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, and into high school, 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.

We recognize the need for meaningful application across subject areas and career-related fields.

—Laurie Boswell, Ed.D.

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 middle school math classrooms!

- Uses learning targets and success criteria for student self-assessment
- Supports deep conceptual understanding to facilitate meaningful application for success in higher-level math courses
- Helps teachers recognize the impact they have on students
- Allows students to grow as independent learners and experience the delight of mathematics

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 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.

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, and into high school, 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.

Big Ideas Math: Modeling Real Life fits the needs of today’s middle school math classrooms!

- Uses learning targets and success criteria for student self-assessment
- Supports deep conceptual understanding to facilitate meaningful application for success in higher-level math courses
- Helps teachers recognize the impact they have on students
- Allows students to grow as independent learners and experience the delight of mathematics

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 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.

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, and into high school, 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.

Big Ideas Math: Modeling Real Life fits the needs of today’s middle school math classrooms!

- Uses learning targets and success criteria for student self-assessment
- Supports deep conceptual understanding to facilitate meaningful application for success in higher-level math courses
- Helps teachers recognize the impact they have on students
- Allows students to grow as independent learners and experience the delight of mathematics

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 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.

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, and into high school, 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.

Big Ideas Math: Modeling Real Life fits the needs of today’s middle school math classrooms!

- Uses learning targets and success criteria for student self-assessment
- Supports deep conceptual understanding to facilitate meaningful application for success in higher-level math courses
- Helps teachers recognize the impact they have on students
- Allows students to grow as independent learners and experience the delight of mathematics

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 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.
Multiplying Fractions

Explorations help students reach a deeper level of conceptual understanding.
Learning Targets and Success Criteria encourage students to self-assess and evaluate their learning.

MULTIPLYING FRACTIONS

Using Models to Solve a Problem

Work with a partner. A bottle of water is \( \frac{3}{4} \) full. How much of the water is left?

\[ \text{area model} = \quad \frac{3}{4} \]

Exploring Models

Solving a Problem Involving Fractions

Work with a partner. A park has a playground \( \frac{3}{4} \) of its width and \( \frac{4}{5} \) of its length.

Find the portion of the park that is \( \frac{3}{4} \) of its width and \( \frac{4}{5} \) of its length.

Find General Learning Target:

• I can interpret products involving fractions and mixed numbers to solve real-life problems.

• I can draw a model to explain fraction multiplication.

• I can multiply fractions.

Find General Learning Target:

• I can interpret products involving fractions and mixed numbers to solve real-life problems.

• I can draw a model to explain fraction multiplication.

• I can multiply fractions.

EXPLORATION 1

EXAMPLE 5

Multiplying Mixed Numbers

Find \( \frac{1}{3} \times \frac{2}{5} \).

\[ \frac{1}{3} \times \frac{2}{5} = \frac{2}{15} \]

Try It

Multiply. Write the answer in simplest form.

1. \( \frac{1}{3} \times \frac{1}{4} \)
2. \( \frac{1}{2} \times \frac{1}{4} \)
3. \( \frac{1}{3} \times \frac{1}{5} \)
4. \( \frac{1}{4} \times \frac{1}{2} \)

EXAMPLE 6

Multiplying Real Life

A city is resurfacing a basketball court. Find the area of the court.

The length of the court is \( 308 \) meters and the width is \( 22 \) meters.

Find the product of the length and the width. Then rate your understanding of the success criteria in your journal.

\[ \text{area} = \text{length} \times \text{width} \]

\[ \text{area} = 308 \times 22 \]

Multiply the numerators and the denominators.

\[ \frac{308}{1} \times \frac{22}{1} = \frac{6776}{1} \]

Solve the problem. Explain your reasoning.

\[ \text{area} = 6776 \text{ square meters} \]

Self-Assessment for Concepts & Skills

Identify each exercise. Then rate your understanding of the concepts in each exercise.

1. \( \frac{1}{3} \times \frac{1}{4} \)
2. \( \frac{1}{2} \times \frac{1}{4} \)
3. \( \frac{1}{3} \times \frac{1}{5} \)
4. \( \frac{1}{4} \times \frac{1}{2} \)

Self-Assessment for Problem Solving

Identify each exercise. Then rate your understanding of the concepts in each exercise.

20. You spent \( \frac{1}{2} \) of an amusement park. You spent \( \frac{1}{3} \) of this time riding roller coasters. How much time did you spend riding roller coasters?

21. A venue is preparing for a concert on the fl oor shown. The width of the red carpet is \( \frac{3}{4} \) of the width of the floor. What is the area of the red carpet?

22. You need \( \frac{1}{4} \) of your amount of a swimming pool. You need \( \frac{3}{5} \) of this amount to fill the pool. How much of the pool do you need to fill?
The Big Ideas Math: Modeling Real Life Teaching Edition is a comprehensive resource that guides teachers throughout instruction. A table in each chapter 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.

The Progressions highlight the program coherence from grade to grade. Teachers can see what was covered in the previous grade and how it builds to the content they are teaching. They can also see further connections and applications in the next grade.

In the Progressions Through the Chapter, the standards are called out for every section along with guidance on where students should be tracking on their conceptual development.

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

Laurie’s Notes provide effective tips for using models and making connections to previously learned concepts, as well as real-world applications.

The Progressions Through the Chapter sets the stage for the content. The overview lays out the conceptual progression for that chapter and how it is developed and instructed in each lesson.

