ideas Math®: Modeling Real Life**. Written by renowned authors Dr. Ron Larson and Dr. Laurie Boswell, this series uses an exploratory approach to engage students' inquiring minds through rich explorations and in-class problem solving. With one voice from Grade K through Grade 8, students make connections through cohesive progressions and consistent, dependable instruction.

The pedagogical approach used in this program follows the best practices outlined in the most prominent and widely accepted educational research including John Hattie's *Visible Learning*, NCTM's *Principles to Actions*, Jo Boaler's *Mathematical Mindsets*, Wiggins and McTighe's *Understanding by Design*, and others.

*We created Big Ideas Math because we recognized the need for a truly balanced approach to learning, using discovery learning and scaffolded instruction.*

—Ron Larson, Ph.D.



**Ron Larson, Ph.D.**, is well known as the lead author of a comprehensive program for mathematics that spans school mathematics and college courses. He holds the distinction of Professor Emeritus from Penn State Erie, The Behrend College, where he taught

for nearly 40 years. He received his Ph.D. in mathematics from the University of Colorado. Dr. Larson's numerous professional activities keep him actively involved in the mathematics education community and allow him to fully understand the needs of students, teachers, supervisors, and administrators.



**Laurie Boswell, Ed.D.**, is the former Head of School at Riverside School in Lyndonville, Vermont. In addition to textbook authoring, she provides mathematics consulting and embedded coaching sessions. Dr. Boswell received her Ed.D. from the University of Vermont in 2010.

She is a recipient of the Presidential Award for Excellence in Mathematics Teaching and is a Tandy Technology Scholar. Laurie has taught math to students at all levels, elementary through college. In addition, Laurie has served on the NCTM Board of Directors and as a Regional Director for NCSM. Along with Ron, Laurie has co-authored numerous math programs and has become a popular national speaker.

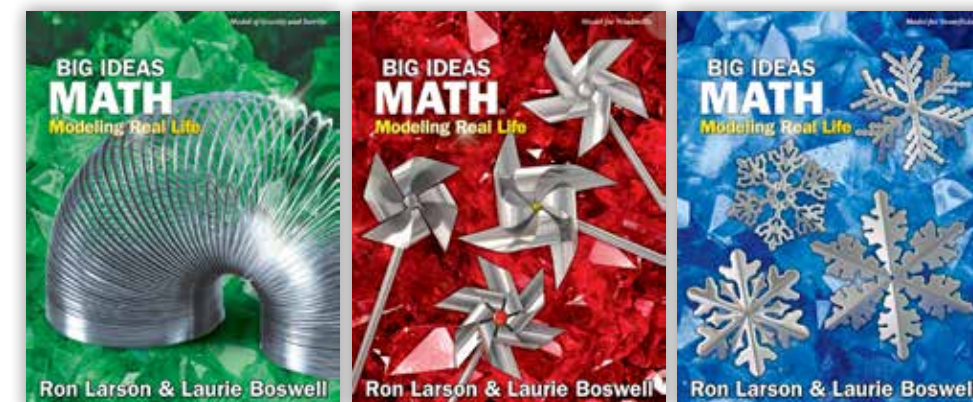
*Students go deeper in their learning when they are motivated to dig in. My passion is to provide effective ways for teachers to begin each lesson.*

—Laurie Boswell, Ed.D.

## Big Ideas Math: Modeling Real Life fits the needs of today's elementary classrooms!

- Uses learning targets and success criteria for student self-assessment
- Incorporates literacy strategies, encouraging students to read, write, and talk about math
- Helps teachers recognize the impact they have on students
- Empowers students to grow as independent learners and experience the delight of mathematics

Common Core Edition also available

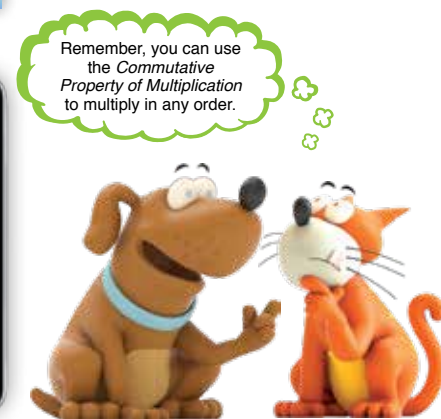


Grades K–5



Online Resources

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# Instructional Design

The **Big Ideas Math: Modeling Real Life** program uses a Universal Design for Learning to create an engaging and innovative program that uses hands-on activities and scaffolded instruction.

