

Mc
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Hill

Program Overview
Grades 9–12



Reveal MATH™

Algebra 1 • Geometry • Algebra 2

Reveal the Full Potential
in Every Student


revealmath.com/9-12



Reveal the Power and Possibility of Math!

Reveal Math™ includes a wealth of print and digital resources that lead to mastery of the standards.





Every classroom is unique, and each student is different in terms of knowledge level and learning style. Teachers need a set of tools as diverse as their students.

Reveal Math meets this need by providing students the positive mindset, confidence, and skills to achieve mastery of math standards while giving teachers an effective, flexible way to assess understanding and adapt instruction for every learner. Informed by the latest research on how students learn best, *Reveal Math* ensures students don't just meet the standards—they master them!

Reveal curiosity with mathematical exploration and discovery that deepens conceptual understanding.

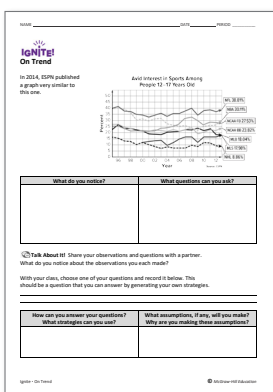
Reveal understanding with insightful instructional resources to more effectively differentiate and promote a positive student mindset.

Reveal possibilities with purposeful technology that creates an active classroom experience.

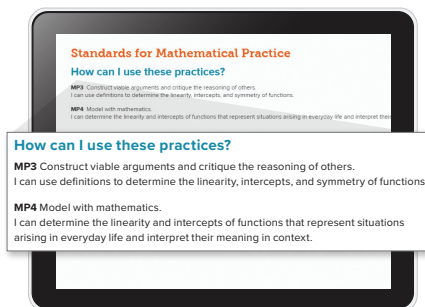
The Science of Learning Meets the Art of Teaching

The evolving field of educational research drove the approach of *Reveal Math*. Our team was inspired by esteemed publications such as *Principles to Actions* (NCTM), *Mathematical Mindsets* (Jo Boaler), and *Making Sense of Math* (Cathy Seeley), as well as learning models including Bloom's Taxonomy and Webb's Depth of Knowledge Guide. This solid foundation of academic research and direct feedback from hundreds of educators just like you ensures that *Reveal Math* represents the cutting-edge of best practices in mathematics instruction.

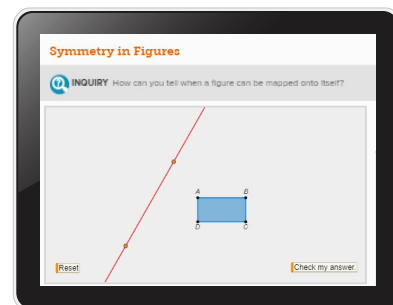
Research-Based Best Practices



Spark Students to Ask “Why?”
Ignite! Activities are designed to spark student curiosity and motivate them to ask questions, solve complex problems, and develop a can-do approach to mathematics.



Build Students' Confidence in Their Abilities
Learning targets in the form of “I Can” statements appear at the beginning of each lesson to communicate the lesson objective in student-friendly language.

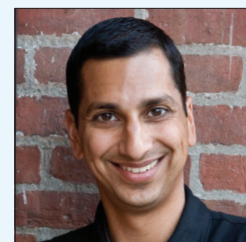


Nurture Curiosity with Rich Tasks
Online **Explore** activities begin with an open-ended question and require deep conceptual thinking from the learner. At the end of the **Explore** activity, students apply their learning in order to answer the **Inquiry Question**. The focus is on student exploration and reasoning, not just getting the right answer.

The expert advisor team behind *Reveal Math* includes thought leaders at the forefront of mathematics education.



Cathy L. Seeley, Ed.D.
Author, Educator,
and NCTM President
2004–2006



Raj Shah, Ph.D.
Founder of Math Plus
Academy, a STEM
enrichment program

Reveal Math
teaches students
how to think—
not *what* to think!

Talk About It!

What values of x might be easiest to use when graphing a linear equation when the x -coefficient is a whole number? Justify your argument.

Talk About It!

Why is the slope for vertical lines always undefined? Justify your argument.

Talk About It!

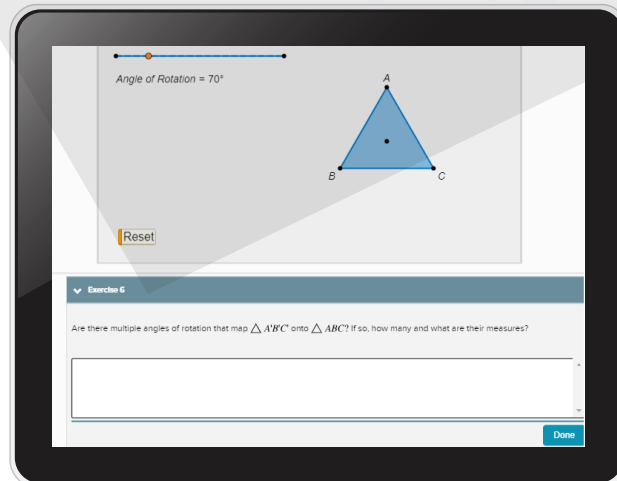
What do you notice about the symmetry, extrema, and end behavior of the function?

Talk About It!

How is the value of a in an absolute value function related to slope? Explain.

