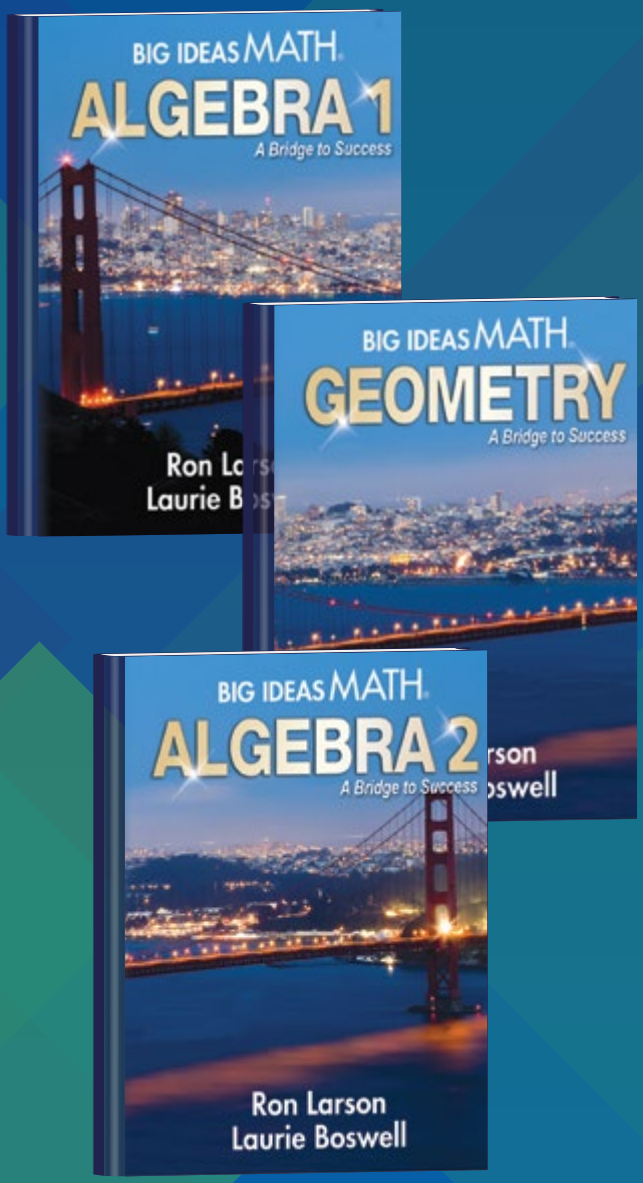
BIG IDEAS MATH®

High School

UPDATED EDITION

A BRIDGE TO SUCCESS

Ron Larson
Laurie Boswell



BIG IDEAS LEARNING®

NATIONAL GEOGRAPHIC LEARNING | CENGAGE

Enrich Learning with *Big Ideas Math*®

Big Ideas Math is pleased to offer a complete high school program built for student success—***Big Ideas Math: A Bridge to Success—Algebra 1, Geometry,*** and ***Algebra 2***. Ron Larson and Laurie Boswell's research-based program provides a rigorous, focused, and coherent curriculum for high school students.

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.

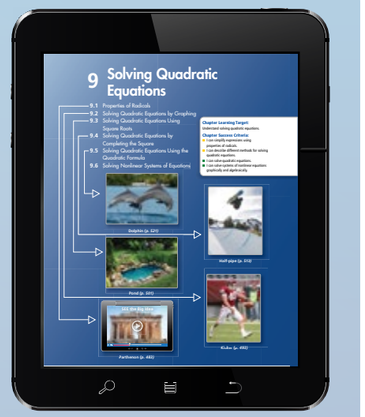
Big Ideas Math offers a program that:

