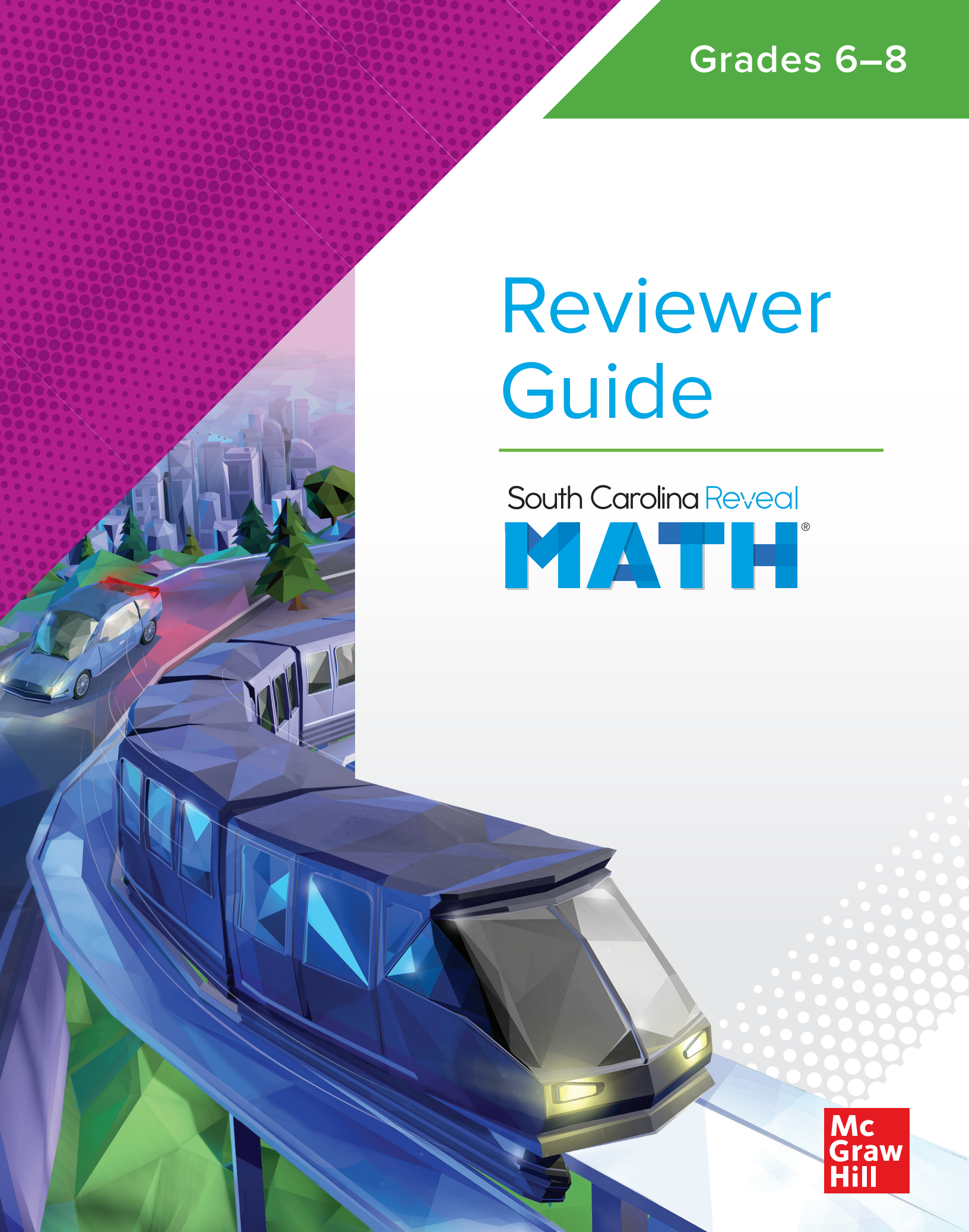


Grades 6–8

Reviewer Guide

South Carolina *Reveal*
MATH[®]