The instructional design guides students through concepts from surface-level to deep-level learning and allows them to transfer these skills to new concepts in a complete and comprehensive way. This allows for balanced lessons with built-in differentiation, as well as RTI support, that appeals to students and teachers alike.

**Learning Targets:** Use the Distributive Property to multiply.  
**Success Criteria:**  
 • I can draw an area model to multiply.  
 • I can use known facts to find a product.  
 • I can explain how to use the Distributive Property.

**Explore and Grow**  
 Use base ten blocks to model  $4 \times 16$ . Draw your model. Then find the area of the model.

$4 \times 16 =$  \_\_\_\_\_

Break apart 16 to show two smaller models. Find the area of each model. What do you notice about the sum of the areas?

Area = \_\_\_\_\_ Area = \_\_\_\_\_

**Reasoning:** How does this strategy relate to the Distributive Property? Explain.

Chapter 3 | Lesson 4

**Learning Targets and Success Criteria**<sup>1</sup> encourage students to self-assess and evaluate their learning.

**Apply and Grow: Practice**

2. You collect 16 red leaves, 21 orange leaves, and 14 yellow leaves. How many leaves do you collect in all?  
 \_\_\_\_\_ leaves

3. A dentist has 41 toothbrushes. She buys some more. Now she has 85. How many toothbrushes did the dentist buy?  
 \_\_\_\_\_ toothbrushes

4. You make 17 origami dogs and 13 origami fish. Your friend makes 12 more origami animals than you. How many origami animals does your friend make?

**Step 1:** How many origami animals do you make?  

$$\begin{array}{r} \square \\ + \square \\ \hline \square \end{array}$$

**Step 2:** How many origami animals does your friend make?  

$$\begin{array}{r} \square \\ + \square \\ \hline \square \end{array}$$

\_\_\_\_\_ origami animals

Chapter 4 | Lesson 7

**Apply and Grows** provide independent practice to help students monitor their own understanding of concepts.

**Explore and Grows** give students a hands-on approach to develop conceptual understanding.

Learning targets and success criteria help to focus student learning and make learning visible to teachers and students. With a strong emphasis on problem-solving in the classroom, students can transfer their mathematical knowledge to new concepts and apply their understanding to real-life situations. Through in-class practice and activities, students become more comfortable with the problem-solving process to become strategic mathematical thinkers.

**Think and Grow**

You find 19 objects in a scavenger hunt.  
 You find 13 fewer objects than your friend.  
 How many objects does your friend find?

Circle what you know. Underline what you need to find.

Solve:  
 Use a model to help organize the information.

Friend:  $\underline{32}$   
 You:  $\underline{19}$   $\underline{13}$   
 \_\_\_\_\_ objects

**Show and Grow**

1. You have 66 marbles. You have 26 fewer marbles than your friend. How many marbles does your friend have?  
 \_\_\_\_\_ marbles

90 one hundred ninety

**Think and Grows** offer scaffolding to ensure all levels of learners attain procedural fluency.

**Show and Grows** give teachers the opportunity for continual formative assessment and student discourse.

**Think and Grow: Modeling Real Life**

Your teacher divides the items shown equally among 9 students. Write two equations that you can use to show how many straws each student gets.