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

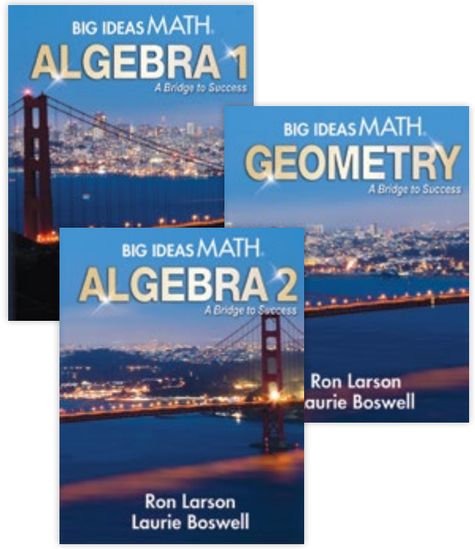


LOXODONTA AFRICANA
African Elephant

COVER: One species of African elephant, the bush elephant, is the largest living terrestrial animal, while the forest elephant is the third-largest. African elephants are found widely in Sub-Saharan Africa, in dense forests, mopane and miombo woodlands, Sahelian scrub, or deserts. The trunk acts as a fifth limb, a sound amplifier, and an important method of touch.
http://www.nationalgeographic.com/animals/mammals/a/african-elephant/
PHOTO CREDIT: Codyphotography / iStock by Getty Images

Expert Authors

The ***Big Ideas Math*** authors are dedicated to fostering curiosity and confidence in learners.



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 encourages productive struggle. It's not about being hard. The entire program is accessible for all students.

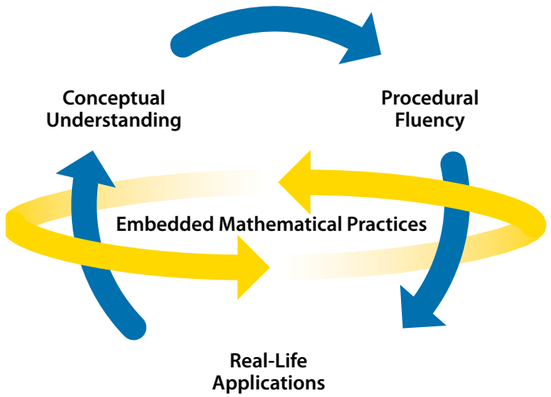
—Laurie Boswell, Ed.D.

Dr. Larson and Dr. Boswell began writing together in 1992. Since that time, they have authored over four dozen textbooks. In their collaboration, Ron is primarily responsible for the Student Edition while Laurie is primarily responsible for the Teaching Edition.

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.

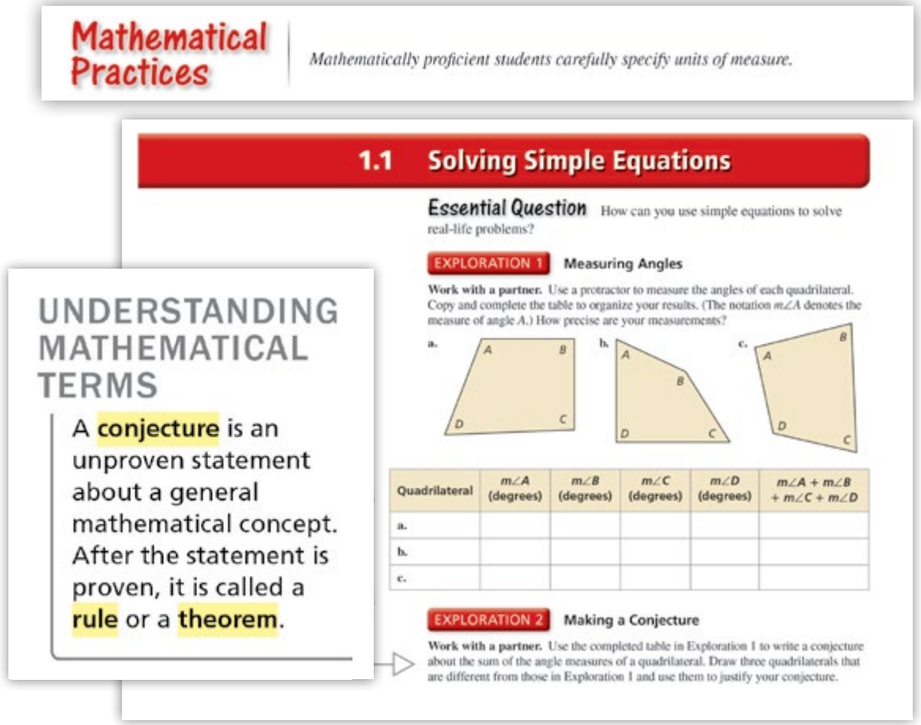
Laurie Boswell, Ed.D., is the former Head of School at Riverside School in Lyndonville, Vermont. In addition to textbook authoring, she provides mathematics consulting and embedded coaching sessions. Dr. Boswell received her Ed.D. from the University of Vermont in 2010. She is a recipient of the Presidential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