Exercise 6

Are there multiple angles of rotation that map $\triangle A'B'C'$ onto $\triangle ABC$? If so, how many and what are their measures?



Improve Communication

While Deepening Comprehension

Talk About It! prompts build mathematical discourse skills as students learn to clarify their thinking and defend their rationale.

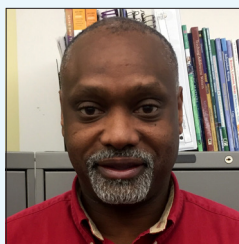
Teach the Value of Perseverance

Problems with multiple solution paths encourage **productive struggle** and challenge student thinking.



Cheryl R. Tobey, M.Ed.

Mathematics Program Director
at Maine Mathematics and
Science Alliance (MMSA)



Nevels Nevels, Ph.D.

PK–12 Mathematics
Curriculum Coordinator for
Hazelwood School District



Dinah Zike, M.Ed.

President of Dinah.com in
San Antonio, Texas, and
Dinah Zike Academy



Walter Secada, Ph.D.

Professor of Teaching
and Learning at the
University of Miami

What If Math Class Were the Most Exciting Class of the Day? It Can Be!

Reveal Math supports both low-tech and high-tech classrooms.

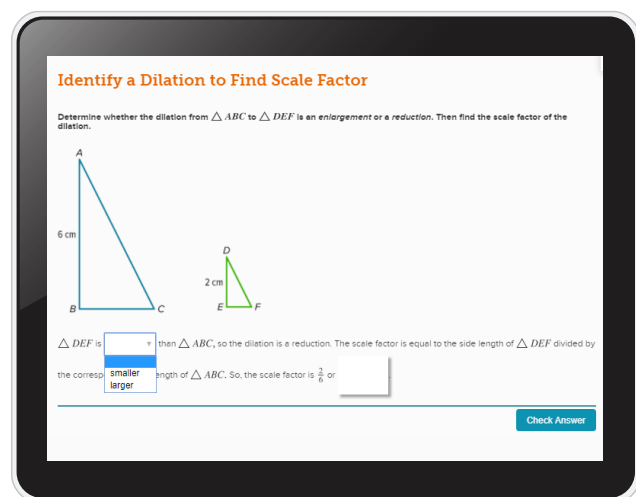
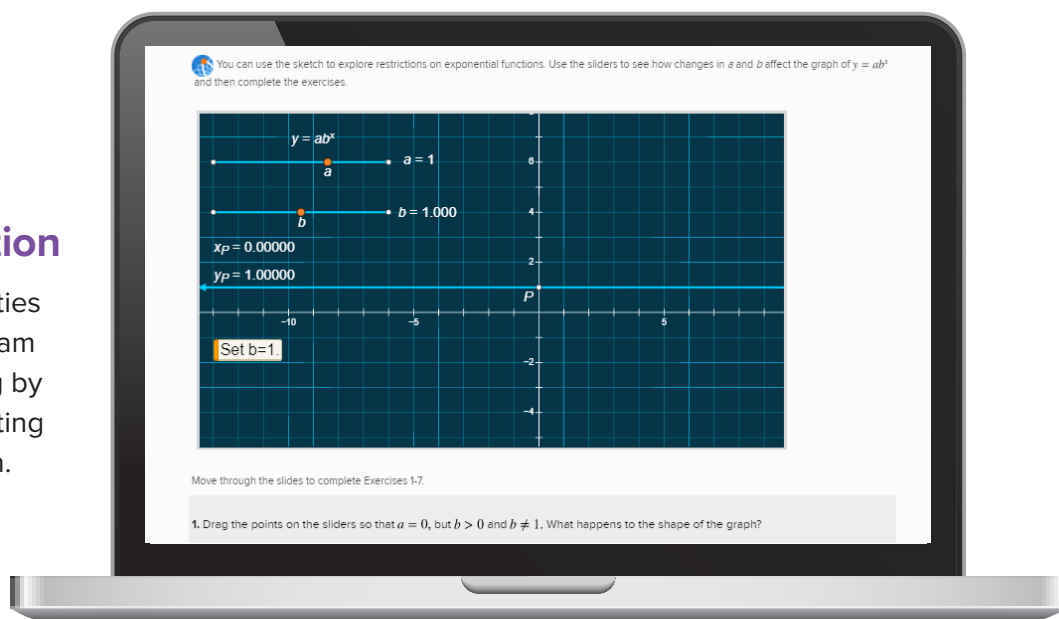
The blended print and digital instructional model captures the best of both modalities and brings them together in a seamless experience that makes math meaningful for your students.



Web Sketchpad®

Visualize Math Concepts in Action

Web Sketchpad® activities included with the program enhance understanding by dynamically demonstrating math concepts in action.



