McGraw Hill

West Virginia Reveal
MATH®

Welcome to *West Virgina Reveal Math® K–5!*

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.
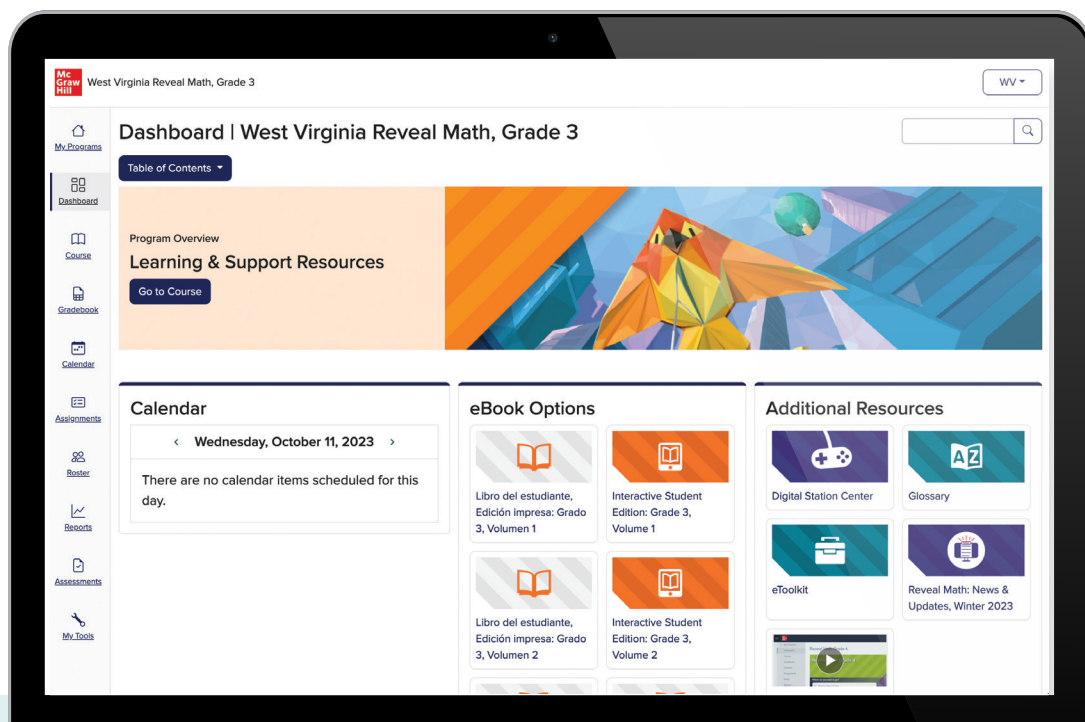
Reveal the Full Potential in Every Student

West Virginia Reveal Math helps students develop the positive mindset, confidence, and skills to become problem solvers and mathematical thinkers. The program works by incorporating both inquiry-focused and teacher-guided instructional strategies within each lesson. Informed by the latest research on how they learn best, *West Virginia Reveal Math* ensures students don't just meet the West Virgina College- and Career- Readiness Standards for Mathematics—they master them!
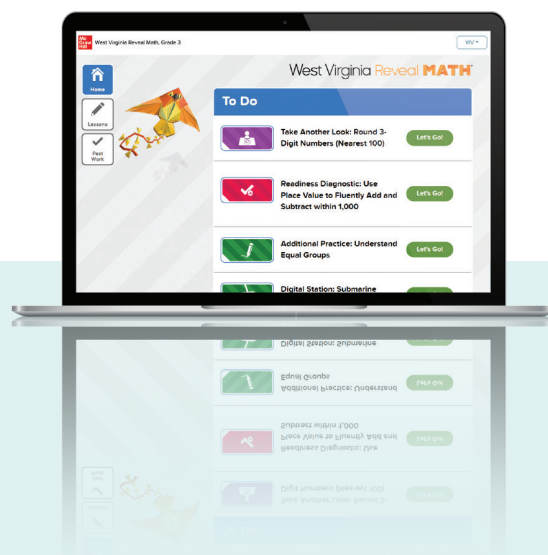
Our Powerful Program:

Champions a positive classroom centered on curiosity, connection, and a mathematical mindset.

Offers a flexible lesson design that provides access to rigorous instruction with robust teacher supports and scaffolds.

Tailors instruction for each student through data-driven insights and purposeful, personalized differentiation.

Built on Standards

Standards Focus

West Virginia Reveal Math breaks down the standards into a coherent scope and sequence that emphasizes each grade level's major content areas to develop a strong foundation as students progress towards algebra.

Standards

Content

M.3.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each (e.g., describe a context in which a total number of objects can be expressed as 5 × 7).

Mathematical Habits of Mind
MHM4 Model with mathematics.
MHM6 Attend to precision.

Each Lesson includes the West Virginia CCR Standards for Mathematics and Mathematical Habits of Mind.

Item Analysis

Item	DOK	Lesson	Guided Support Intervention Lesson	Standard
1	1	3-5	Unknown Number of Groups (Equal Groups)	M.3.2
2	2	3-3	Reorder Factors	M.3.5
3	1	3-1	Model Multiplication (Objects)	M.3.1
4	3	3-4	Unknown Group Size (Equal Groups)	M.3.2
5	3	3-1	Model Multiplication (Objects)	M.3.1
6	2	3-2	Model Multiplication (Arrays)	M.3.1
7	1	3-2	Model Multiplication (Arrays)	M.3.1
8	2	3-7	Word Problems Using Equations	M.3.4
9	3	3-6	Relate Multiplication and Division Facts	M.3.1 M.3.2
10	2	3-7	Word Problems Using Equations	M.3.4
11	2	3-5	Unknown Number of Groups (Equal Groups)	M.3.2
12	2	3-5	Unknown Number of Groups (Equal Groups)	M.3.2
13	2	3-7	Equal Groups Word Problems (Equations)	M.3.4
14	1	3-4	Unknown Group Size (Equal Groups)	M.3.2
15	3	3-6	Relate Multiplication and Division Facts	M.3.2
16	2	3-2	Model Multiplication (Arrays)	M.3.1
17	1	3-6	Relate Multiplication and Division Facts	M.3.2
18	2	3-2	Model Multiplication (Arrays)	M.3.1
19	3	3-3	Reorder Factors	M.3.5
20	2	3-6	Relate Multiplication and Division Facts	M.3.1 M.3.2

West Virginia CCR Standards are included in the Item Analysis and the standards report to help track student's understanding as they progress towards the end of each grade level.

| NGA West Virginia ▾ | College and Career ▾ | Mathematics (2023) ▾ | Grade 3 ▾ |

Show: Assessed ⬤ All   ☑ Show Description   ■ 0 - 59% ■ 60 - 69% ■ 70 - 79% ■ 80 - 89% ■ 90 - 100%

Standards	Description	Class Avg	Questions
⊟ WV Math Content M.3.16	Understand a fraction as a number on the number line and represent fractions on an umber line diagram. Instructional Note: Fractions in this standard are limited to denominators of 2, 3, 4, 6, and 8.	82% ■	9
⊟ M.3.16a	Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line (e.g., given that b parts is 4 parts, then 1/b represents 1/4; students partition the number line into fourths and locate 1/4 on the number line).	82% ■	9

Teachers can access reports on class performance by *West Virginia Reveal Math* standard, including a cumulative score by class and student, as well as the number of questions answered.

Spiral Review

Students can complete the Spiral Review at any point during the unit as either a paper-and-pencil or digital activity.

Lesson	Standard
3-1	M.2.1
3-2	M.2.2
3-3	M.2.6, M.2.6a, M.2.6b, M.2.7, M.2.8, M.2.9
3-4	M.2.10, M.2.11, M.2.12, M.2.13, M.2.14

Spiral Review promotes mastery and preparation for end-of-year assessment through distributed and mixed practice of the major clusters throughout the year.

Coherent Across Grade Levels

The scope and sequence of *West Virginia Reveal Math* is built on the logical learning progression of mathematical content, connecting concepts across all grades and within each grade.

Coherence

What Students Have Learned
- Students used repeated addition to find the total number of objects in an array. (Grade 2)
- Students determined whether a group of objects was odd or even by pairing objects into two equal groups. (Grade 2)
- Students add and subtract within 100 using the relationship between addition and subtraction. (Grade 2)

What Students Are Learning
- Students understand that multiplication represents the total number of objects in equal groups.
- Students understand that division can represent equal sharing or equal grouping.
- Students use representations to understand the relationship between multiplication and division.

What Students Will Learn
- Students use patterns and multiplication properties to multiply within 100. (Units 4 and 5)
- Students use strategies to divide within 100. (Unit 9)
- Students use the relationship between multiplication and division to solve division equations. (Unit 9)

Unit- and lesson-level Coherence guidance helps teachers understand what prior knowledge students need to be able to access the unit content and what math the current unit is building the foundation for.