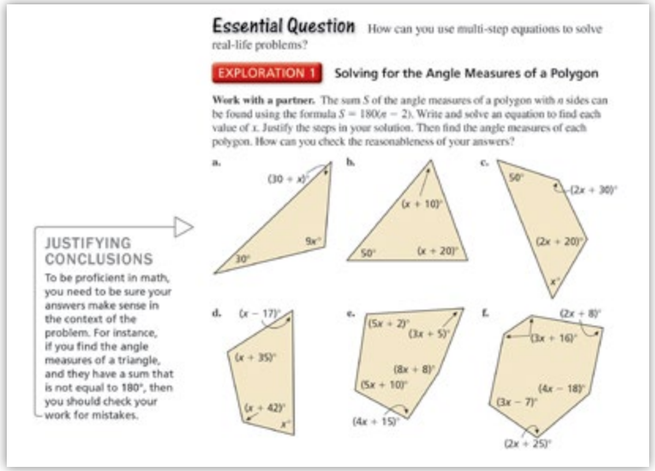
Program Philosophy: Rigor and Balance with Embedded Mathematical Practices



The ***Big Ideas Math*** program balances conceptual understanding with procedural fluency. Real-life applications create connections to content and help turn mathematical learning into an engaging and meaningful way to explore the real world.

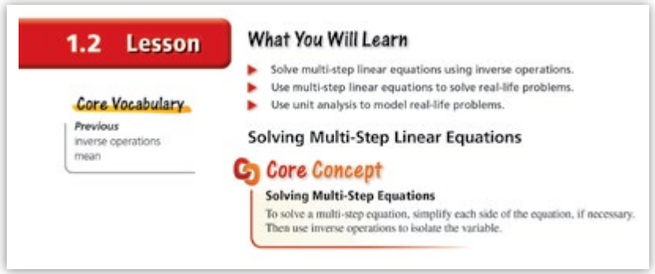
Embedded ***Mathematical Practices*** in grade-level content promote a greater understanding of how mathematical concepts are connected to each other and to real-life scenarios.





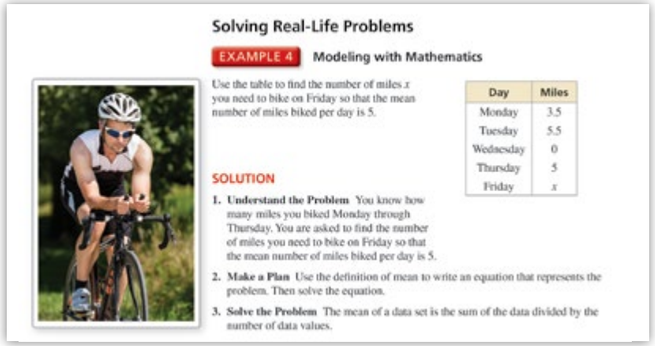
Conceptual Understanding

Explorations and guiding Essential Questions encourage ***conceptual understanding***.



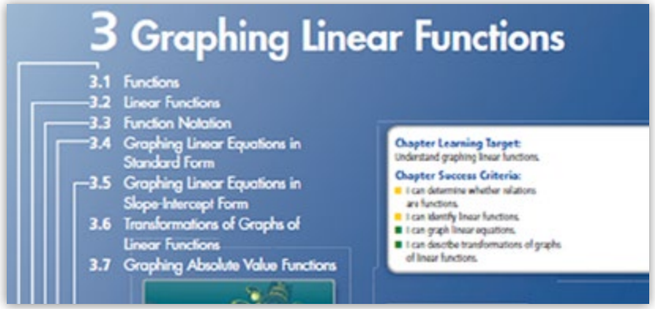
Procedural Fluency

Scaffolded lessons allow for ***procedural fluency*** and provide the opportunity to use clear, precise mathematical language.