Prepare Students for Computer-Based Testing

Technology-enhanced items provide students the valuable practice they need to master computer-based assessments. These items include:

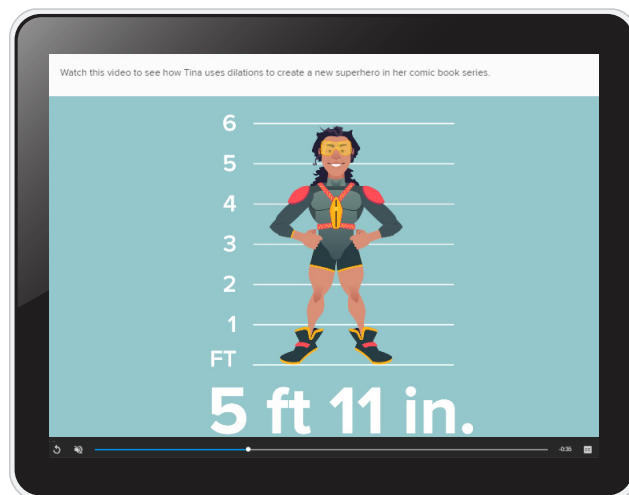
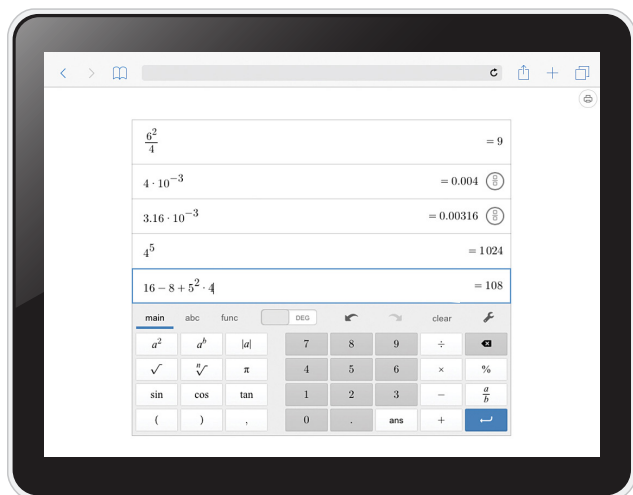
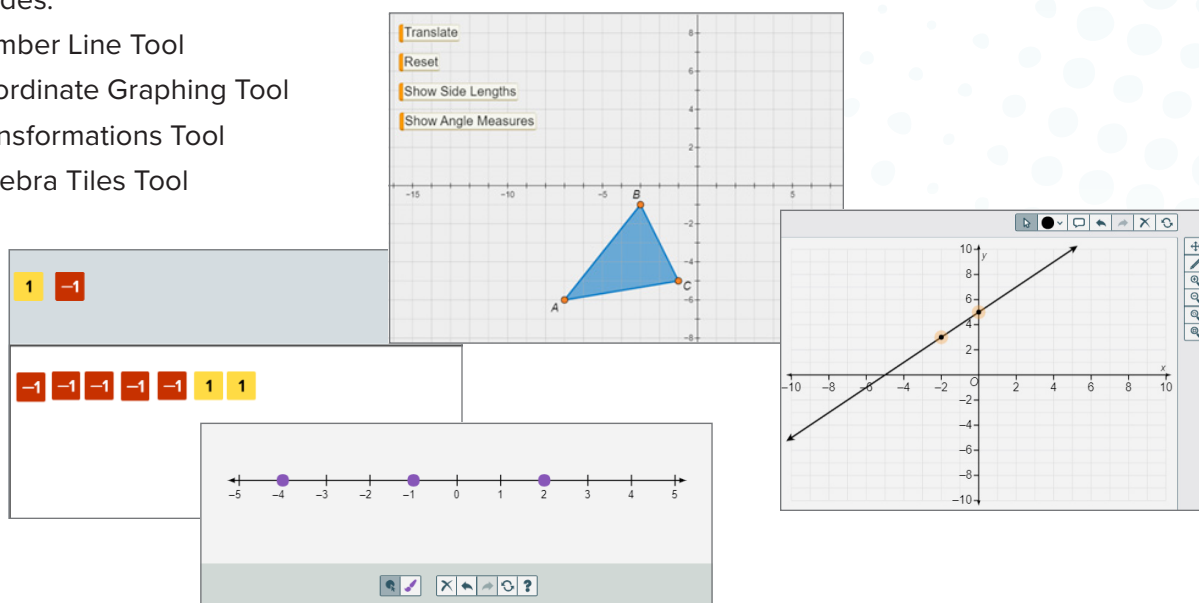
- Drag-and-drop
- Equation editor problems
- Multiselect
- Open response

Utilize Digital Tools for Problem-Solving

Embedded within lessons, this convenient collection of **eTools** builds a bridge from conceptual understanding to procedural fluency.

It includes:

- Number Line Tool
- Coordinate Graphing Tool
- Transformations Tool
- Algebra Tiles Tool



Explore, Model, and Apply Math

The best-in-class **Desmos scientific calculator**, easily accessible in *Reveal Math*, allows students to utilize the same resource that appears on many common standardized tests.

Motivate with Truly Enjoyable Technology

Designed with student engagement in mind, the digital resources in *Reveal Math* include **animations, videos, and interactive problems** to enhance context and learning.

Drive Learning With Student-Centered Instructional Tools

In *Reveal Math*, the Teacher Edition centers around opportunities to promote mathematical discourse, collaboration, and a positive student mindset.

Develop Habits of Mind With Standards for Mathematical Practices Tips

These strategies illustrate ways teachers can integrate the practices in their classroom in a practical and meaningful way.

Encourage Student Discourse

Questions for Mathematical Discourse provide point-of-use discussion prompts that teachers can use to facilitate classroom discussion.

Identify Student Misconceptions

Common Error tips help teachers identify where students may be making mistakes.

Integrate Technology in a Way That Makes Sense

User-friendly tips in the Teacher Edition suggest when and how to integrate technology purposefully.

Example 4 Identify Absolute Value Functions from Graphs

Use the graph of the function to write its equation.