Item	Number
Toothpicks	72
Containers of clay	27
Straws	54

Division equation:  
 \_\_\_\_\_

Multiplication equation:  
 \_\_\_\_\_

**Show and Grow**

11. Use the table above to write two equations that you can use to show how many containers of clay each student gets.  
 \_\_\_\_\_

12. Use the table above to find how many more toothpicks students will get than straws.  
 \_\_\_\_\_

13. Explain how a multiplication fact can help you solve  $30 \div 3 =$  \_\_\_\_\_.

166

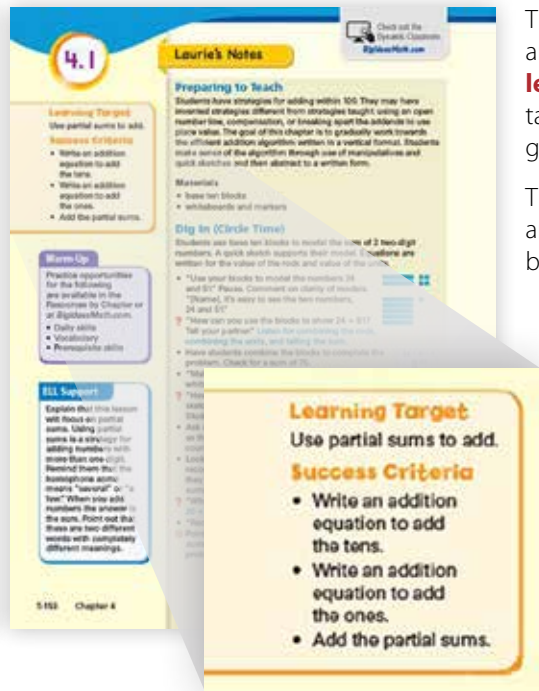
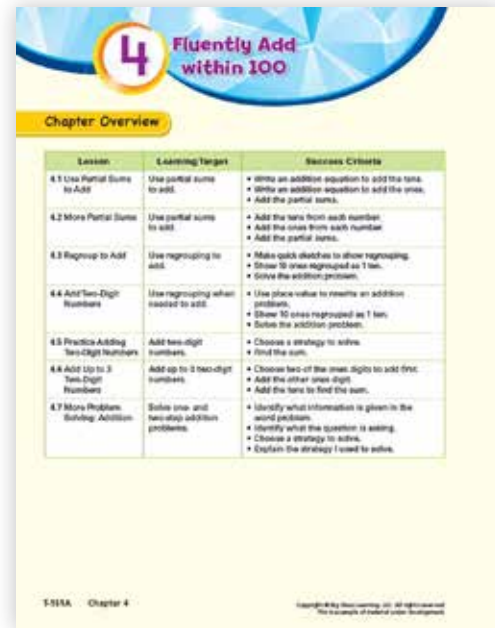
**Think and Grow: Modeling Real Life** brings problem solving into the classroom, promoting transfer of concepts and skills into real-life situations.

<sup>1</sup> Success Criteria only appear on the Student Edition pages in grades 3 to 5.



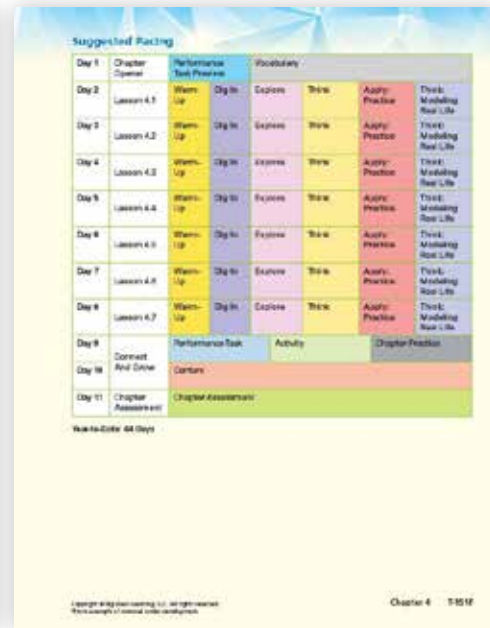
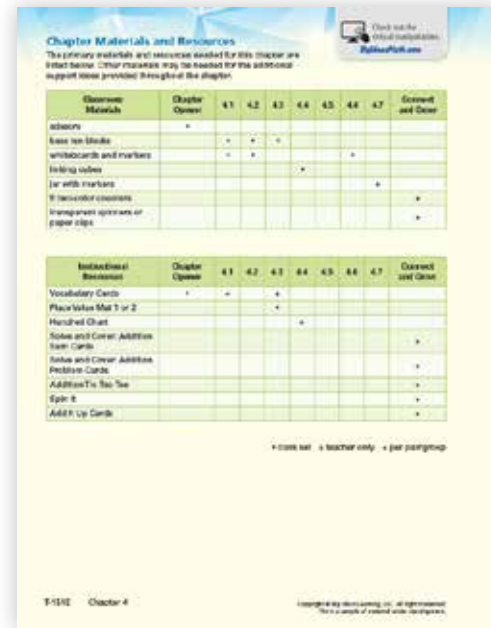
# Teaching Support