Readiness Diagnostic assesses pre-requisite skills and provides connected intervention resources to ensure students have a strong foundation in previously learned topics relevant to the unit content.

Rigorous Instruction

West Virginia CCR Standards for Mathematics

The learning objective for each lesson is influenced by the element or elements of rigor that each standard targets—conceptual understanding, procedural skill and fluency, or application.

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students develop understanding of one meaning of multiplication as the total number of objects in equal groups.	• Students begin to build a foundation for fluency with multiplication facts. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students begin to apply their understanding of multiplication to represent and solve real-world problems with equal groups. *Application is not a targeted element of rigor for this standard.*

Conceptual Understanding

West Virginia Reveal Math places a significant emphasis on sense-making as the foundation for conceptual understanding. Sense-making routines at the beginning of each lesson help build a classroom environment that supports thinking, reasoning, and communicating about math to uncover the "why" behind the math.

⁇ Sense-Making Routines

- **Notice & Wonder** (Lessons 3-1, 3-5) In Lesson 3-1, students think about the total number of items and how the items are grouped together. In Lesson 3-5, students understand that when things are grouped equally, each group has the same amount.
- **Notice & Wonder: How are they the same? How are they different?** (Lesson 3-2) Students think about the use of structure to determine the total number of objects in each array.
- **Is It Always True?** (Lesson 3-3) Students think about how an array can be used as a tool to determine the total number of objects, and why the direction of the rows in an array does not impact the total.
- **Numberless Word Problem** (Lessons 3-4, 3-7) In Lesson 3-4, students understand that when things are shared equally, each group has the same amount. In Lesson 3-7, students understand that when objects are sorted into equal groups, it is easier to identify the total number of objects.
- **Which Doesn't Belong?** (Lesson 3-6) Students understand that representations with the same number of objects in each group or each row can show both multiplication and division.

Procedural Skill and Fluency

Students engage in mathematical discourse and productive struggle as they develop the math for each lesson. This engagement allows students to connect the "why" to the "how" of mathematics. Students are given purposeful practice problems and multiple opportunities to practice throughout the year to help meet each grade level's fluency expectations.

Daily Practice Opportunities:

- On My Own
- Additional Practice
- Game Station
- Spiral Review

Unit Practice Opportunities:

- Unit Review
- Fluency Practice
- Digital Game Station

Rigorous Application

Students encounter real-world problems throughout each lesson. The On My Own exercises include rich, application-based question types, such as **Error Analysis** and **Extend Your Thinking**.
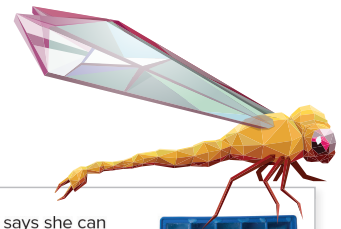
9. **Error Analysis** Frankie says she can add 3 + 5 to find the total number of ice cubes in the tray. Do you agree? Explain.

10. **Extend Your Thinking** Mrs. Ruiz is placing 18 chairs in equal rows. What 2 multiplication equations can represent different arrays she can create with the chairs?

Making a Bird Feeder

Equal groups are often used in construction.

You will build a craft stick bird feeder, like the one shown. Bird feeders like this use equal groups of craft sticks to create the sides of the bird feeder. Search the Internet for ideas about making a craft stick bird feeder. Discuss the ideas with your group. Then, create a supply list and build the bird feeder together.

Make up an equal group word problem about the bird feeder.
Be sure to include a symbol for the unknown quantity. Switch problems with another group and solve.

1. What are some other math questions you can ask about your bird feeder?
2. How can you use equal groups to help answer these questions?
3. How could you make your bird feeder so it will hold more birdseed?

Unit 3 • Multiplication and Division

Performance Task

Haley observes 12 stars with her telescope. She gives each star a number starting with 1.

Part A: Haley notices that star number 3, 4, 6, and 10 form a rectangle. What fraction of the stars Haley observed are part of the rectangle? What fraction are not part of the rectangle?

Daily differentiation provides opportunities for application at higher depths of knowledge through the **Application Station Cards**, STEM Adventures, and WebSketch Explorations.

The unit **Performance Task** found in the Student Edition offers another opportunity for students to solve non-routine application problems.

Mathematical Habits of Mind

West Virginia Reveal Math helps students build proficiency with these important thinking habits and problem-solving skills through the **Math is... prompts**. These prompts model the kinds of questions students can ask themselves to become proficient problem solvers and doers of math.

Support the Development of Mathematical Habits and Problem-Solving

In the **Math is... Unit**, students are first introduced (or re-introduced) to the Math is... prompts. Teachers can model applying Mathematical Habits of Mind within the problem-solving process. With *West Virginia Reveal Math,* developing these habits of mind becomes a daily expectation within the math classroom.

Learn

Heather added two 2-digit numbers. There wasn't a zero in either number.

$$\square + \square = 100$$

What could be the numbers Heather added?

When we do math, we use many strategies to make sense of problems.

I know:
- The two numbers have a sum of 100.
- The numbers do not have zeros.
- I can write an equation.

$$\square + \square = 100$$

Math is... Analyzing
What do I know about the problem?

I can ask:
- What two addends sum to 100?
- Can the two numbers be 50 and 50? Or 60 and 40?

$$60 + 40 = 100$$

No, because those numbers have zeros.

Math is... Planning
What questions can I ask myself about the numbers?

When we do math, we work to solve problems but sometimes the first try doesn't work. We keep trying and don't give up.

I can think about different numbers to try.

$$59 + 41 = 100$$

Math is... Perseverance
What is another way to think about the problem?

Lesson 2 • Math Is Exploring and Thinking

Copyright © McGraw Hill Education

Math is... Perseverance
What is another way to think about the problem?

Self-Monitoring Throughout the Year

Math Is…prompts are integrated into the Teacher Edition for easy integration into a daily learning routine. Prompts in student-friendly language in the Student Edition remind students to employ mathematical thinking habits throughout the year.

CHOOSE YOUR OPTION

Activity-Based Exploration

Students explore how to find the unknown using multiplication or division.

Materials: blank number cubes, counters

Directions: Students should work in pairs. Provide each pair a number cube labeled 0-5 and 25 counters. One student rolls the number cube. The student writes a multiplication equation using the number rolled as the known factor, a box to represent an unknown factor, and a chosen product. The second student rolls the number cube and writes a division equation equation using the number rolled as the divisor, a chosen dividend, and a box to represent the unknown quotient. The students each solve for the unknown in the other's equation using drawings, counters, or another representation. Then they check each other's work. Students switch roles and repeat the activity as time allows.

ETP Support Productive Struggle
- How can you represent the equation using a drawing? using counters?
- Which part of the model represents the unknown?
- What does each number in the equation represent?
- What does the unknown in the equation represent?
- How can you use the relationship between multiplication and division to find the unknown?

Activity Debrief: Have each pair share some of their equations and their strategies for finding the unknown. Students should share which strategy or representation they found most helpful for finding the unknown.

Math is… Explaining
- How can you use representations to find the unknown in multiplication and division equations?

Have students revisit the Pose the Problem question and discuss answers.
- What questions might you ask?

Guided Exploration

Students extend their understanding of multiplication and division by identifying an unknown using equal groups and an array.

ETP Facilitate Meaningful Discourse
- How does the representation with equal groups help you identify the unknown?
- What do you notice about the numbers used in the multiplication and division equations?
- Think... to de...

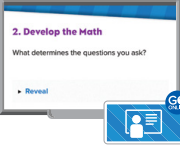Have... unknown...
- Why... multi...

Have students look at the array.
- How does the array help you determine the unknown?
- What does the unknown number in the multiplication equation represent? the unknown number in the division equation?

Math is… Explaining
- How can you use representations to find the unknown in multiplication and division equations?

Students should explain that an array or equal groups can model the information in a problem to help identify the unknown.

2. Develop the Math

What determines the questions you ask?

► Reveal

Math is… Explaining
- How can you use representations to find the unknown in multiplication and division equations?

Learn

Oliver has 24 shirts in his dresser drawers. There are the same number of shirts in each drawer.

What questions might you ask?