The graph is the translation of the parent graph 1 unit to the right.

General equation for a horizontal translation

$g(x) = |x - h|$

$g(x) = |x - 1|$

The vertex is 1 unit to the right of the origin.

Example 5 Identify Absolute Value Functions from Graphs (Multiple Translations)

Use the graph of the function to write its equation.

The graph is a translation of the parent graph 2 units to the left and 5 units down.

General equation for a translation

$g(x) = |x - h| + k$

$g(x) = |x - (-2)| + (-5)$

The vertex is 2 units left of the origin.

The vertex is 5 units down of the origin.

$g(x) = |x + 2| - 5$

Simplify.

Learn Dilations of Absolute Value Functions

Multiplying by a constant a after evaluating an absolute value function creates a vertical change, either a stretch or compression.

Key Concept: Vertical Dilations of Absolute Value Functions

If $a > 1$, the graph of $f(x) = |x|$ is stretched vertically.

If $0 < a < 1$, the graph of $f(x) = |x|$ is compressed vertically.

When an input is multiplied by a constant a before the absolute value is evaluated, a horizontal change occurs.

Key Concept: Horizontal Dilations of Absolute Value Functions

If $a > 1$, the graph of $f(x) = |x|$ is compressed horizontally.

If $0 < a < 1$, the graph of $f(x) = |x|$ is stretched horizontally.

Interactive Presentation

Identify Absolute Value Functions from Graphs

Use the graph of the function to write its equation.

Tap on the graph to see the parent function.

TAP

Students tap on the graph to see the parent function.

CHECK

Complete the Check exercise online to determine if students are ready to move on.

Lesson 4.7 • Absolute Value Functions 269

Online Professional Learning Support: Ready When You Are

Reveal Math features a digital library of self-paced professional learning videos and modules, including:

Program Implementation Support

The **Quick Start eLearning Module** explains program basics.

Plan, Teach, and Assess eLearning Modules provide deep-dives of the program instructional model and resources.

Digital Platform Support

The **Technical Support Resource Library** provides step-by-step instructions for the digital tools.

Mindset Matters

Reward Effort, Not Talent

When adults praise students for their hard work toward a solution, rather than praising them for being smart or talented, it supports students' development of a growth mindset. Reward *actions* like hard work, determination, and perseverance instead of *traits* like inherent skill or talent.

How Can I Apply It?

Have students complete the Performance Task for the module. Allow students a forum to discuss their process or strategy that they used and give them positive feedback on their diligence in completing the task.

Fuel Growth by Encouraging a Positive Mindset

Mindset Matters tips at the beginning of each module provide strategies for encouraging a growth mindset and productive approaches to problem-solving.

3 REFLECT AND PRACTICE

1 CONCEPTUAL UNDERSTANDING 2 FLUENCY 3 APPLICATION

Practice and Homework

Suggested Assignments

Use the table below to select appropriate exercises.

DOK	Topic	Exercises
1, 2	exercises that mirror the examples	1-37
2	exercises that use a variety of skills from this lesson	38-44
2	exercises that extend concepts learned in this lesson to new contexts	45-48
3	exercises that emphasize higher-order and critical thinking skills	49-53

ASSESS AND DIFFERENTIATE

Use the data from the **Checks** to determine whether to provide resources for extension, remediation, or intervention.

IF students score 90% or above on the Checks, **EL**

THEN assign:

- Practice, Exercises 1-47 odd, 49-53
- Extension: Parametric Equations
- ALEKS** Absolute Value Functions

IF students score 66–89% on the Checks, **OL**

THEN assign:

- Practice, Exercises 1-53 odd
- Remediation: Absolute Value and Distance
- Watch the Personal Tutors again.
- Extra Examples 1-15
- ALEKS** Plotting and Comparing Signed Numbers

IF students score 65% or below on the Checks, **AL**

THEN assign:

- Practice, Exercises 1-37 odd
- Math Triumphs
- ALEKS** Plotting and Comparing Signed Numbers

Answers

- The graph of $g(x)$ is a reflection of the parent function across the x -axis and a vertical stretch.
- The graph of $g(x)$ is a reflection of the parent function across the x -axis and translated 2 units down.
- The graph of $g(x)$ is a reflection of the parent function across the y -axis and a horizontal stretch.
- The graph of $g(x)$ is a reflection of the parent function across the x -axis and translated 7 units right and 3 units up.
- The graph of $g(x)$ is a reflection of the parent function across the y -axis and a horizontal compression.

Practice

Exercises 1 through 3

Describe the translation in $g(x)$ as it relates to the graph of the parent function.

- $g(x) = |x - 5|$
The graph of $g(x)$ is the parent function translated 5 units right.
- $g(x) = |x + 4|$
The graph of $g(x)$ is the parent function translated 4 units left.
- $g(x) = |x - 2| + 7$
The graph of $g(x)$ is the parent function translated 2 units right and 7 units down.
- $g(x) = |x + 3| - 2$
The graph of $g(x)$ is the parent function translated 3 units left and 2 units down.
- $g(x) = |x + 1|$
The graph of $g(x)$ is the parent function translated 1 unit left.
- $g(x) = |x - 8|$
The graph of $g(x)$ is the parent function translated 8 units right.

Exercises 4 and 5

Use the graph of the function to write the equation.