Real-Life Applications

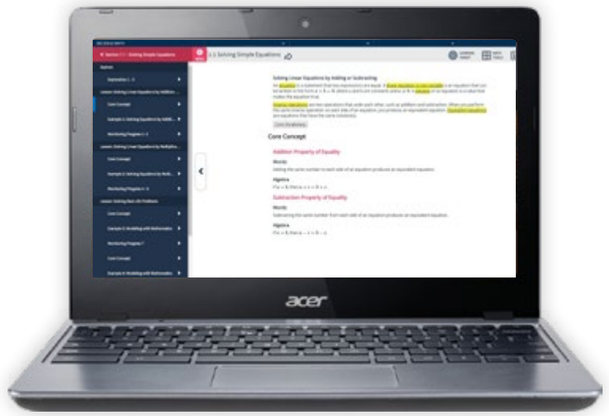
Real-life applications provide students with opportunities to create connections between classroom lessons and realistic scenarios.



Learning Targets and Success Criteria

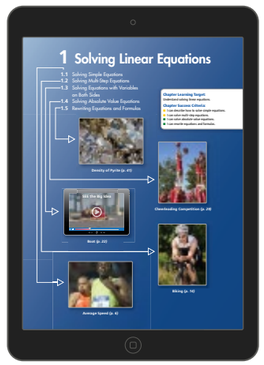
Learning Targets and ***Success Criteria*** encourage students to self-assess and evaluate their learning. Students and teachers receive guidance and clarity for moving from surface level to deep level.

Ignite Learning with Dynamic Technology



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, providing motivation suggestions, teaching tips, questions to ask the students, closure strategies, and more! ***Dynamic Investigations*** and ***Digital Examples*** from the textbook create a 21st-century classroom atmosphere that engages students.



Dynamic Student Edition eBook

The ***Dynamic Student Edition eBook*** is a complete electronic version of the Student Edition that includes interactive digital resources. The eBook allows students to navigate through the textbook, highlight important information, and add notes or bookmarks. While this eBook is available off-line, with a data or internet connection, students can access embedded, digital enhancements.

Audio available in English and Spanish

Dynamic Investigations

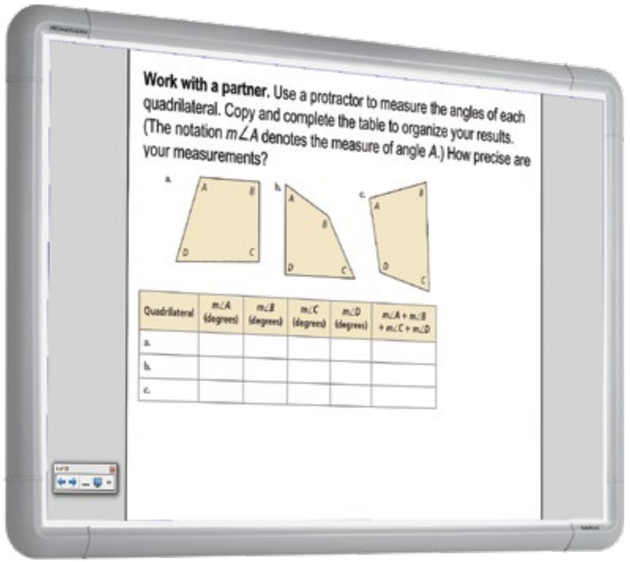
The ***Dynamic Investigations*** in the ***Big Ideas Math*** program allow students and teachers to interactively complete the ***Big Ideas Math*** Explorations.

CREATE CONNECTIONS THROUGH EXPLORATION!

Real-Life STEM Videos

Every chapter in the ***Big Ideas Math*** program contains a ***Real-Life STEM Video*** allowing students to further engage with mathematical concepts. Students learn about the Parthenon, natural disasters, solar power, and more!

ENCOURAGE CURIOSITY WITH STEM CONCEPTS!