Group Size Unknown	Number of Groups Unknown
Oliver has 24 shirts in 4 dresser drawers.	Oliver has 24 shirts in dresser drawers. There are 6 shirts in each drawer.
How many shirts are in each drawer?	How many drawers are filled with shirts?
$24 \div 4 = \square$	$24 \div \square = 6$
$4 \times \square = 24$	$\square \times 6 = 24$
6 shirts	4 drawers

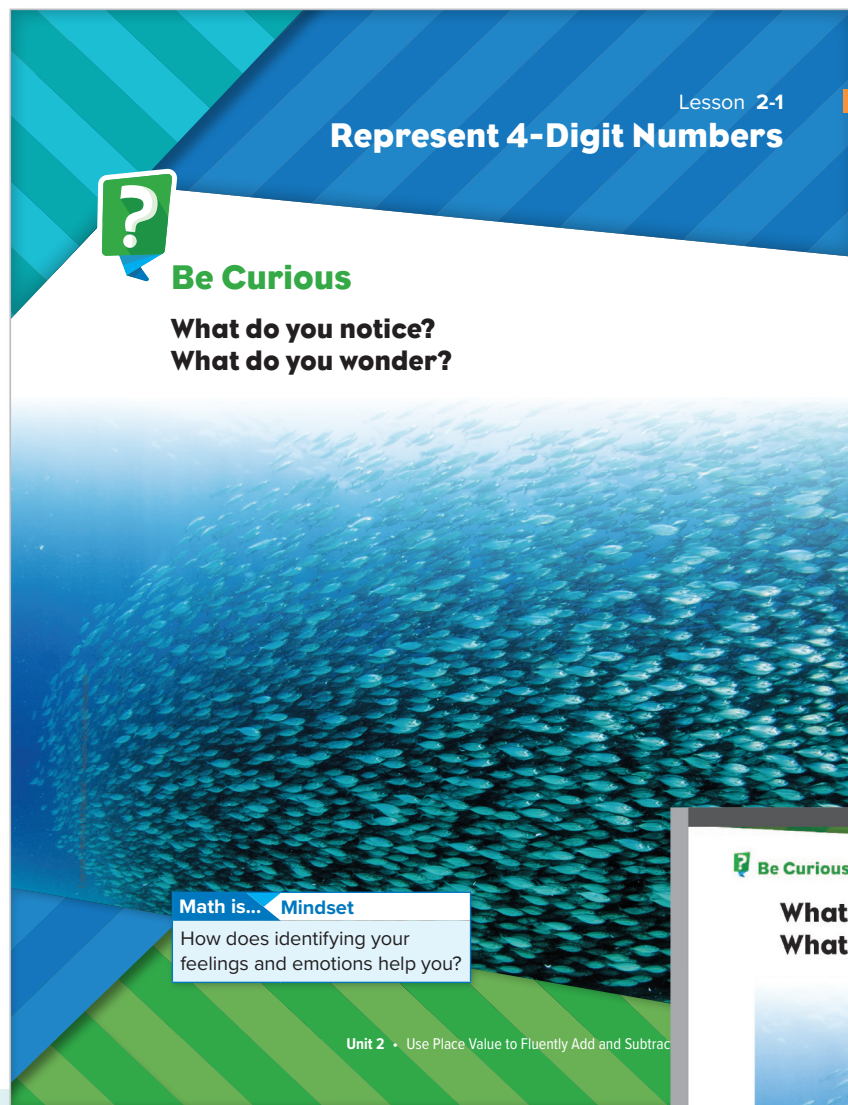You can use equal groups or arrays to find the unknown.

Math is… Explaining

How can you use representations to find the unknown in multiplication and division problems?

Work Together

Ricardo needs 6 pens. Pens are sold in packs of 2. How can you use a representation and an equation to determine how many packs Ricardo needs to buy?

Be Curious

Be Curious launches every lesson and is designed to encourage curiosity and ideas. Students apply previously learned problem-solving strategies or knowledge to make sense of and wonder about a situation, problem, or phenomenon. All ideas are respected and welcomed as students discuss what they notice and wonder.

Lesson **2-1**

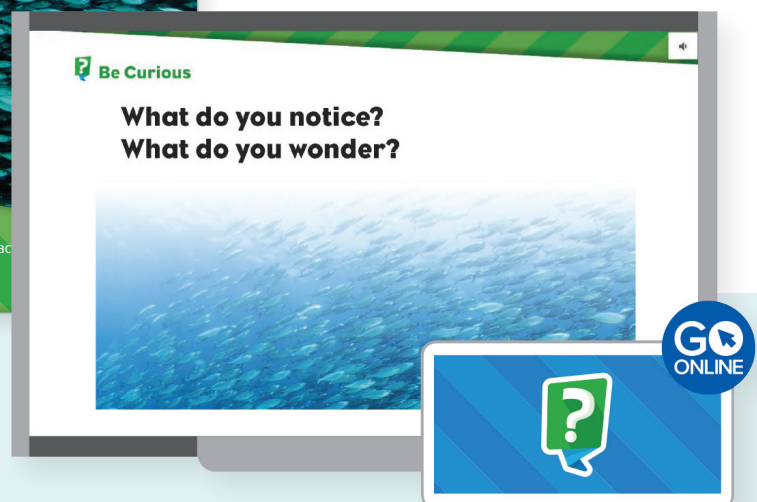**Represent 4-Digit Numbers**

Be Curious

What do you notice?
What do you wonder?

Math is... **Mindset**

How does identifying your feelings and emotions help you?

Unit 2 • Use Place Value to Fluently Add and Subtract

The focus of **Be Curious** is to

- Engage the classroom community.

- Allow students to make sense of the problem.

- Encourage mathematical curiosity.

Be Curious

What do you notice?
What do you wonder?

GO ONLINE

Sense-Making Routines

Every lesson begins with one of four sense-making routines. These routines provide an opportunity for all students to share ideas in a low floor, high ceiling activity.

*West Virginia Reveal Math* sense-making routines follow one of four formats:

Is It Always True? presents students with images or situations that require thought about the objects' relationship to others in the image. Students consider whether the relationship(s) are always true or whether they are unique to the image or situation.

Notice and Wonder helps students understand the story, the quantities, and the real-world relationships of the mathematical concept.
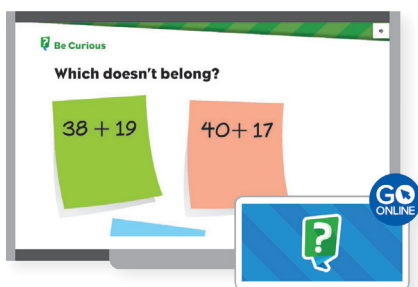
Which Doesn't Belong? presents a series of images, quantities, or numbers. Students use reasoning to help identify which item "doesn't belong." The situation has multiple solutions depending on the reasoning students use.
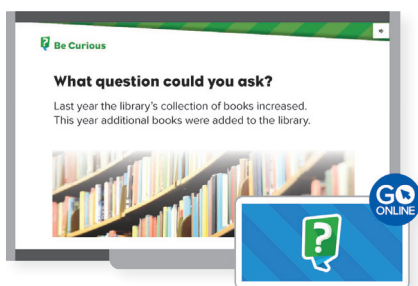
Numberless Word Problems allow students the opportunity to develop a better understanding of the underlying structure of the problem itself.

Number Sense

Building a Foundation

West Virginia Reveal Math supports the the development for arithmetic operations including exploration, procedural reliability, fluency, and automaticity.

1. Exploration

Students develop understanding using manipulatives and models.

2. Procedural Reliability

Students build from exploration to develop an accurate, reliable method.

3. Procedural Fluency

Students become fluent with an efficient and accurate algorithm.

4. Embedded Automaticity

Support is embedded to recall basic facts from memory.

1

Students explore multiplying with multiples of 10. They use their place-value understanding, as well as models, to write a multiplication equation and look for patterns.

Materials: base-ten blocks, blank cubes (labeled 1–6)

Directions: Explain that students will explore multiplying with groups of tens. Students work in pairs. Provide each pair with a number cube labeled 1 through 6. One partner rolls the number cube to determine the number of tens in each group. The other partner rolls the number cube to determine the number of groups. Students work together to build a model with the tens rods and represent the model with an equation. To solve, students may need to trade tens rods for hundreds flats. Students repeat the activity and create a list of equations that represent their models.

2

Students explore a multiplication algorithm.

Directions: Present a multiplication equation with a 1-digit and 2-digit factor. Ask students to determine the product with a partner. Discuss the students' methods. Highlight the use of area models and partial products. Then using the same factors, represent the multiplication with an algorithm without explaining the steps. Explain that an algorithm was used to complete the multiplication. Then, have students work in pairs to determine what the steps in the algorithm might be. Have students use their steps with a new equation to verify their accuracy.

3

Students explore using a multiplication algorithm to multiply two 2-digit numbers.

Directions: Present a multiplication equation with two 2-digit factors. Ask students to determine the product with a partner. Discuss students' methods. Highlight the use of area models and partial products. Then using the same factors, represent the multiplication with an algorithm without explaining the steps. Have students work in pairs to determine the steps in the algorithm. Encourage students to use their understanding of using an algorithm to multiply a 2-digit factor by a 1-digit factor to determine steps for multiplying two 2-digit factors. Have students use their steps with new equations to verify their accuracy.

4

Students use number cards to practice multiplication facts for 3, 6, 4, and 8.