The *Big Ideas Math: Modeling Real Life* Teaching Edition is a comprehensive resource that guides teachers throughout instruction.



The **Chapter Overview** chart and the **first page of each lesson** highlight the learning targets and success criteria that guide student learning.

They encourage self-assessment and give students and teachers benchmarks for each lesson.



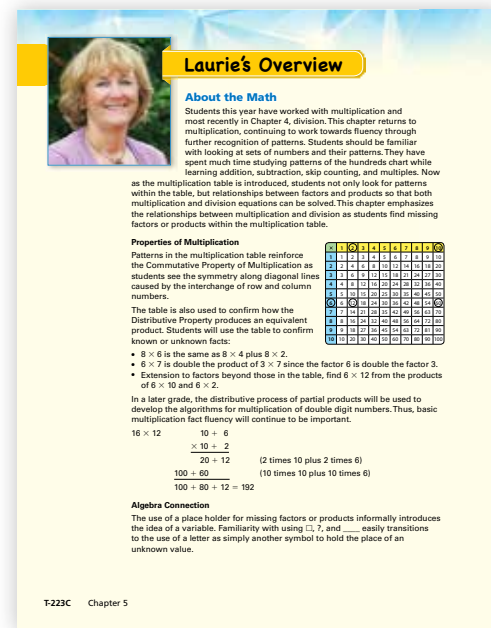
**Chapter Materials, Resources, and Suggested Pacing** are clearly laid out for each chapter to support teachers and save planning time.



The **Progressions** table highlights the program coherence from grade to grade. Teachers will find this useful because they can see what was covered in the previous grade level and how it builds to the content they are teaching in their grade level. In addition, they can see further connections and applications in the next grade level.

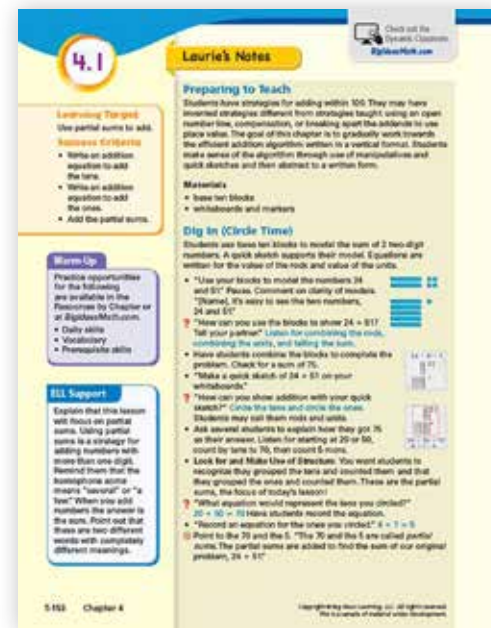
The learning standards are called out for every chapter along with guidance on where students should be tracking on their conceptual development.

The table identifies with "Preparing," "Learning," and "Complete" for each lesson.



**Laurie's Overview** "About the Math" at the beginning of each chapter provides point-of-use professional development and math background. The information offers an efficient way to plan for the chapter and solidify content understanding.

The visuals and representations presented in the overview are meaningful for the learning objectives in that specific chapter.



**Laurie's Notes** appear at the chapter and lesson level for embedded professional development, implementation support, questioning strategies, and differentiation tips every step of the way.