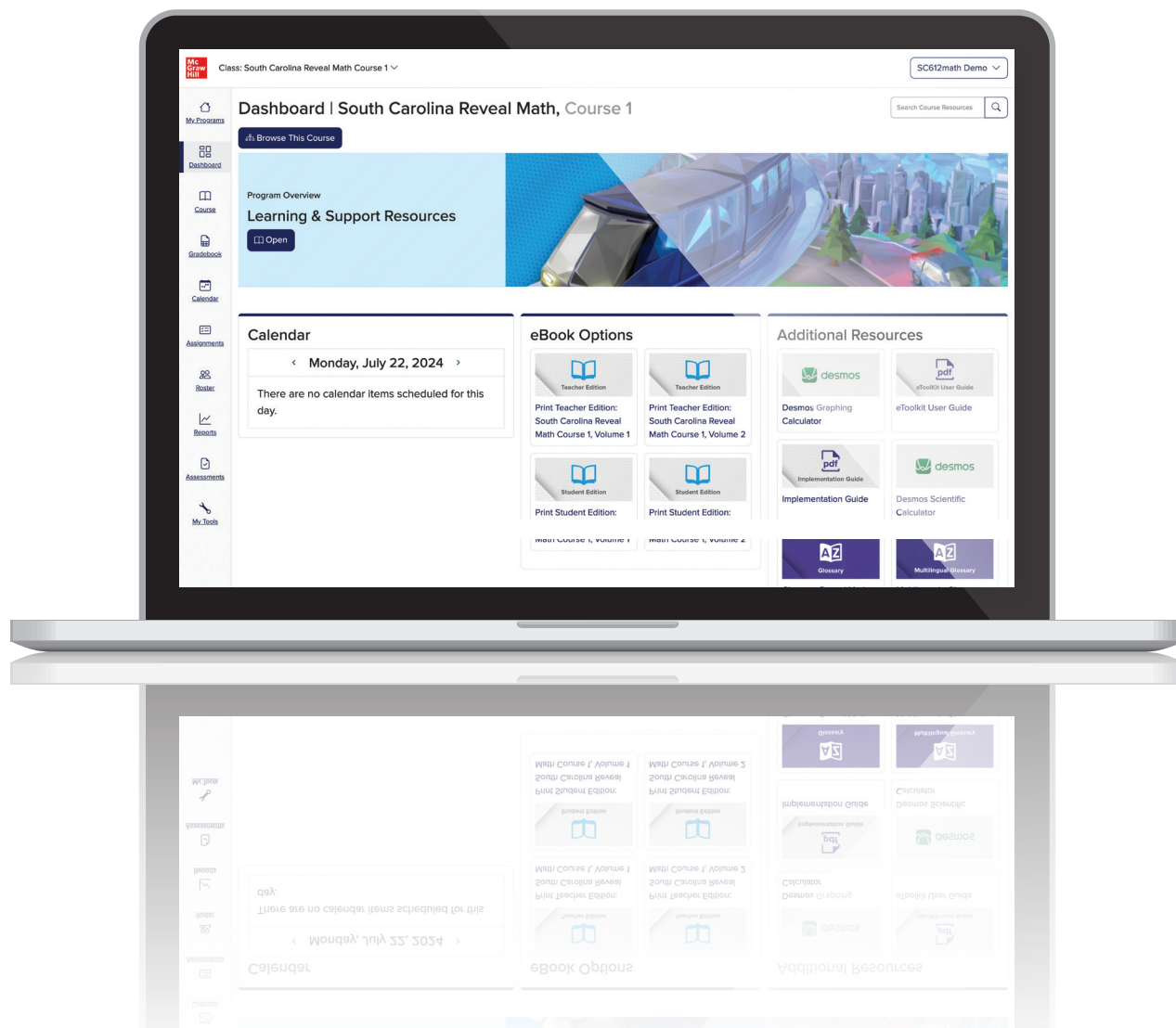
**Mc
Graw
Hill**

Welcome to *South Carolina Reveal Math 6–8!*

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

South Carolina Reveal Math helps students develop the curiosity, 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, *South Carolina Reveal Math* ensures students don't just meet the standards—they master them!

Our Powerful Program:



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



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.



South Carolina Reveal Math Authorship

McGraw Hill learning scientists teamed up with expert authors to create a program guided by validated academic research and classroom best practices.



Sarah Bush, Ph.D.

Expert in both theory and practice for middle school math instruction



John SanGiovanni, M.Ed.

Leader in understanding the mathematics needs of students and teachers



Annie Fetter

Advocate for student ideas and thinking that foster strong problem solvers



Cathy Seeley, Ed.D.

Thought leader and facilitator of high-quality mathematics education for all



Linda Gojak, M.Ed.