Materials: *Number Cards 0-10* Teaching resource and *Number Cards 10-19* Teaching resource (1 set of cards 3, 4, 6, 8 per group and 1 set of cards 1 through 12 per group)

Directions: Divide students into small groups. Provide each group with the two groups of number cards. Tell the groups to put the number cards in two different piles face down. Have students take turns flipping one card from the 3, 4, 6, 8 pile and one card from the 1-12 pile. The group should write a multiplication problem with the two numbers and use any strategy to solve it. Students should write a related division fact after completing each multiplication problem.
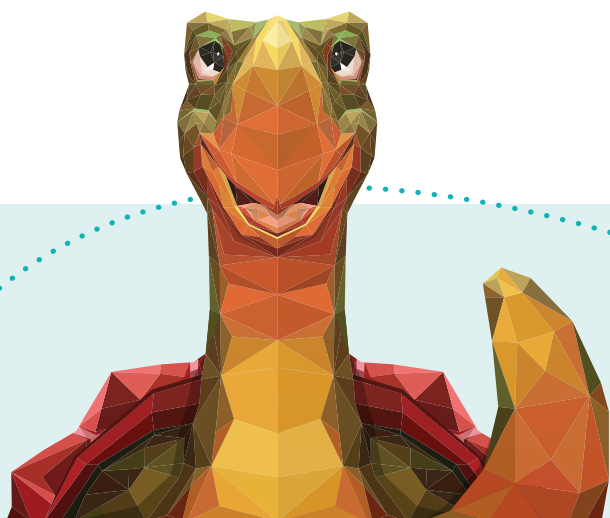
Daily Reinforcement of Number Sense

The **Number Routines** in *West Virginia Reveal Math*, authored by John SanGiovanni, are designed to build students' proficiency with number and number sense. They promote efficient and flexible methods for solving mathematical problems.

Number Routines provide students with daily opportunities to develop number sense, deepening their understanding of number relationships.

Number Routine	Grades					
	K	1	2	3	4	5
About How Much?			✓	✓	✓	✓
Break Apart	✓	✓				
Can You Make the Number?					✓	✓
Counting Things	✓					
Decompose It			✓		✓	✓
Find a Pattern, Make a Pattern	✓	✓	✓		✓	✓
Find the Missing Values			✓	✓	✓	✓
Greater Than or Less Than		✓	✓	✓	✓	
Let's Count		✓	✓	✓		
Math Pictures	✓	✓	✓		✓	✓
Mystery Number			✓	✓		
Start and Stop	✓					
The Counting Path	✓					
The Match	✓					
The Rounds			✓	✓	✓	
What Did You See?	✓	✓			✓	
What's Another Way to Write It?		✓		✓	✓	✓
Where Does It Go?		✓	✓	✓	✓	✓
Which Benchmark Is It Closest To?		✓	✓		✓	✓
Would You Rather?	✓	✓	✓	✓	✓	✓

Supports to Build a Shared Language

West Virginia Reveal Math was developed around the belief that mathematics is not just a series of operations but a way of communicating—listening, speaking, reading, writing, and most importantly, thinking.

Math Language Routines

West Virginia Reveal Math integrates **Math Language Routines** in every lesson during Explore and Develop to support sense-making and cultivate confidence.

Activity types include:

- Stronger and Clearer Each Time
- Collect and Display
- Critique, Correct, and Clarify
- Information Gap
- Co-Craft Questions and Problems
- Three Reads
- Compare and Contrast

MLR **Critique, Correct, and Clarify**

On the board write, *There are 5 groups with 3 objects in each group.* Pair students to discuss whether this statement about the baskets of peaches is correct. Ask them to identify any mistakes and to make changes. Have students write a new, correct version of the sentence.

Math Language Development

Math Language Development offers insights into one of the four areas of language competence—reading, writing, listening, and speaking—and strategies to build students' proficiency.

A Focus on Speaking

When speaking about mathematics, there are often complex concepts and processes to describe. There may be multiple steps or strategies in a problem and a variety of ways to explain similar processes, so mathematical explanations can be challenging for students to convey.

You can help students speak about math to partners or to the whole class by:

- Prompting students with questions to help start conversations or to gain a deeper level of discussion, such as prompting students to describe how an array can represent multiplication in real-world situations.

- Having students restate in their own words why a problem can be written as both a multiplication and a division problem.
- Providing students with visuals to aid in their discussions. Then students can describe how to use representations to model the problem.
- Having students use vocabulary in context, such as *product, factor, multiply,* and *divide,* while discussing multiplication and division situations.
- Pairing more advanced students with those who need assistance. This gives struggling students the opportunity to gain assistance from their peers. Sometimes students are able to describe a task more effectively to a classmate. Students who provide explanations also gain a deeper understanding of concepts while forming their explanations.

English Learner Scaffolds

English Learner Scaffolds are based on WIDA level and provide teachers with scaffolded instruction to help students understand math vocabulary, ideas, and concepts in context.

Language Objectives

Language objectives identify the lesson's linguistic focus for all learners and the math language routines for the lesson.

Language Objectives

- Students describe multiplication equations using the term *equal groups.*
- To maximize linguistic and cognitive meta-awareness and optimize output, use MLR2: Collect and Display and MLR3: Critique, Correct, and Clarify.

Lesson **8-5** · Other Ways To Compare Fractions and Mixed Numbers

Four-Square Vocabulary

Name _____

Write the definition for each math word. Write what each word means in your own words. Draw or write examples that show each math word meaning. Then write your own sentences using the words.

Definition	My Own Words
like denominators	
Example	Sentence

Definition	My Own Words
like numerators	
Example	Sentence

Directions: Students use a Four-Square Vocabulary graphic organizer to define *like denominators* and *like numerators*. Students write a formal definition and a definition in their own words for each term. Students provide an example for each term and use each term correctly in a sentence.

Language of Math

Language of Math promotes the development of key vocabulary terms that support how we talk about and think about math in the context of the lesson.

Language Development

Language Development provides graphic organizers, tools, and tips to build students' academic and math vocabulary and support students' precision with their mathematical language.

Effective Teaching Practices

The instructional design with *West Virginia Reveal Math* integrates the **Effective Teaching Practices** from the National Council of Teachers of Mathematics (NCTM). These research-based teaching practices were first presented and described in NCTM's 2014 work "Principles to Action: Ensuring Mathematical Success for All."

In each unit overview, teachers are presented with suggestions on how to successfully implement one of the teaching practices into classroom instruction.

ETP **Effective Teaching Practices**

Implement Tasks That Promote Problem Solving and Reasoning

Students need to be fully engaged in a complex problem or task and be able to discuss it with someone before they feel they have fully grasped the concept. This is especially true in mathematics because there are often multiple ways to arrive at the same solution. Discussions with others allow students to discover varied points of view and different strategies that they can apply to future problems.

Problems that best promote reasoning and problem solving are non-routine problems, or problems that require a higher level of thinking. Multiple steps may be involved in solving the problem, which would allow for even more variety of strategies to be developed.

Students may have differing opinions or may be confused by the information provided during some of these lessons. When this occurs, spend time discussing these problems.

- When students are given the choice between multiplication and division in this unit, intentionally pair students who solved the problem using multiplication with those who solved the problem using division to analyze each other's answers. This grouping and academic discourse will allow for a deeper understanding of the relationship between multiplication and division.
- Instead of specifying tools or specific pathways, encourage students to find multiple solutions to multiplication and division problems. This allows for more strategies and creativity to develop.
- Assign tasks that require a higher level of thinking. For example, ask students to create representations to justify their answers. Consider having students write a word problem to match a multiplication or division equation.

- Establish mathematical goals to focus learning.

- Implement tasks that promote reasoning and problem-solving.

- Use and connect mathematical representations.

- Facilitate meaningful mathematical discourse.

- Pose purposeful questions.

- Build procedural fluency from conceptual understanding.

- Support productive struggle in learning mathematics.

- Elicit and use evidence of student thinking.

Activity-Based Exploration

Students explore partial-sums addition with 3-digit addends in horizontal or vertical formats.

Materials: base-ten blocks, grid paper

Directions: Present the equation $378 + 546 = \square$. Ask student pairs to share strategies they can use to find the sum. Discuss as a group. If not mentioned by students, in the discussion. Ask for a volunte what it means to decompose ea students decompose each adde pairs use the partial-sums strate for support as needed.

ETP Support Productive S
- What do you notice when y by place value?
- How could you use base-ten blocks to show how you added the parts?

After students have shared, present the addition equation vertically. Compare the two ways to present the addends as a group. Then ask students to find different ways to show their work when the addends are stacked. Encourage students to find more efficient ways to use the strategy. Provide base-ten blocks and grid paper for support as needed.

ETP Support Productive Struggle
- How might stacking the addend help you add?
- How might you organize your work differently so there are fewer steps?