Laurie's Notes offer guidance for building fluency with the mathematical processes and proficiencies.



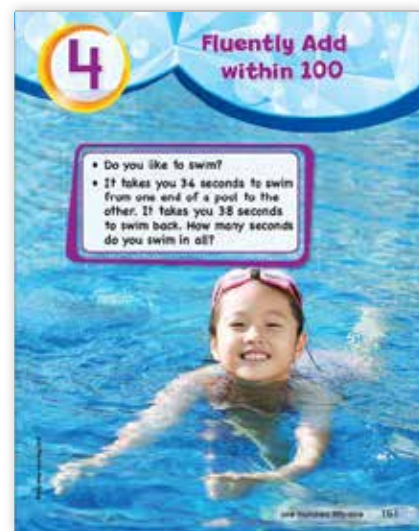
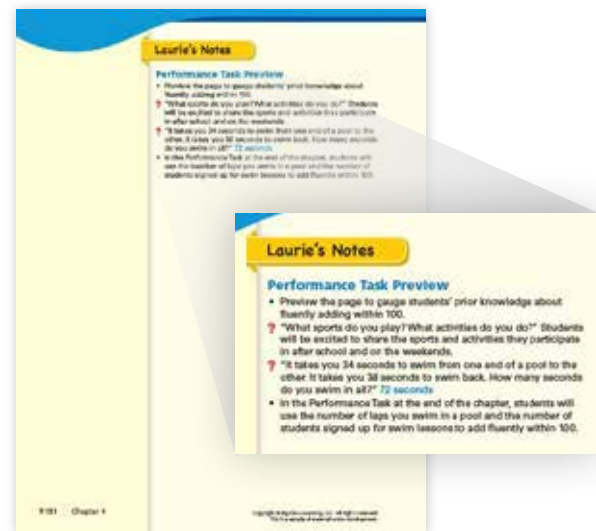




# Assessment

The K–5 program offers a variety of opportunities for both formative and summative assessment. Student ownership and accountability for learning is a vital component of fluency with the content, as well as the mathematical processes and proficiencies.

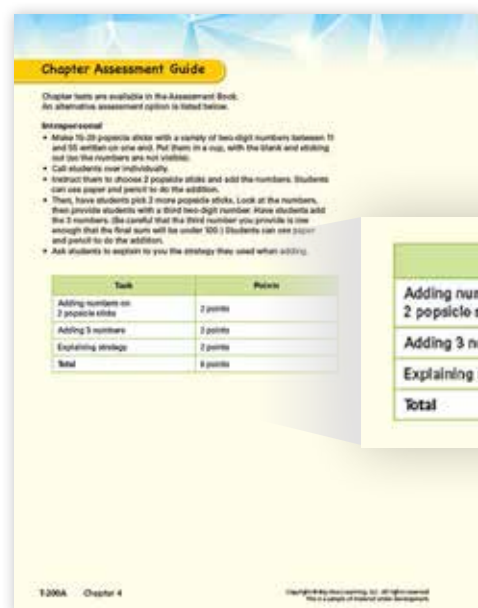
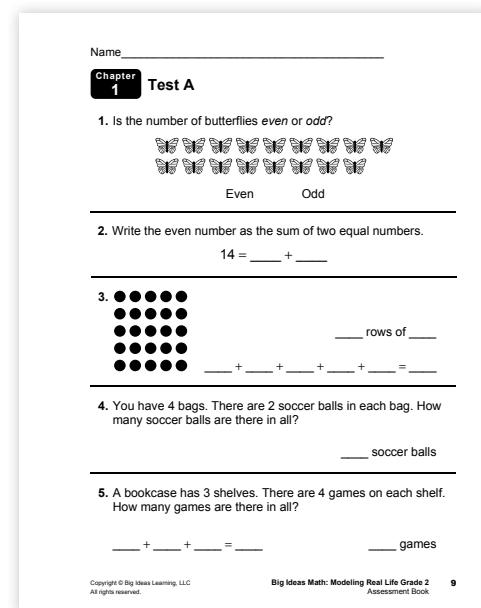
Each chapter opens with a **Performance Task Preview**. It previews what children will be learning throughout the chapter.