Dynamic Teaching Tools

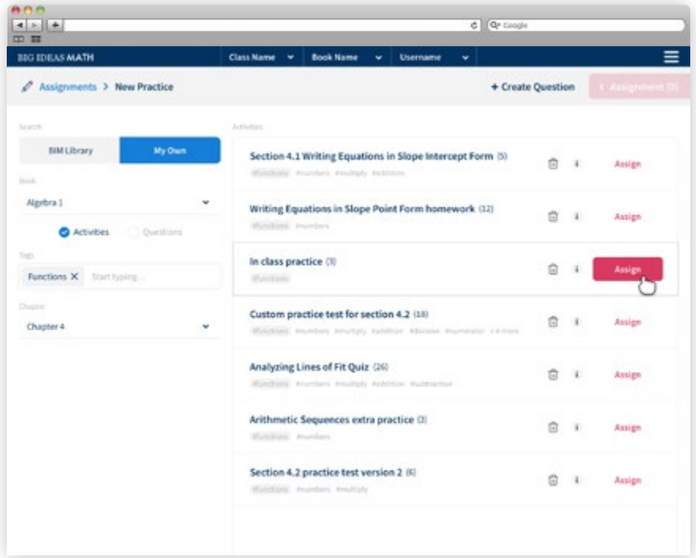
These tools feature the ***Interactive Whiteboard Lesson Library***. Teachers can present any ***Big Ideas Math*** lesson from an interactive whiteboard. Standard whiteboard lessons and customizable templates are included.

VISUALLY RICH PRESENTATIONS!

The *Big Ideas Math* Dynamic Assessment System

Homework and Assessment That Informs

- Includes multiple, customizable assignments for each chapter, which can contain teacher-created items
- Assign homework and assessments for the entire class or a select group of students
- Offers progress monitoring assessments for an adaptive testing experience



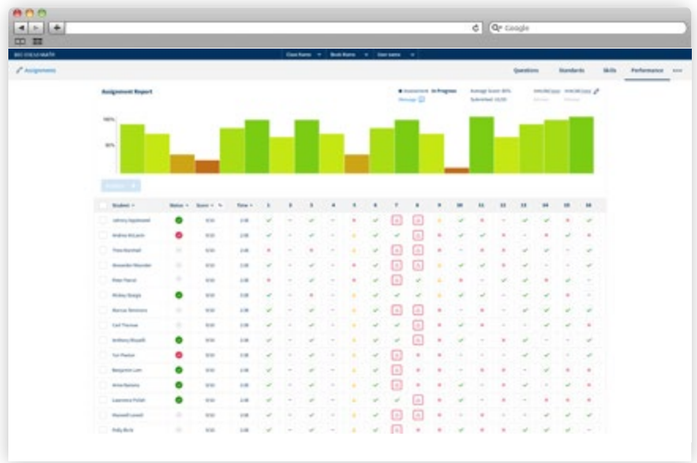
RESTORE STUDENT CONFIDENCE!

Direct Ties to Remediation

- Includes direct links to Lesson Tutorial Videos
- Allows students to access live chat tutors for selected exercises

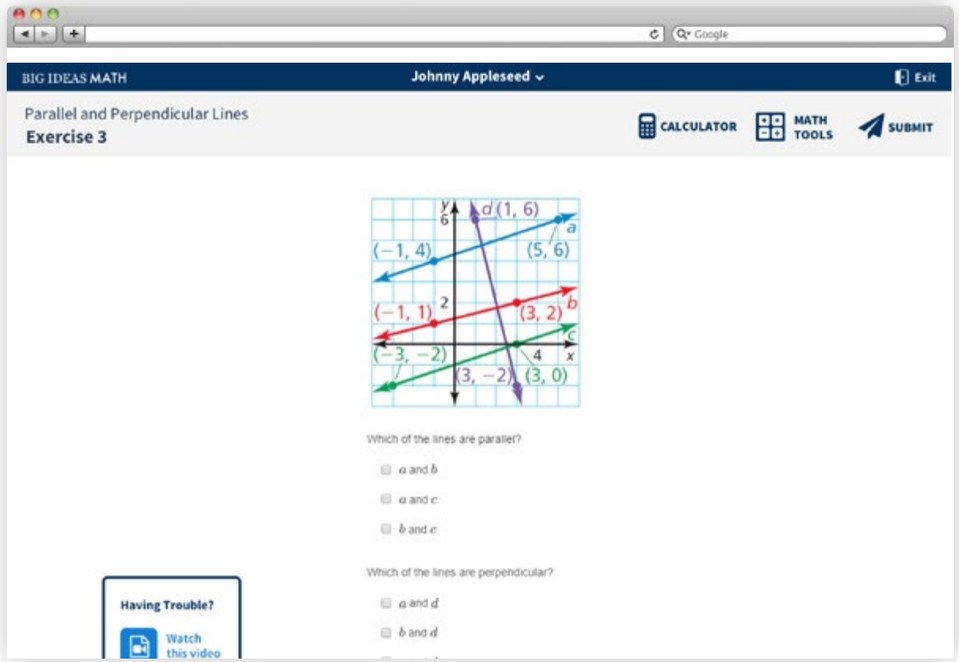
Assessment Reporting with Precision

- Offers real-time reporting at both the class and student levels
- Organizes progress details in a variety of reports, including Questions, Standards, Skills, and Performance



"Formative practice has to have feedback and action. Use assessments to drive instructional decisions."