Activity Debrief: Pair students with different partners so they have an opportunity to share their work and discuss. Have students compare and state which way they prefer. Then as a group discuss how they can estimate the sum to check the reasonableness of their answer.

Math is... ◄ Explaining
- Why is the sum the same when the addends are in a row or stacked?

Have students revisit the Pose the Problem question and discuss answers.

- How can each girl show their work a different way?

Guided Exploration

Students explore adding two 3-digit addends using the partial-sums strategy in both horizontal and vertical formats. Student will also estimate the sum and check the accuracy of their estimate.

Have students do a pair-share to determine a reasonable estimate for the sum of the addends.

ETP Support Productive Struggle
- What do you notice when you decompose the addends by place value?
- How could you use base-ten blocks to show how you added the parts?

- How reasonable is the calculated sum based on your estimated sum?

Math is... ◄ Explaining
- Why is the sum the same when the addends are in a row or stacked?

Students consider why the sum is the same despite the different formats of the equation.

2. Develop the Math

To find the total, we can **decompose** each addend by place value.

What place values could you use to break apart the addends?

ETP Support Productive Struggle
- What do you notice when you decompose the addends by place value?
- How could you use base-ten blocks to show how you added the parts?

Throughout the lessons are elements that embody each of the eight teaching practices. Look for the **ETP Icon.**

Equity and Access

West Virginia Reveal Math supports equity and access through:

- Mathematical content that establishes achievable academic goals.

- Instructional design that is focused on exploration, discourse, and sense-making.

- Multiple lesson entry points that allow all students to actively participate in rich discussion.

- Daily instruction that uses multiple representations to promote understanding.

- Comprehensive language supports to help all students access the language of mathematics and communicate effectively.

- Embedded scaffolds and supports to promote common access to content for all students.

- Daily opportunities to collect data to drive purposeful instructional choices.

- Multi-modal differentiation to support each student's learning journey.

Develop Student Confidence

When students believe that mistakes are learning opportunities, they are willing to try and challenge themselves. This strong identity and agency as doers of math leads to a growth mindset. The Math is... Unit encourages every student to think of their math identity by considering their math story, their "superpowers," and their self-perception as "doers of mathematics."
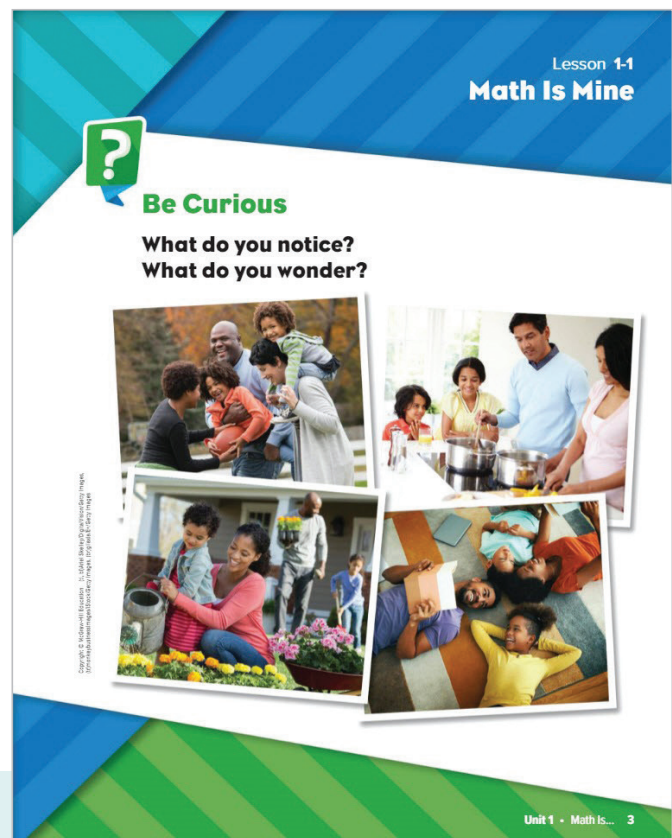
Encourage Ownership of Learning

Both the Activity-Based Exploration and Guided Exploration offer problem-based activities that promote productive struggle and agency as students decide what strategies to use. Daily Reflection opportunities drive accountability for both their understanding and behavior.

Reflect

How does multiplication represent equal groups?

Math is... **Mindset**
What have you done to be an active listener today?

Make Career Connections

Curiosity leads to adventure. The STEM Career Kids motivate students to stay engaged, inspired, and curious about mathematics. By introducing a STEM career at the beginning of every unit, STEM Career Kids help all students imagine what they could be and might do when they grow up!

Establish a Community of Learners

The **Math is...Unit**, the first unit of every grade level, helps students understand math as a set of problem-solving strategies instead of an end result. The unit helps define a productive and positive classroom environment where all students can share ideas and collaborate freely.

- Find success in math and become doers of mathematics.

- Apply mathematical thinking and habits to problem-solving.

- Take ownership of their personal learning journey.

- Become the creative problem solvers of tomorrow.
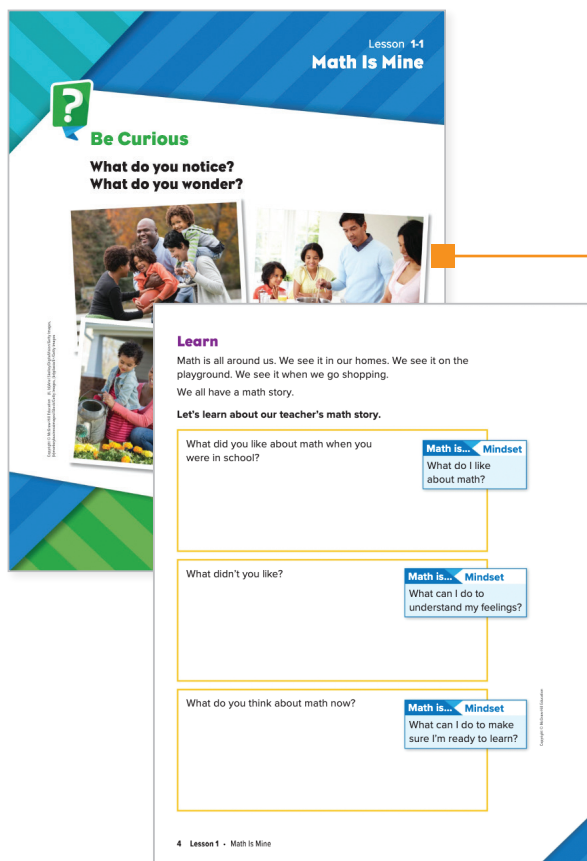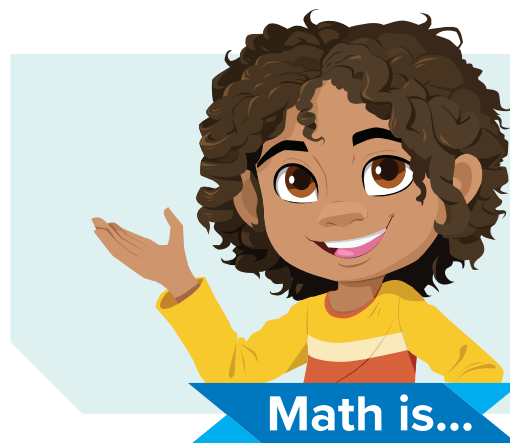
Math is...

Understand That Their Math Story is Ongoing

The first lesson aims to help **all students see themselves as doers of mathematics** and take ownership of their learning within the math classroom. In this first lesson, students will:

- Learn about the teacher's personal math story.

- Craft their personal math story.
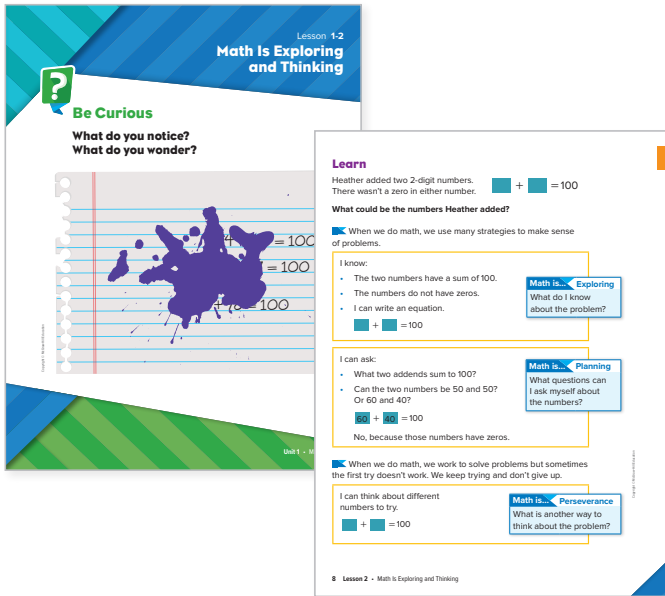
Create a Community Classroom Environment

In Lesson 6, students discuss what **a positive and productive classroom community** looks like before defining what the classroom norms and expectations are for the year. These norms help build a strong community as students:

- Develop a voice and choice in their classroom environment.
- Establish norms of interaction within the math classroom.