The Performance Task Preview is an engaging way to hook them into the content of the chapter with some guiding questions about engaging and relevant topics.

Students are given visibility into what will be expected of them at the end of the chapter to ensure accountability for learning.

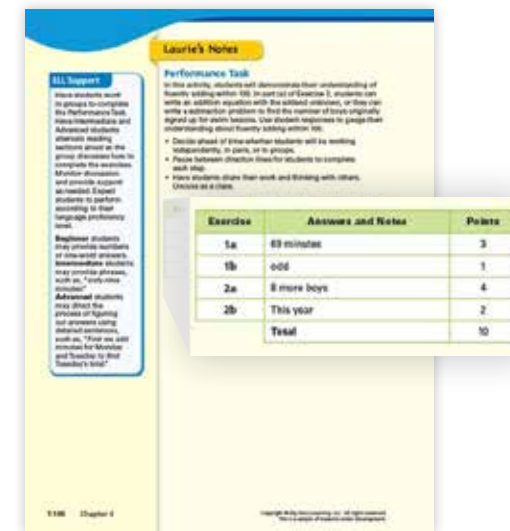
**Chapter Tests** are available in the Assessment Book. Additional assessment opportunities include **Course Benchmark Tests** (Pre-Course, Post-Course, and Cumulative), as well as **Prerequisite Skills Practice**.



Task	Points
Adding numbers on 2 popcicle sticks	2 points
Adding 3 numbers	2 points
Explaining strategy	2 points
Total	6 points

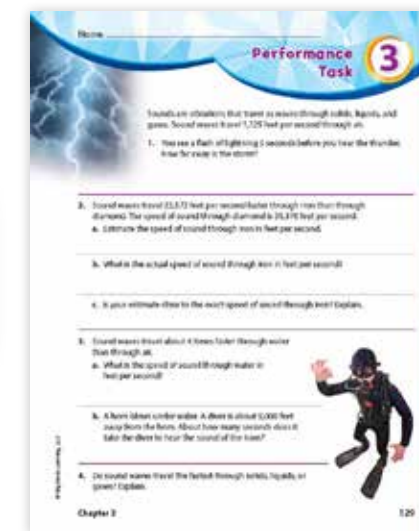
The Teaching Edition also includes an alternative assessment option to support multiple learning styles and meet the needs of all students.

**Laurie's Notes** and the **ELL support** provide instructional support for modifying the Performance Task activity for different levels of learners as well as options for individuals, partners, and small groups.



The evaluation table lays out a point structure for ease of grading and evaluation.

The **Performance Task** provides students with the opportunity to demonstrate their understanding of the chapter learning targets. It aligns with what was previewed in the Performance Task Preview.

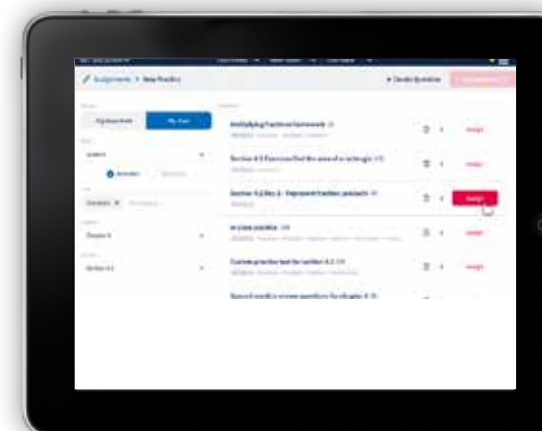


Grade 4 Performance Task

## Online Assessment

With the Dynamic Assessment System, teachers can build customizable assessments with *Big Ideas Math* question banks or items they create!

Items include a variety of question types such as multiple choice, technology enhanced, multiple select, essay style, and more.





# Technology

**Big Ideas Math: Modeling Real Life** comes with an innovative and dependable technology package that supports and enhances instruction for teachers and students.