The information offers an efficient way to plan for the chapter and solidify math background.
**Embedded Differentiation**

The Teaching Edition, along with the program’s print and digital resources, offers support for all levels of learners. The comprehensive guidance for scaffolding instruction in the Teaching Edition was thoughtfully written with both students and teachers in mind. Throughout every Lesson, Laurie’s Notes provide point-of-use differentiation for emerging, proficient, and advanced learners. The modification suggestions relate directly to the specific content of the exercises.

**ELL Support**

The ELL support boxes are located throughout the Teaching Edition. These are quick, point-of-use notes to help teachers differentiate instruction for ELL students. Some of the ELL notes even have differentiated levels of support to provide the most effective suggestions for these students.

**Print and Digital Resources to meet the needs of all Learners**

The new middle school series offers options and resources to curate a unique instructional experience. There are a variety of opportunities for reteaching, extra practice, enrichment, and extension in the Teaching Edition, online, and in printed resources.

The Math Tools provide an array of virtual manipulatives for modeling lessons or for students to work out solutions while practicing in their Dynamic Student Edition.

**School to Home Connections**

The Resources by Chapter include Family Letters in English, Spanish, and other languages to support practice and homework exercises.

**Differentiation**
opportunities appear throughout

Student ownership and accountability for learning is a vital component of fluency with both the content and practice standards.

Assessment

The middle school program offers a variety of opportunities for both formative and summative assessment. Options include:

- Self-Assessments
- Prerequisite Skills Practice
- Pre-Course and Post-Course Test
- Quizzes
- Chapter Tests
- Alternative Assessments
- STEAM Performance Tasks
- Quarterly Benchmark Tests
- Online Assessments (see Technology page)

Student ownership and accountability for learning is a vital component of fluency with both the content and practice standards. Every Chapter offers a Chapter Self-Assessment for students to evaluate their understanding of the learning targets and their performance perception related to the success criteria. Laurie’s Notes provide guidance for supporting all learners’ success on the Self-Assessment.

The Chapter Tests and Quizzes are opportunities for students to demonstrate understanding. The problems include questions that extend concepts. High-stakes assessments require a deeper level of conceptual understanding. Explorations provide students with multiple opportunities to develop their conceptual understanding.

The STEAM Performance Task activity provides students the opportunity to demonstrate their understanding of the chapter learning targets. It aligns with the Performance Task Preview from the beginning of the chapter and the Performance Task reference on the Connecting Concepts page.

Connecting Concepts prepare students for high-stakes assessments by asking questions that use previously learned skills in new contexts. Students also practice with the Problem-Solving Plan so they are prepared to use it during assessments.
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, and digital exercises from the textbook.

**Dynamic Classroom**
The Dynamic Classroom mimics the students’ Dynamic Student Edition, with additional resources and support for teachers. Interactive explorations and examples from the textbook create a 21st-century classroom atmosphere that engages students. Point-of-use Laurie’s Notes guide instruction with motivation suggestions, teaching tips, questions to ask the students, closure strategies, and more!

**STEAM Videos**
STEAM Videos allow students to see mathematics in real life. They also come with corresponding Performance Tasks to make further connections to the mathematical content. Students learn about DNA, the carbon atom, natural disasters, and more!

**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, as well as skills from Algebra 1 and Geometry. The Skills Trainer can be used to engage students in remediation or as the daily warm-up for the lessons!

**Formative Check**
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.

**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! Question types include a variety of technology-enhanced items, such as drag and drop, graphing, point plotting, multiple select, multiple-choice, and more. Students complete the assignments online and can receive immediate feedback on their progress. The reports in this system provide the feedback teachers need to drive instruction.
Components

**PRINT RESOURCES**

- Student Edition
- Teaching Edition
- Student Journal
- Resources by Chapter
  - Family Letter
  - Warm-Ups
  - Extra Practice
  - Reteach
  - Enrichment and Extension
- Assessment Book
  - Prerequisite Skills Practice
  - Pre-Course Test
  - Quizzes
  - Chapter Tests
  - Alternative Assessments
  - STEAM Performance Tasks
  - Course Benchmark Tests
  - Post-Course Test
- Skills Review Handbook
- Rich Math Tasks

**TECHNOLOGY RESOURCES**

**Dynamic Student Edition**
Includes access to Student Edition and Student Journal online, as well as:
- Virtual Manipulatives
- Interactive Explorations
- Digital Examples
- Lesson Tutorial Videos

**Dynamic Classroom**
Includes access to the Teaching Edition, as well as:
- Laurie's Notes
- Virtual Manipulatives
- Interactive Explorations
- Digital Examples
- Extra Examples
- Formative Check
- Mini-Assessments
- 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
  - Cross-Curricular Projects
  - Worked-Out Solutions Key
  - Math Tool Paper

**Dynamic Assessment System**
- Customized Practice and Assessments
- Detailed Reports

**Video Support for Teachers**
- Pedagogical Approach Videos
- Concepts and Tools Videos

---

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
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.

**Big Ideas Math: Modeling Real Life for Grades K–5**

**Big Ideas Math: Modeling Real Life for Grades 6–8**

Integrated Mathematics courses also available!

Grades 9–12

Precalculus/AP® Calculus

Learn more!

NGL.Cengage.com/BigIdeas

Visit NGL.Cengage.com/repfinder to locate your sales consultant for pricing or ordering information. Or, call 888-915-3276.

“AP® is a registered trademark of the College Board, which was not involved in the production and does not endorse this product. Big Ideas Math® and Big Ideas Learning® are registered trademarks of Larson Texts, Inc.

“National Geographic,” “National Geographic Society” and the Yellow Border Design are registered trademarks of the National Geographic Society ®Marcas Registradas.