Develop Mathematical Habits of Mind

Lessons 2 through 5 focus on the **Mathematical Habits of Mind**. Each lesson unpacks the thinking habits of one or two standards. Throughout these lessons, students will:

- Develop their mathematical thinking and reasoning skills.
- Communicate about and apply these skills to the problem-solving process.
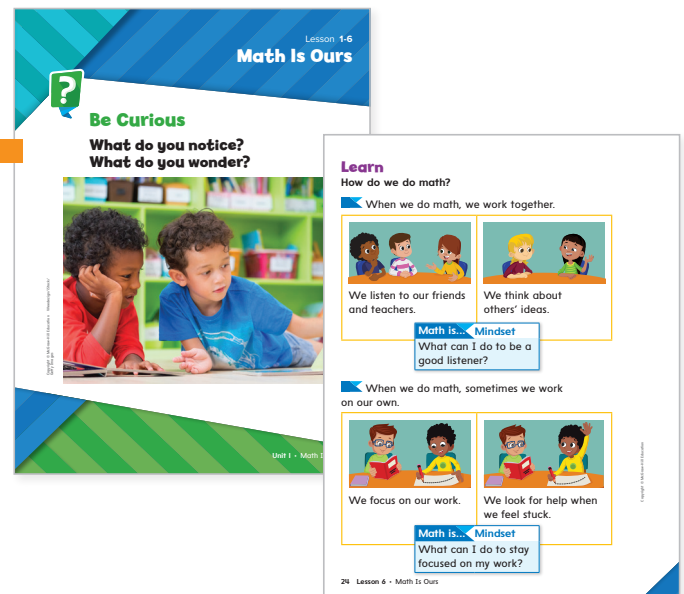
Math is... Mindset

What can you do to work together with your classmates?

Math is... prompts are embedded throughout the Student Edition to remind students of classroom expectations and support the ownership of their learning journey throughout the year.

Purposeful Practice

West Virginia Reveal Math provides purposeful practice opportunities in both print and digital formats to help all students build their confidence and prepare for unit, course, and state assessments.

Practice Types and Formats			
Type	**Purpose**	**Print**	**Digital**
On My Own	Daily Practice with exercises that address various depths of knowledge and encourage students to reflect on their learning and the lesson objectives.	Student Edition	✓
Additional Practice	Additional practice aligned to daily lesson content with embedded learning supports.	Student Practice Book/ Printable PDF	✓ Autoscored
Spiral Review	Daily practice on major work of each grade level to help students build fluency and be ready for end-of-year assessment.	Printable PDF	✓ Autoscored
Fluency Practice	Practice at the end of each unit addressing the fluency expectations for each grade level.	Student Edition	✓
Unit Review	End of unit practice to prepare for unit assessment to include vocabulary and content practice items as well as practice task.	Student Edition	✓

Digital Practice With Embedded Learning Aids

Autoscored practice items have a variety of helpful tools and learning aids to support students while they practice. Students can also attempt an exercise multiple times. Teachers can customize the number of attempts and the learning aids available to students.

Question 2 of 9

Question 2

Enter the answers.
Look at the fact triangle

(Fact triangle showing 36, 9, and ?)

How can you use a fact triangle to find a related multiplication equation and the unknown number? Complete the equations.

$36 \div 9 =$ [   ]

$9 \times$ [   ] $=$ [   ]

> **Need help with this question?**

Next Question   Check Answer   Done and Review

eToolKit

Examples

You can use the relationship between multiplication and division to represent a division equation as an unknown factor problem. Fact triangles can help you rewrite a division equation as an unknown factor problem. Look at the equations and the fact triangle.

$32 \div 4 = ?$

$? \times 4 = 32$

(Fact triangle showing 32, ?, 4)

The quotient and unknown factor are the same number. Finding the unknown factor will give you the quotient. Look at the equations and the fact triangle.

Glossary

Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

multi-step Using more than one operation to solve.

multiple A multiple of a number is the product of that number and any whole number. 15 is a multiple of 5 because 3 × 5 = 15.

multiplication An operation on two numbers to find their product. It can be thought of as repeated addition.

Hint

How can you use the numbers in the fact triangle to write a division and multiplication equation?

Hints

Workstations

To meet the learning needs of all students, *West Virginia Reveal Math* includes a robust offering of differentiation resources for each lesson and unit. The variety of resources allows teachers to meet the learning needs of their students while also providing a range of implementation.

Small-Group Instruction

Teacher-facilitated, **small-group mini-lessons** use concrete modeling and discussion to reteach and build conceptual understanding.

Application Station

- **STEM Project Cards** Science, Technology, and Engineering

- **Cross-Curricular Connection Cards** Literacy, Music, Art, Social Studies, Health, and Physical Education

- **Real World Cards** Financial Literacy, Digital Literacy, and Coding

Lesson 3-6 and 3-7

Addition and Arrays Concentration

Players: 2 and an answer keeper

Materials: none

Directions: Shuffle the cards and place them face down in an array. Decide who goes first.

When it is your turn, flip over a card and then another to find a match. A match is an array and the equation that matches the array. Tell the answer keeper if you have a match. The answer keeper will check the answer key to see if you are correct. If you are correct, keep the cards. If you are not correct, turn the cards over. Now it is the next player's turn. Whoever has the most cards at the end of the game wins.

Answer Key		
A and E	I and M or W	Q and U
B and F	J and N	R and V
C and G or H	K and O	S and M or W
D and H or G	L and P	T and X

Game Station

Written by Dr. Nicki Newton, the **Game Station** offers hands-on games that provide engaging opportunities to build proficiency with the lesson material.
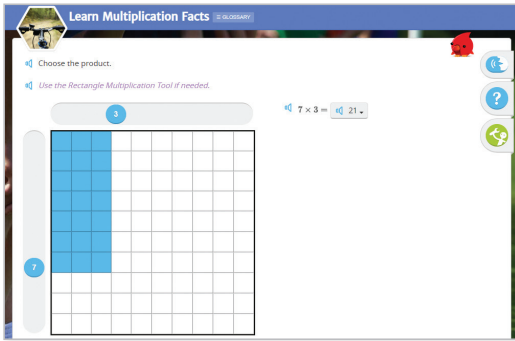

Digital Station

The **Digital Station** offers digital games that students play to build fluency important grade-level skills in a fun and engaging environment. Each game has a range of 40–60 unique items students can work through for extra practice.

Redbird Mathematics

Redbird Mathematics curriculum features adaptive instruction, gamification, and practice. Students can work at their own pace on the path to algebraic readiness.
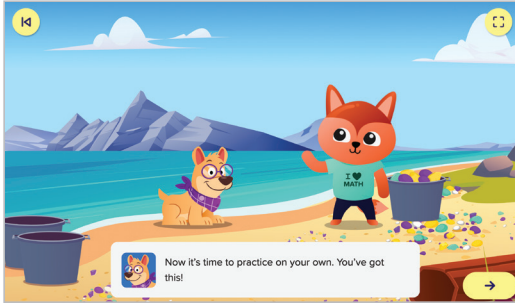
ALEKS Adventure

ALEKS Adventure is a personalized mathematics solution that engages K–5 learners in immersive worlds and interactive games while empowering teachers to oversee instruction with powerful reporting. Driven by technology that recognizes and adapts to each student's learning needs, this is a whole new way to master math.

Take Another Look

Take Another Look mini-lessons offer reteaching and remediation opportunities for students. Each lesson consists of a three-part, gradual release activity.