- $f(x) = |x + 2|$
- $g(x) = |x + 5| - 2$
- $h(x) = |x - 3|$

Exercises 6 through 8

Describe the dilation in $g(x)$ as it relates to the graph of the parent function.

- $g(x) = \frac{1}{2}|x|$
The graph of $g(x)$ is a vertical compression of the parent function.
- $g(x) = 3|x|$
The graph of $g(x)$ is a vertical stretch of the parent function.
- $g(x) = \frac{1}{4}|x|$
The graph of $g(x)$ is a vertical compression of the parent function.
- $g(x) = 2|x|$
The graph of $g(x)$ is a vertical stretch of the parent function.
- $g(x) = \frac{1}{3}|x|$
The graph of $g(x)$ is a vertical compression of the parent function.
- $g(x) = 4|x|$
The graph of $g(x)$ is a vertical stretch of the parent function.

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Exercises 9 through 11

Describe the reflection in $g(x)$ as it relates to the graph of the parent function.

- $g(x) = -|x|$
- $g(x) = -|x + 2|$
- $g(x) = -|x - 2|$
- $g(x) = -|x - 4|$
- $g(x) = -|x + 3|$
- $g(x) = -|x - 2|$
- $g(x) = -|x - 4|$
- $g(x) = -|x + 3|$
- $g(x) = -|x - 2|$
- $g(x) = -|x - 4|$
- $g(x) = -|x + 3|$

Exercises 12 through 14

Use TOOLS: Graph each function. State the domain and range.

- $g(x) = |x + 2| + 3$
- $g(x) = |x - 2| + 1$
- $g(x) = |x - 2|$
- $g(x) = |x + 2|$
- $g(x) = |x - 2| + 3$
- $g(x) = |x - 2| + 1$
- $g(x) = |x - 2|$
- $g(x) = |x + 2|$
- $g(x) = |x - 2| + 3$
- $g(x) = |x - 2| + 1$
- $g(x) = |x - 2|$

Example 15

34. **REASONING** The function $y = \frac{1}{2}|x - 3|$ models a car's distance in miles from a parking lot after x minutes. Graph the function. After how many minutes will the car reach the parking lot?

35. **STATE YOUR ASSUMPTION** A track coach set up an agility drill for members of the track team. According to the coach, 3.7 seconds is the largest time to complete the agility drill. If the time differs from the desired 2.5 seconds by more than x , the track coach may require members of the track team to change their training. Write an equation that can be used to find the fastest and slowest times members of the track team can complete the agility drill so that their training does not have to change. If $x = 3.2$, what can you assume about the range of times the coach wants the members of the track team to complete the agility drill? Solve your equation for $x = 3.2$ and use the results to justify your assumption. $x = 3.2 - 2.5$; The range of x is $3.2 - 2.5 = 0.7$. The range of x is 0.7 . The range of x is 0.7 . The range of x is 0.7 .

36. **SCALING** The function $y = 2|x - 12| - 38$ models a scale down a mountain. In feet compared to sea level after x minutes. Graph the function. How far below sea level is the scale down at the deepest point in their dive? 38 feet below sea level.

37. **MANUFACTURING** A manufacturing company produces boxes of cereal. A small box of cereal must have 12 ounces. If the amount of cereal in a small box differs from the desired 12 ounces by more than x , the box cannot be shipped for sale. Write an equation that can be used to find the highest and lowest amounts of cereal in a small box. $x = 0.5$.

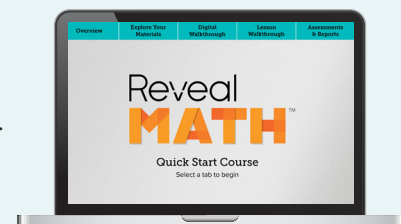
278 Module 4 • Linear and Nonlinear Functions

Lesson 4-7 • Absolute Value Functions 277-278

Ongoing Pedagogy Support

- Classroom Videos** model lessons from a real classroom.
- Math Misconception Videos** address common misconceptions and strategies to help students overcome them.

- Content and Pedagogy Videos** provide tips for teaching difficult math concepts.
- Interviews with Experts** examine the “why” behind the math and best practices.
- Content Progression Resources** show the progression of math concepts from elementary through high school math.



Reveal Math Meets You Where You Are and Goes Where You're Growing

Lesson Model

Launch



WARM UP

The **Warm Up** covers the prerequisite skills needed for the lesson.

Teachers can also project the “**What Vocabulary Will You Learn?**” and “**Today’s Standards**” slides to review what topics will be covered in the lesson with their class.

Warm Up

Warm Up

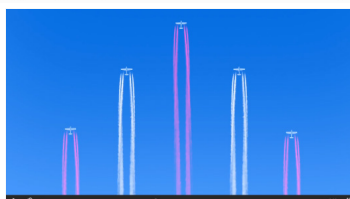
Does each situation describe a *translation*, a *reflection*, a *rotation*, or a *dilation*?

1. using a screwdriver to attach a screw
2. using a sewing machine to sew a seam
3. the image of a mountain on the surface of a lake
4. architectural models
5. the movement of cars down a highway

Launch the Lesson

Launch the Lesson

Formation flying involves two or more aircrafts traveling together in a tight formation led by a flight leader. It is also performed in air shows. In formation flying, aircrafts maintain the same position as the right, or left. The path of each plane can be described as a function that is a transformation of the leader's path.