Expert in both theory and practice of strong mathematics instruction



Raj Shah, Ph.D.

Champion of perseverant problem-solvers and student curiosity in mathematics



Christa Jackson, Ph.D.

Advocate for strong STEM education and equity for middle school students



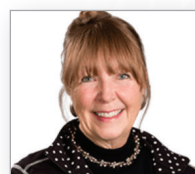
Cheryl Tobey, M.Ed.

Facilitator of strategies that drive informed instructional decisions



Georgina Rivera, M.Ed.

Expert in building student agency through culturally responsive teaching



Dinah Zike, M.Ed.

Creator of learning tools that make connections through visual-kinesthetic techniques



George Roy, Ph.D.

Expert in integrating technology into middle school instruction

Program Design Influenced by Teachers, Research, and Industry Experts

When designing the program, our expert authorship consulted rigorous educational research. Foundational texts include *Principles to Actions* (NCTM), *Mathematical Mindsets* (Jo Boaler), and *Making Sense of Math* (Cathy Seeley) as well as learning models such as Bloom’s Taxonomy and Webb’s Depth of Knowledge Guide. We then called upon our most trusted collaborators, hundreds of teachers across the country, for instructional insights to bring this research to life.

Major Focus Areas:

A Supportive Classroom Culture for All Students

Learner-focused practices develop a classroom designed for equitable learning.

Rich Mathematical Discourse

Instructional options and supports focus on student discourse while emphasizing academic and math vocabulary.

Productive Struggle

Opportunities to explore and engage with challenging mathematical ideas and relationships build deep understanding.

Thinking Like a Mathematician

Building mathematical thinking fosters agency and confidence to help all students see and achieve academic success.

Sense-Making

Support for the development of sense-making and critical thinking skills develops proficient problem solvers.

Fluency

Flexible strategies help students to practice math content and achieve automaticity.

Instructional Routines

Structures and expectations create productive classroom interactions with students. Read more about Math Language Routines (MLR) on page 17.

Metacognition

Student reflection promotes math learning.