STEM Adventure

STEM Adventures are engaging **application-based learning activities** where students work alongside the STEM Career Kids to explore science and engineering concepts through experiments and application. Students make and test hypotheses throughout the process.
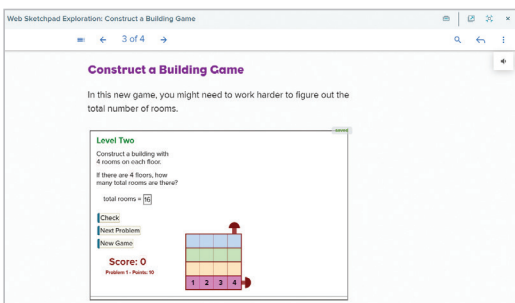
Web Sketchpad® Exploration

Web Sketchpad Explorations are highly visual and engaging activities that demonstrate math concepts in action. Students engage with a concept through an open-ended environment and exploratory modeling.
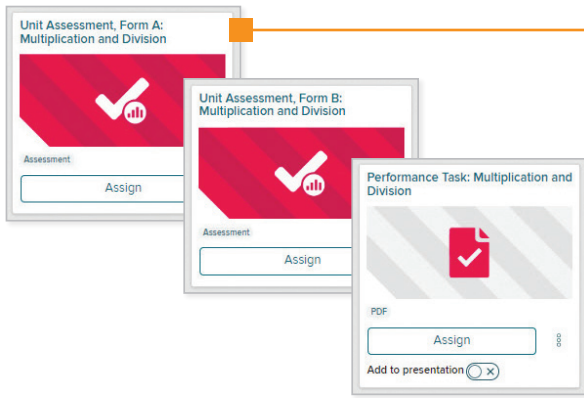
Assessment

## Monitor Student Understanding Throughout the Year

West Virginia Reveal Math offers a comprehensive set of assessment resources that include diagnostic, formative, and summative tools.

| Type	Assessment	How Often	Description
Diagnostic	Course Diagnostic	Beginning of the school year	Diagnoses students' strengths and weaknesses with prerequisite concepts and skills for the upcoming year.
	Unit Diagnostic	Beginning of each unit	Diagnoses students' strengths and weaknesses with prerequisite concepts and skills for the upcoming unit.
Formative	Work Together	During a lesson	Assesses students' understanding of the concepts and skills presented in the Learn stage.
	Exit Ticket	At the end of a lesson	Assesses students' conceptual understanding and procedural fluency with lesson concepts and skills.
	Math Probe	During a unit	Identifies common misconceptions.
Summative	Unit Assessment, Forms A and B	At the end of a unit	Evaluates students' understanding of and fluency with unit concepts and skills.
	Unit Performance Task	At the end of a unit	Evaluates students' ability to apply concepts and skills learned.
	Benchmark Assessments	After multiple units	Evaluates students' understanding of concepts and skills taught in multiple units.
	End of the Year Assessment	At the end of the school year	Evaluates students' proficiency with concepts and skills taught over the school year.

All assessments are available for either print or digital administration.

All print assessments are available in downloadable PDF printables. Item analysis tables found in the Teacher Edition include recommendations for intervention support.
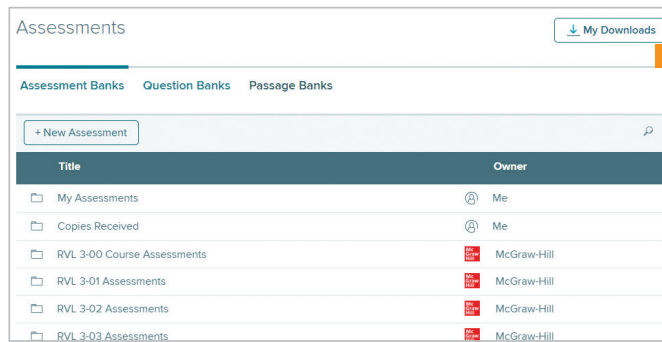
Digital assessments are customizable as **West Virginia's CCR Standards for Mathematics item banks** to build additional assessments as needed. Many of the digital assessment items are auto-scorable. Teachers can access more digital reporting information in the assessment reports within the Teacher Center.
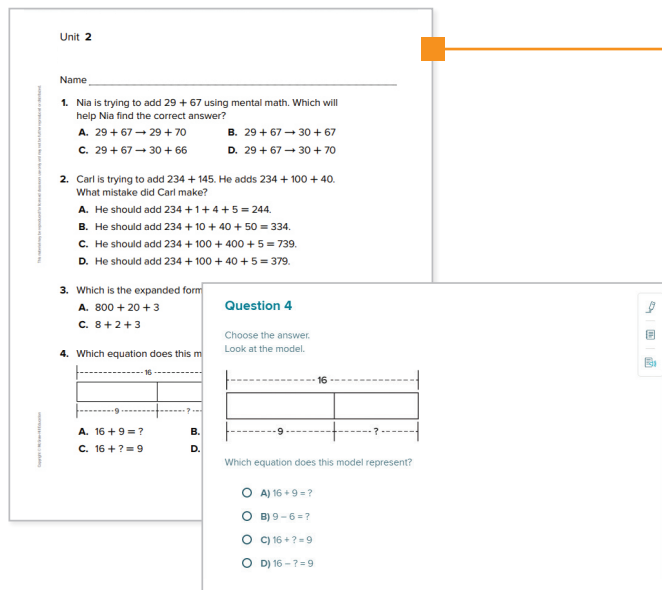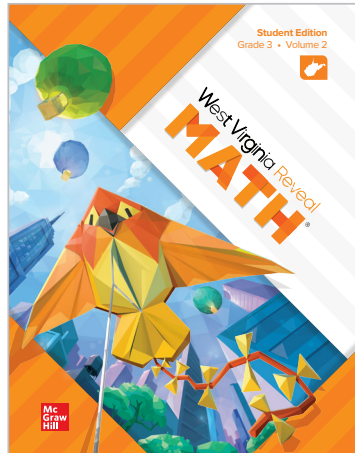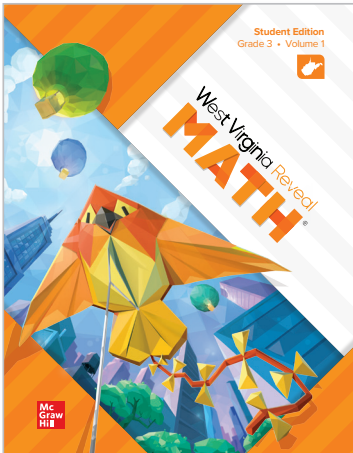

West Virginia Reveal Math assessments include a range of item types that students are likely to encounter on West Virgina General Summative Assessments. These include:

- Single Response Multiple Choice
- Multiple Response Multiple Choice
- Fill-in-the-Blank
- Matching
- Constructed Response

- Digital Assessments include technology-enhanced items:
  – Drag and Drop
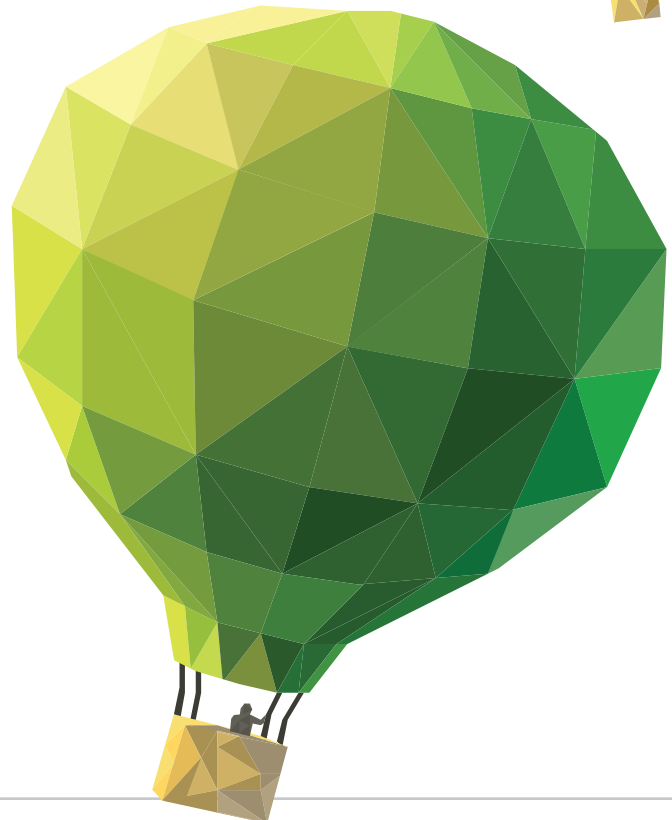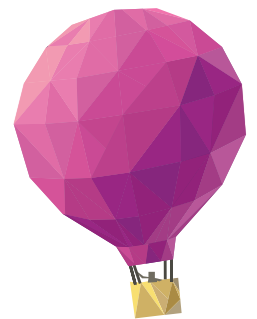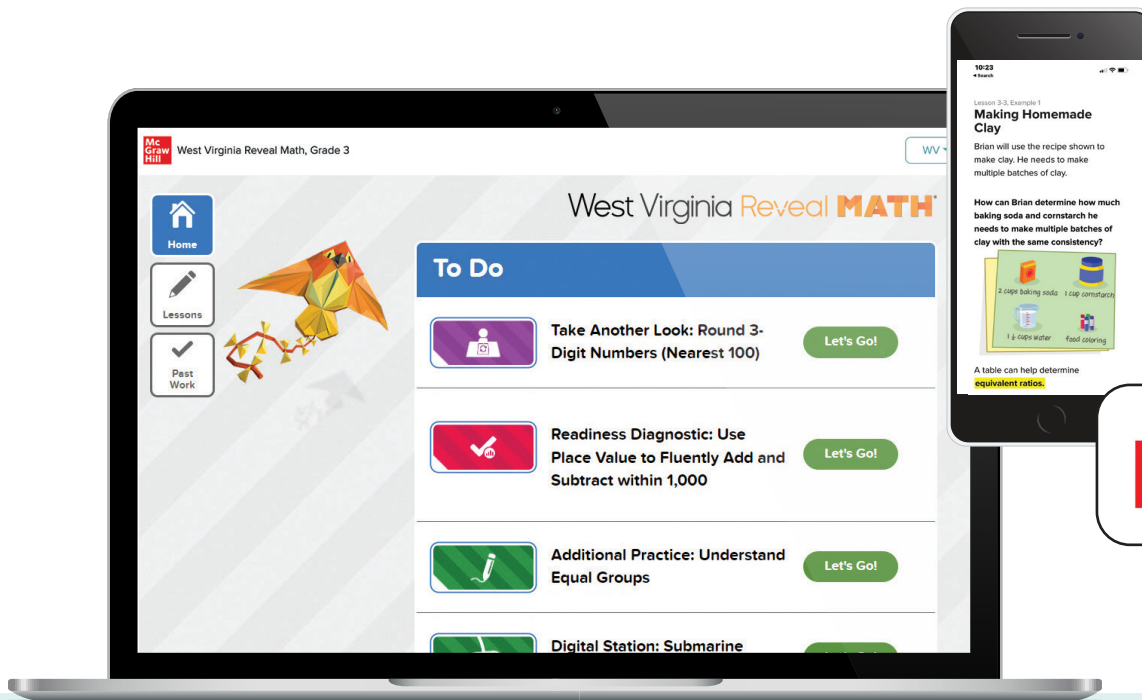 – Drop-Down Menu Select
  – Choice Matrix