INDIVIDUAL ACTIVITY



GROUP ACTIVITY



CLASS ACTIVITY

Explore and Develop



EXPLORE

Students complete rich tasks in online **Explore** activities while working in collaborative groups, allowing them to share ideas and approaches with their peers.

Study Tips and **Watch Out!** tips in the print Interactive Student Edition help focus student attention.

Explore

Teachers can project the digital features, or students can access them on their own devices.

The abundant print and digital resources within *Reveal Math* intersect in a meaningful way to heighten the learning experience. Interactive print and digital tools increase student engagement while simultaneously deepening comprehension. The *Reveal Math* classroom is an active classroom experience that brings math to life!

Reflect and Practice

LEARN

In the **Learn** portion of the lesson, students' understanding is formalized through guided instruction.

Teachers can use the aligned print and digital content to create the most effective instructional pathway for their students.

EXAMPLES & CHECK

Students work through one or more **Examples** tied to the key concepts, followed by a quick **Check** (formative assessment) to measure their understanding.

Examples and **Checks** can be completed in the print **Interactive Student Edition** or online. When **Checks** are completed online, performance data is instantly captured for the teacher.

EXIT TICKET

The **Exit Ticket** provides a quick formative assessment opportunity that encourages students to reflect on their learning.

Write About It! prompts provide an opportunity for students to integrate writing skills in the math classroom.

PRACTICE

Students complete the **Practice** either online or in their print **Interactive Student Edition** to apply what they've learned and build procedural fluency.

When the **Practice** is completed online, performance data is instantly captured for the teacher.

Learn

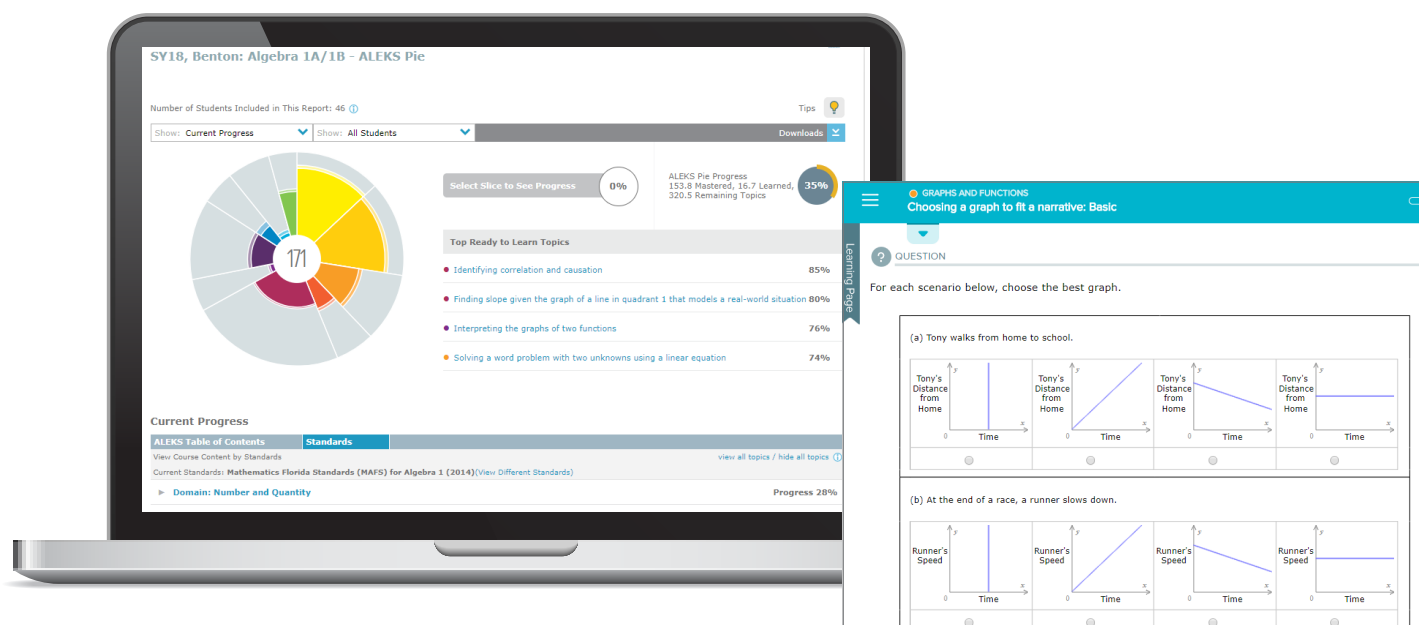
Exit Ticket

Examples & Check

Practice

Support Every Student

Reveal Math empowers teachers with the tools they need to provide in-the-moment differentiation and deliver insightful instruction that reaches every learner.



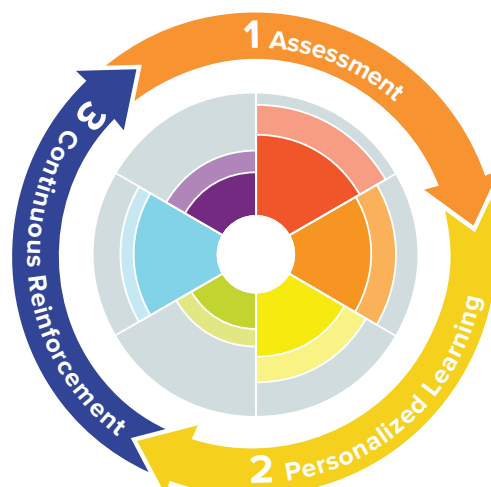
ALEKS®

Reveal the Power of Personalized Learning

ALEKS® is an online math solution for Grades 6–12 that uses adaptive technology to identify and provide instruction on the topics each student is most ready to learn. Through a continuous cycle of assessment, learning, and reinforcement, *ALEKS* develops a personalized learning path for each student to ensure measurable success.