Student Resources



Print Resources

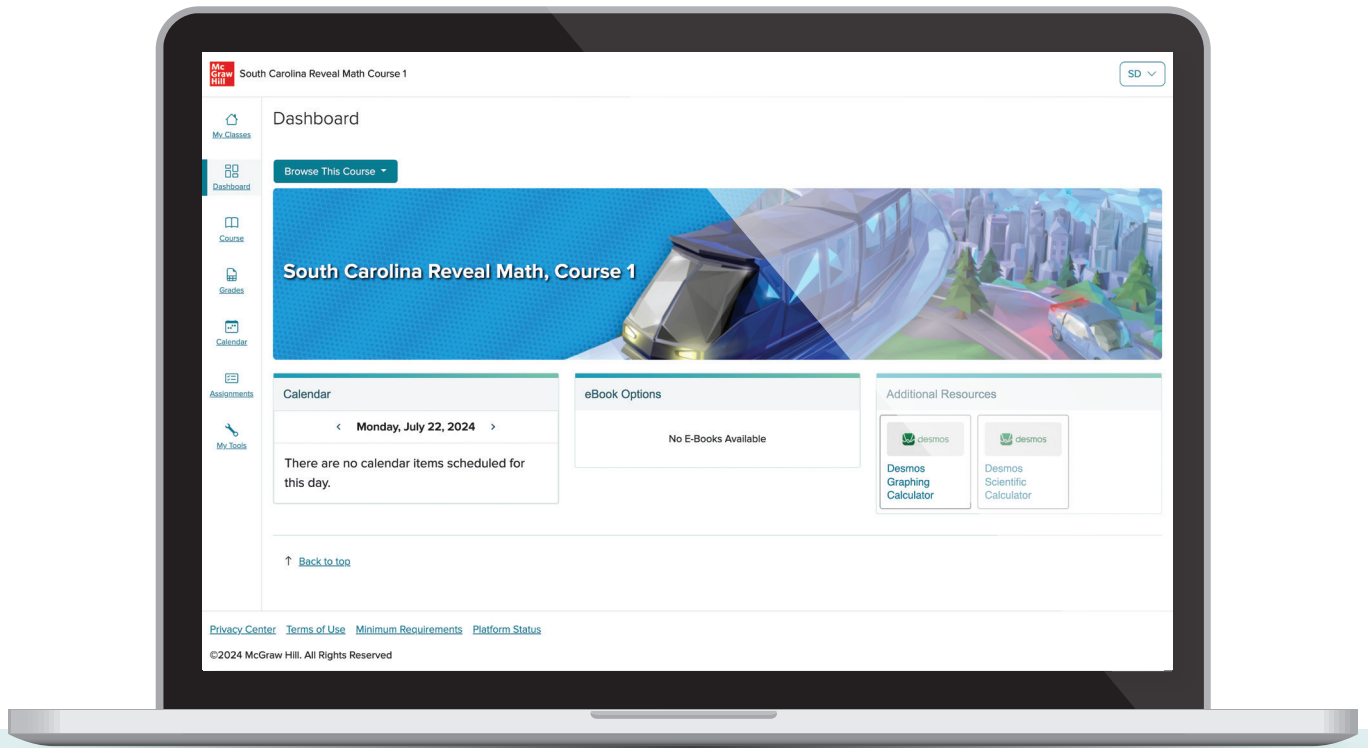
Student Edition, 2 Volumes

Available in print and interactive formats, the Student Editions are write-in, three-hole-punched, and perforated for easy organization in a binder. Students engage in learning through the use of problem-solving, discourse, and reflection.

Digital Student Center Resources

Students have access to a robust set of engaging digital tools and interactive learning aids, including:

- Interactive Student eBooks.
- Daily, interactive practice with embedded learning aids and dynamic (algorithmic) items.
- Dynamic, exploratory activities powered by Web Sketchpad®.
- Anytime access to the eToolkit (virtual manipulative suite).
- Rich, exploratory STEM Adventures.
- Online assessments with interactive item types.
- Math Replay videos to review lesson content.
- Digital games designed for purposeful practice.
- ALEKS® adaptive practice.

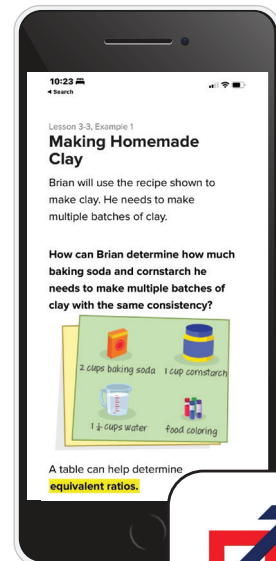


Visit mheducation.com/southcarolina today to begin your digital sample or contact your McGraw Hill sales representative for a personal presentation of *South Carolina Reveal Math*.

Where Technology Meets Math

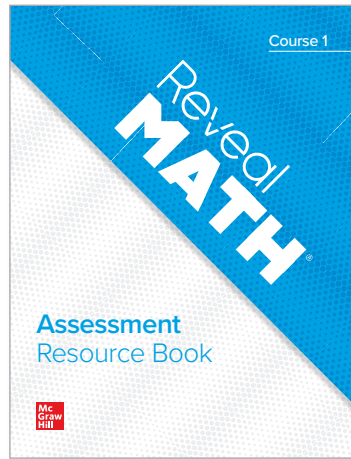
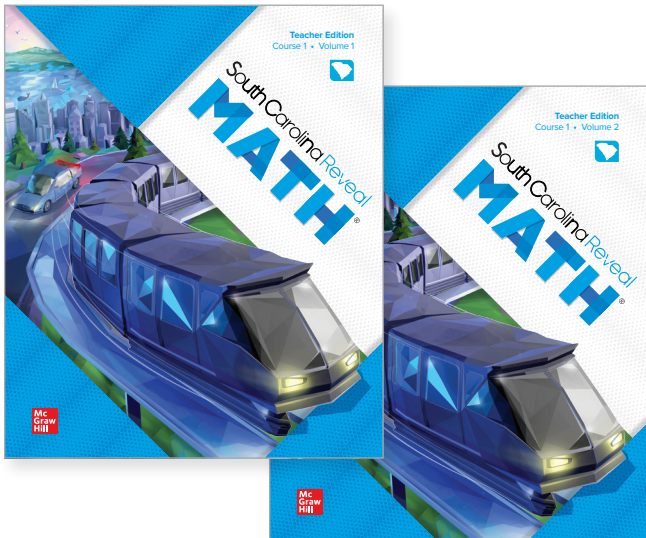
South Carolina Reveal Math supports both low-tech and high-tech classrooms. The blended print and digital instructional model captures the best of both modalities and brings them together in a seamless experience that makes math meaningful for your students.