—Laurie Boswell, Ed. D.

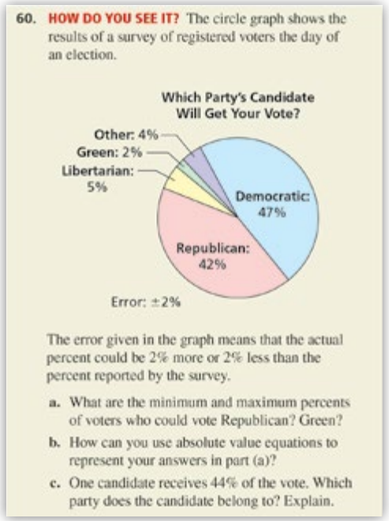


Intuitive Design and Delivery

- Provides embedded tools for students
- Includes auto-scored, technology-enhanced items such as drag and drop, graphing, point plotting, multiple select, and fill in the blank using math expressions
- Allows teachers to include reminders or notes to students

Preparation for the Journey Toward High-Stakes Testing

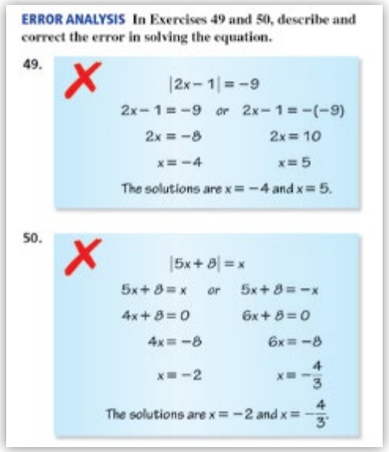
Each chapter of the ***Big Ideas Math*** program features question types frequently found on standardized tests. The balanced approach to instruction also helps students develop the habits of mind required to be successful on high-stakes tests.


60. **HOW DO YOU SEE IT?** The circle graph shows the results of a survey of registered voters the day of an election.

The error given in the graph means that the actual percent could be 2% more or 2% less than the percent reported by the survey.

a. What are the minimum and maximum percents of voters who could vote Republican? Green?
b. How can you use absolute value equations to represent your answers in part (a)?
c. One candidate receives 44% of the vote. Which party does the candidate belong to? Explain.


41. **MAKING AN ARGUMENT** Your friend claims that Thermometer A displays a greater temperature than Thermometer B. Is your friend correct? Explain your reasoning.


ERROR ANALYSIS In Exercises 49 and 50, describe and correct the error in solving the equation.

49. ✗
$$|2x - 1| = -9$$
$$2x - 1 = -9 \quad or \quad 2x - 1 = -(-9)$$
$$2x = -8 \qquad 2x = 10$$
$$x = -4 \qquad x = 5$$
The solutions are $x = -4$ and $x = 5$.

50. ✗
$$|5x + 8| = x$$
$$5x + 8 = x \quad or \quad 5x + 8 = -x$$
$$4x + 8 = 0 \qquad 6x + 8 = 0$$
$$4x = -8 \qquad 6x = -8$$
$$x = -2 \qquad x = -\frac{4}{3}$$
The solutions are $x = -2$ and $x = -\frac{4}{3}$.

Exercises
The Exercises in the ***Big Ideas Math*** program provide students with opportunities to use multiple approaches to solve problems.

Dynamic Assessment System
This tool allows teachers to provide customizable homework directly related to the ***Big Ideas Math*** program. Assignments are automatically scored and students have access to immediate remediation on homework questions.

Explorations
The Explorations that begin each section require students to use higher-level thinking to work through each problem and to explain their reasoning in the solution.

Cumulative Assessments
Each chapter in the ***Big Ideas Math*** program includes a Cumulative Assessment. The questions in each assessment were carefully chosen to represent problem types and reasoning patterns frequently found on standardized tests.