Benefits of Using *ALEKS*:

- Provide standards-based instruction
- Focus on appropriate topics to prevent boredom or frustration
- Offer bilingual courses in English and Spanish
- Easily differentiate with remediation, on-level, and enrichment opportunities
- Pie reports allow you to see which students know the concepts in each module's topic and adjust instruction as appropriate
- Access dynamic data at the student, class, school, and district level to inform classroom instruction



Build Language Skills in the Math Classroom

The **Language Development Handbooks** empower teachers to meet the language needs of all learners.

The **Language Development Handbook Student Edition** includes:

- Word Cards.
- Vocabulary Squares.
- Three-Column Charts (with English/Spanish cognates).
- Definition Maps.
- Concept Webs.
- Cornell Notes.

The **Language Development Handbook Teacher Edition** includes:

- English Learner Instructional Strategies.
- English Language Development Leveled Activities.
- Multicultural Teacher Tips.



Resources for Spanish Speakers

- Spanish Interactive Student Edition for Algebra 1, Geometry, and Algebra 2
- Language Development Handbook for Algebra 1, Geometry, and Algebra 2 (*Teacher and Student Editions*)
- Spanish Personal Tutors
- Multilingual eGlossary
- *ALEKS* Bilingual Courses in Spanish

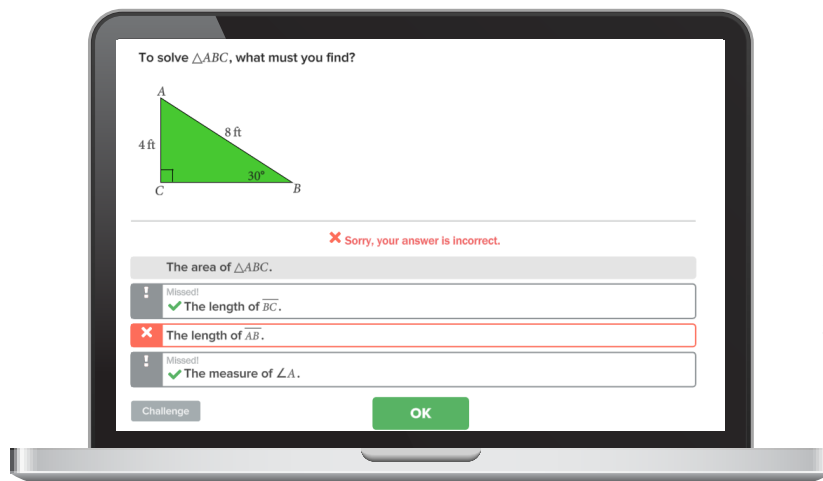
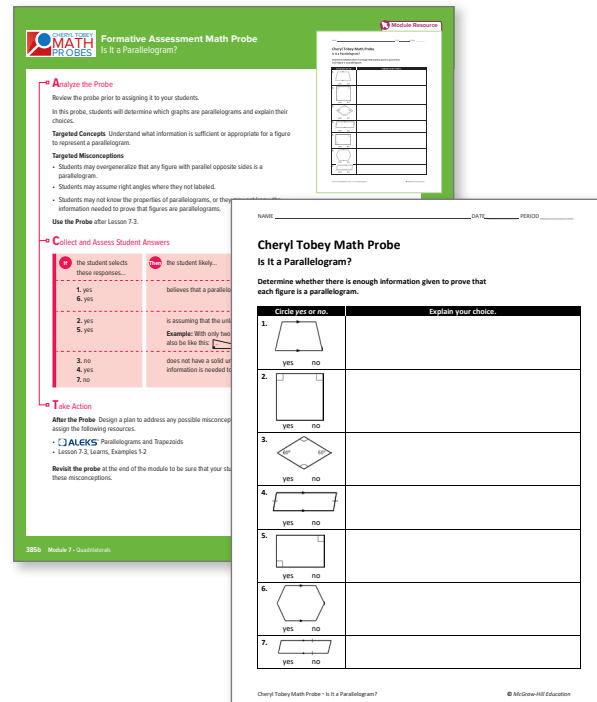
Assessment

With *Reveal Math*, students apply their deep, authentic learning to a variety of assessments in order to demonstrate that they can explain both the *what* and the *why* of mathematics—not just the *how*.

Teach Students that Mistakes are an Opportunity for Growth

Each module features a **Cheryl Tobey Formative Assessment Math Probe**—exclusive to McGraw-Hill Education!