## Dynamic Student Edition

The Dynamic Student Edition is a complete, interactive version of the Student Edition. Students have access to interactive explorations, digital examples, virtual manipulatives, Lesson Tutorial Videos (Grades 3-5), and digital exercises from the textbook.



## Dynamic Assessment System

With the Dynamic Assessment System, teachers can create customizable homework and assessments with *Big Ideas Math* question banks or items they create!

Items include a variety of question types, all of which are automatically scored except for the newly released essay questions, which allow students to explain their thinking and reasoning.

The reports in this system provide the feedback teachers need to drive instruction.



Students complete the assignments online and can receive immediate feedback on their progress.

## STEAM Videos

STEAM Videos, which are available for Grades 3-5, allow students to see mathematics in real life.



STEAM Performance Tasks make further connections to the mathematical content. Students learn about animals, electricity, sea levels, constellations, and more!

## Math Musicals

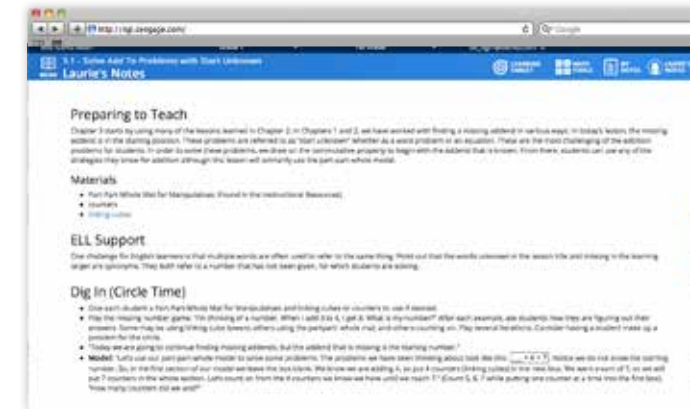
Math Musicals are a fun way of bringing music and literature into your math classroom. *Big Ideas Math's* own Newton, the dog, and Descartes, the cat, team up to provide educational stories, songs, and animations to enhance student learning.



Math Musicals bring fun into the classroom with engaging songs that support concepts with patterns, rhythm, and rhymes.

## Dynamic Classroom

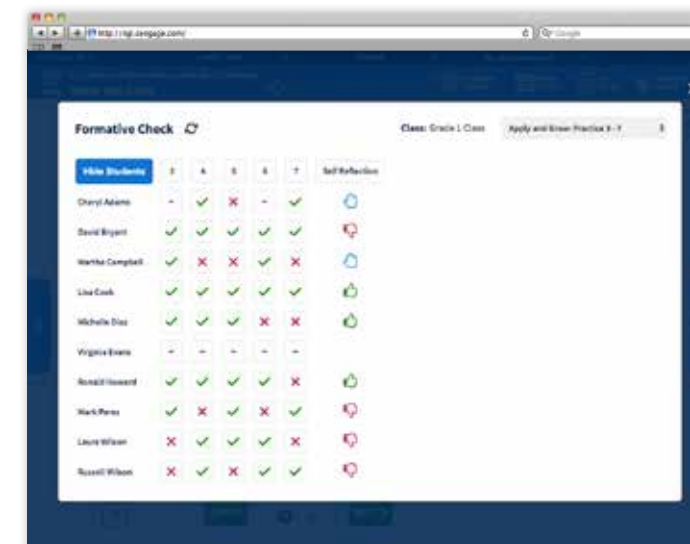
The Dynamic Classroom mimics the students' Dynamic Student Edition, with additional resources and support for teachers.



Point-of-use Laurie's Notes guide instruction with Dig Ins, motivation suggestions, teaching tips, questions to ask the students, closure strategies, and more!



Interactive explorations and digital examples from the textbook create a 21st-century classroom atmosphere that engages students.



The Formative Check provides teachers with immediate feedback on student progress, making it easy to differentiate and provide support where it is needed the most.

## Skills Trainer

The Skills Trainer is an online interactive tool for skill practice that comes with detailed reports for teachers to gain insight into each student's proficiency. Students have access to every skill found within the *Modeling Real Life* series.