Quizzes and Tests
The Quizzes and Tests in the ***Big Ideas Math*** program assess the concepts students learned in each lesson.

Online Test Practice
Self-grading tests are available online, allowing students to receive immediate feedback on their progress.

Performance Tasks
Each chapter of the ***Big Ideas Math*** program contains a Performance Task in the Assessment Book and an online Performance Task that correlates to the STEM video of the chapter. Each Performance Task allows students to work with multiple objectives.

Alternative Assessments
Alternative Assessments provide teachers with the opportunity to assess students on the same content in a variety of ways.

Robust Print Support for All Learners

Student Edition
The Student Edition was designed using the Universal Design for Learning Guidelines (CAST © 2011) and features carefully chosen images that increase student engagement and enhance the mathematical content.

Teaching Edition
The Teaching Edition provides teachers with complete support for every ***Big Ideas Math*** lesson. Master educator Laurie Boswell incorporates instructional insights and recommendations in Laurie's Notes.

Student Journal *Available in English and Spanish*
This consumable workbook serves as a valuable resource where students can solve extra practice problems, take notes, and internalize new concepts by expressing their findings in their own words.

Resources by Chapter
- Start Thinking
- Warm Up
- Cumulative Review Warm Up
- Extra Practice (Practice A and B)
- Enrichment and Extension
- Puzzle Time
- Family Communication Letters

Available in English and Spanish

Assessment Book
- Prerequisite Skills Test with Item Analysis
- Pre-Course Test with Item Analysis
- Mid-Chapter Quizzes
- Chapter Tests
- Alternative Assessments with Scoring Rubrics
- Performance Tasks
- Cumulative Tests
- Post Course Test with Item Analysis

ACCESS ALL PRINT COMPONENTS ONLINE AT BIGIDEASMATH.COM!

Algebra 1
CHAPTERS
1. Solving Linear Equations
2. Solving Linear Inequalities
3. Graphing Linear Functions
4. Writing Linear Functions
5. Solving Systems of Linear Equations
6. Exponential Functions and Sequences
7. Polynomial Equations and Factoring
8. Graphing Quadratic Functions
9. Solving Quadratic Equations
10. Radical Functions and Equations
11. Data Analysis and Displays

Geometry
CHAPTERS
1. Basics of Geometry
2. Reasoning and Proofs
3. Parallel and Perpendicular Lines
4. Transformations
5. Congruent Triangles
6. Relationships Within Triangles
7. Quadrilaterals and Other Polygons
8. Similarity
9. Right Triangles and Trigonometry
10. Circles
11. Circumference, Area, and Volume
12. Probability

Algebra 2
CHAPTERS
1. Linear Functions
2. Quadratic Functions
3. Quadratic Equations and Complex Numbers
4. Polynomial Functions
5. Rational Exponents and Radical Functions
6. Exponential and Logarithmic Functions
7. Rational Functions
8. Sequences and Series
9. Trigonometric Ratios and Functions
10. Probability
11. Data Analysis and Statistics

Additional Topic: Composition of Functions

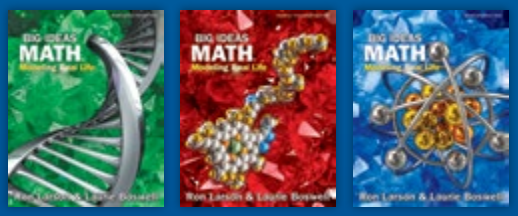
Appendix A (Online): Additional Topics in Algebra 2

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.

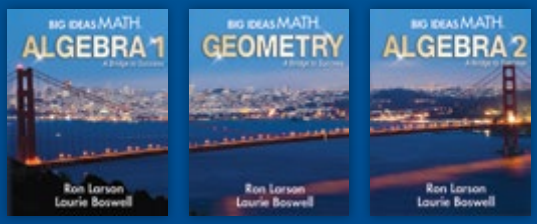
***Big Ideas Math: Modeling Real Life* for Grades K–5**

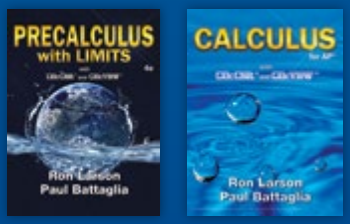


Advanced middle school courses available!

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

Integrated Mathematics courses also available!





Precalculus / AP® Calculus

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