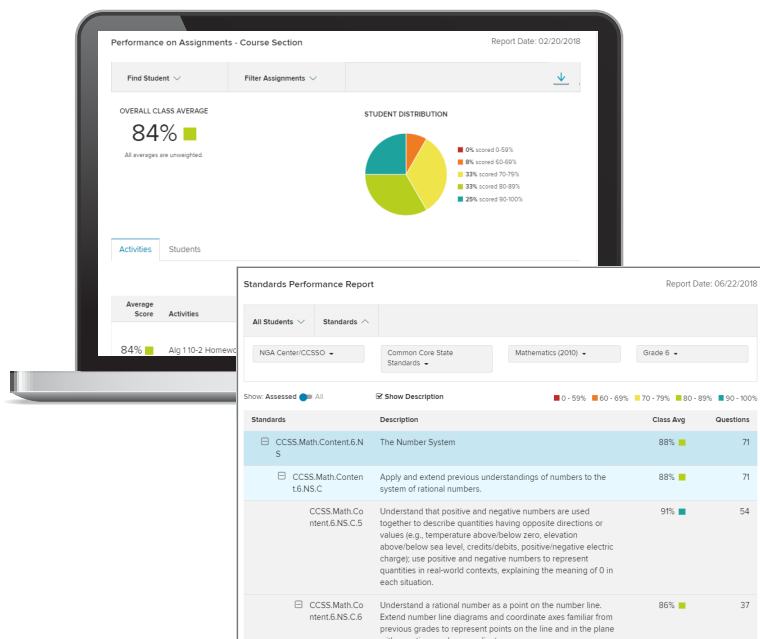
Students complete an activity that is designed to target common misconceptions about a particular mathematical concept. Teacher resources include support for diagnosing and correcting these misconceptions.



Ensure Topic Mastery

LearnSmart®, included with *Reveal Math*, provides students with access to an online, interactive study tool.

LearnSmart assesses a student's proficiency and knowledge within a specific course, tracks which topics have been mastered, and identifies areas that need more study.



Drive Instruction with Actionable Data

By drawing on performance data from student assessments and activities, the *Reveal Math* reports and recommendations provide teachers and administrators with the information they need to monitor and adjust instruction on a daily basis.

Activity Report

- Overall class or student average score
- Overall class or student progress over time
- Performance by activity type (e.g., homework, quiz, exam)
- Average score per activity

Standards Report

Class and individual average score per standard, skill, or objective.

Recommendations Report

Suggested resources that can be assigned to any student in that group based on their performance.

Administrator Report

Activity, standards, progress, and usage reports.

Assessment Options

Diagnostic Assessment

- Diagnostic and Placement Test, with Scoring Guide
- Module Pretests

Formative Assessment

- Cheryl Tobey Formative Assessment Math Probes
- Checks
- Exit Tickets
- Put It All Together

Summative Assessment

- Leveled Module Tests
- Module Review
- Module Vocabulary Tests
- End of Course Test
- Performance Tasks
- *LearnSmart*

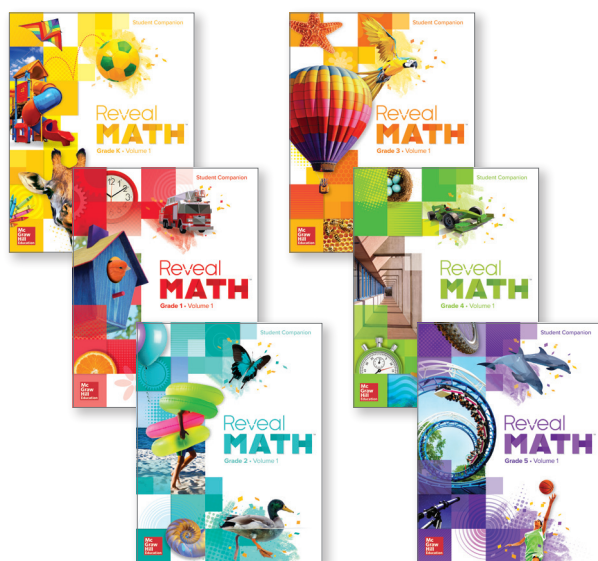
PLUS—Build your own assessments with access to question banks featuring technology-enhanced items.

The K–12 Solution for Today's Mathematics Classroom

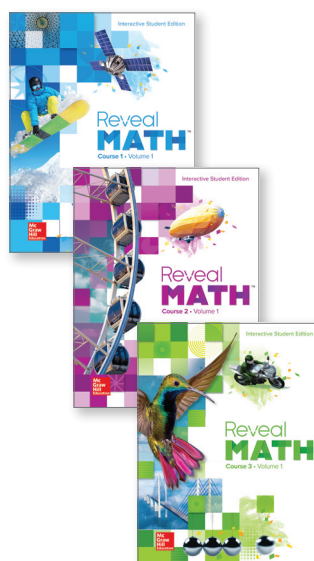
Reveal Math is a coherent, vertically aligned K–12 core math solution that empowers educators to uncover the mathematician in every student through powerful explorations, rich mathematical discourse, and timely individualized learning opportunities.

COMING
SOON!

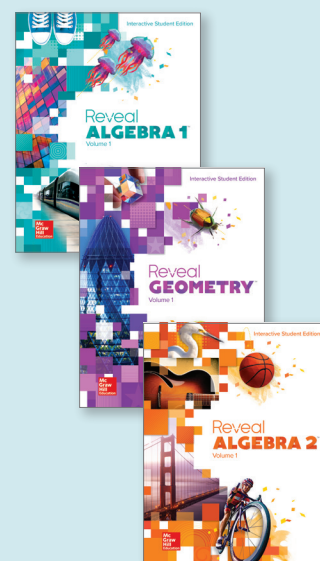
K–5



6–8



9–12



Learn more about *Reveal Math*

Visit revealmath.com/9-12 to sample online and access a trial of the digital resources, or contact your sales representative at mheducation.com/contact to request a presentation.

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