The Skills Trainer can be used to engage students in remediation or as the daily warm-up for the lessons!



## Components

### PRINT RESOURCES

**Student Edition (Volumes 1 and 2)**

**Teaching Edition (Volumes 1 and 2)**

#### Resources by Chapter

- Family Letter
- Warm-Ups
- Extra Practice
- Reteach
- Enrichment and Extension
- Chapter Self-Assessment\*

#### Assessment Book

- Prerequisite Skills Practice
- Course Benchmark Tests
- Chapter Tests

#### Instructional Resources

- Vocabulary Cards
- Blackline Masters
- Activities

#### Skills Review Handbook\*

#### Differentiated Rich Math Tasks

### ADDITIONAL RESOURCES

#### Manipulative Kits

#### Literature Kits

#### Math Musicals

#### Newton and Descartes Puppet Set

### TECHNOLOGY RESOURCES

#### Dynamic Student Edition

- Virtual Manipulatives
- Interactive Explorations
- Digital Examples
- Lesson Tutorial Videos\*

#### Dynamic Classroom

- Laurie's Notes
- Virtual Manipulatives
- Interactive Explorations
- Digital Examples
- Formative Check
- Flip-To

#### Dynamic Teaching Tools

- Answer Presentation Tool\*
- Skills Trainer
- Digital Flashcards
- STEAM Videos\*
- Game Library
- Multi-Language Glossary
- Additional Online Resources
  - Lesson Plans
  - Differentiating the Lesson
  - Graphic Organizers
  - Pacing Guides
  - Worked-Out Solutions Key\*
  - Math Tool Paper
  - Kindergarten Exploration Literature

#### Dynamic Assessment System

- Customized Practice and Assessments
- Detailed Reports

#### Video Support for Teachers

- Professional Development Videos
- Concepts and Tools Videos

\*Available for Grades 3–5

# Big Ideas Math: Modeling Real Life offers a program that:

## INSPIRES

*Elevate student learning with a balanced approach*

## ENGAGES

*Captivate student learning with innovative technology*

## EMPOWERS

*Make learning visible through student accountability*

## GROWS

*Positively impact student performance in mathematics*

Learn more at [NGL.Cengage.com/BigIdeas](https://www.ngl.cengage.com/BigIdeas)



# K-12 Programs

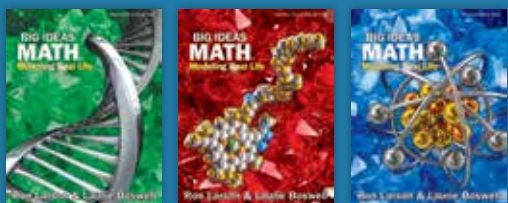
*Big Ideas Math* programs offer a seamless articulation from elementary through high school. With a consistent author voice from level to level, students make connections through cohesive progressions and rich instruction.

*Big Ideas Math* uses a balanced approach to engage students' inquiring minds and empower them to become mathematical thinkers in their daily lives.



Common Core  
edition available  
for Grade K  
through Algebra 2.

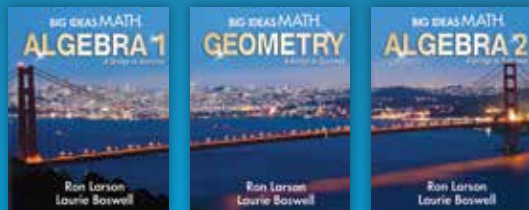
## Big Ideas Math: Modeling Real Life for Grades K-5



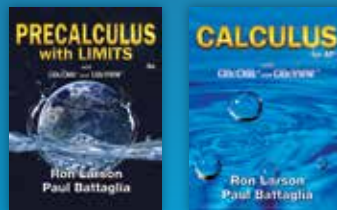
Advanced middle school  
courses available!

## Big Ideas Math: Modeling Real Life for Grades 6-8

Integrated  
Mathematics  
courses also  
available!



Grades 9-12



Precalculus/AP® Calculus

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