Student Resources

Print Resources

Student Edition, 2 Volumes

Student Edition
Grade 3 • Volume 1
West Virginia Reveal
MATH®
McGraw Hill

Student Edition
Grade 3 • Volume 2
West Virginia Reveal
MATH®
McGraw Hill

Student Practice Book

Grade 3
Reveal
MATH®
McGraw Hill
Student Practice Book

Students can access the Interactive Student Edition eBook and assignments from anywhere on a mobile device using the K–12 Portal App.

Register for access to review the Digital Student Center at **mheonline.com/westvirginia**

Digital Student Center

Designed with the needs of elementary students in mind, the Digital Student Center offers access to a robust set of engaging digital tools and interactive learning aids, including:

- Interactive Student Editions
- Daily, interactive practice with embedded learning aids
- Online assessments with interactive question types
- Adaptive practice
- Animations, glossary, videos, and eTools

- Digital games designed for purposeful practice
- Instructional mini-lessons to reinforce understanding
- Rich exploratory STEM Adventures
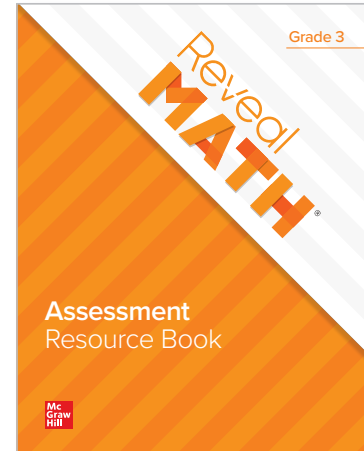- Visual and dynamic Web Sketchpad® activities

Teacher Resources

Print Resources

Teacher Edition, 2 Volumes
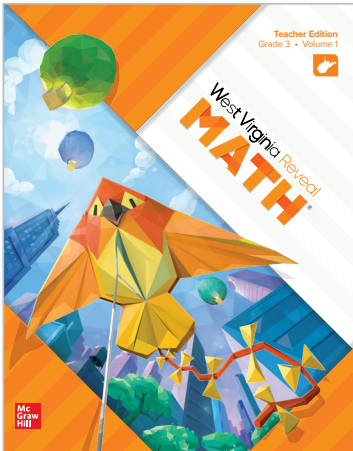
Assessment Resource Book

Classroom Workstation Kit

Workstation Teacher Guide
(in Digital Teacher Center)

Game Station Resource Book

Mountain Science

Glaciers are mountain features that are made up of fallen snow that, over many years, compacts into large, thickened ice masses. Ecosystem scientists study glaciers and their melting ice, called runoff, to help us understand how our climate changes, which can hurt the environment. Based on what they learn, scientists then make suggestions how to be kinder to the environment.

Imagine you are an ecosystem scientist.

1. Make a bar graph that displays the information in the table. Analyze the information.
   - Make comparisons between the current and historical glacial runoff data.
   - What conclusions can you draw about the current and historical glacial runoff based on your comparisons? What similarities and differences do you notice?
   - Use rounded numbers to write word problems that ask, "How much more?" and "How much less?"
2. Consider what you have learned. Make a poster that will tell others about the data you analyzed and your conclusions. Be prepared to present your findings to the class.

Glacial Runoff May to September (kiloliters)		
Water Source	Current Average	Historical Average
Stehekin River	600,000	523,000
Ross Lake	1,317,000	1,520,000
Baker River	1,700,000	1,752,000

Unit 2 • Generalize Place-Value Structure

Application Station Cards
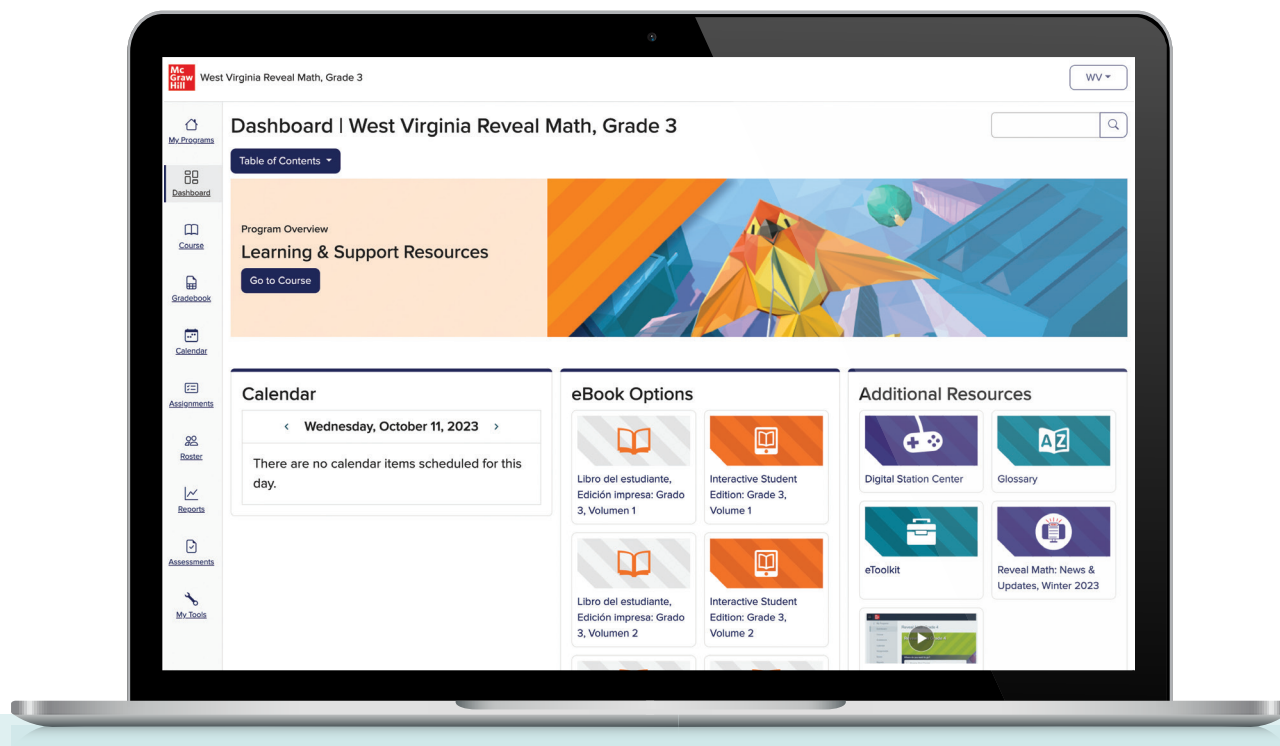
Register for access to review the Digital Teacher Center at **mheonline.com/westvirginia**

Digital Teacher Center

Teachers have access to an intuitive and easy-to-use platform where they can plan and implement engaging instruction. The teacher experience includes:

- Daily, interactive lesson presentations

- Differentiation resources

- Assessment resources

- Auto-scored practice and assessment

- Customizable assessment and item banks

- Teacher and administrator data and reporting

- Professional development workshops and videos

- Ability to add resources, including presentations, website links, and more

- Classroom management and grouping tools

- Adaptive instruction and practice

- Rich, holistic reporting across multiple online learning interactions

West Virginia Reveal

MATH®

Reveal the Full Potential in Every Student

Learn more at **mheonline.com/westvirginia**

Mc
Graw
Hill