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



Teacher Resources

Print Resources



Teacher Edition, 2 Volumes

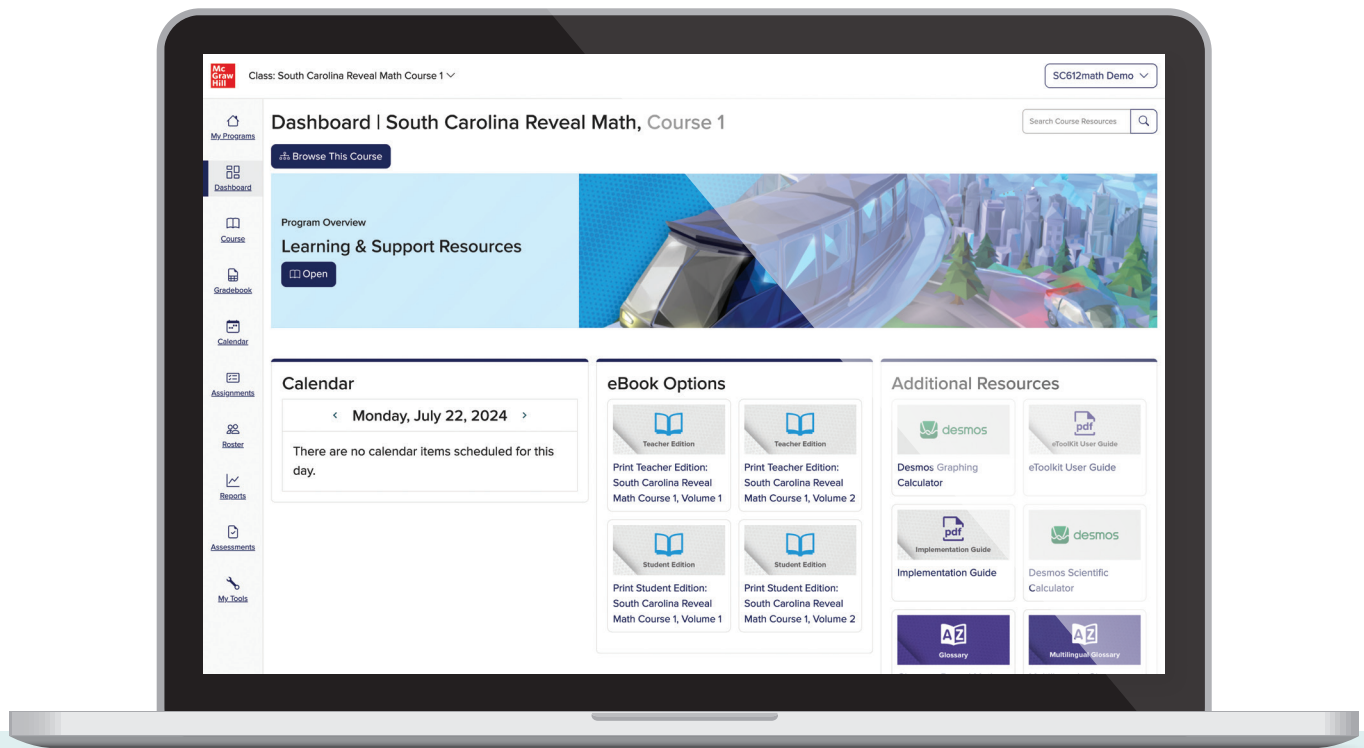
These spiral-bound Teacher Editions provide the essentials to plan and implement high-quality math instruction. Inside, you will find instructional supports including:

- NCTM's Effective Teaching Practices (ETPs)
- Math Language Routines (MLR)
- Multilingual Learner (ML) Language Scaffolds
- Differentiation Recommendations

Assessment Resource Book

The Assessment Resource Book contains the blackline masters for the following *South Carolina Reveal Math* assessments:

- Lesson Exit Tickets
- Lesson Quizzes
- Unit Readiness Diagnostic
- Unit Assessments
- Unit Performance Tasks
- Course Readiness Diagnostic
- Benchmark Assessments
- End-of-Course Assessment



Visit mheducation.com/southcarolina today to begin your digital sample or contact your McGraw Hill sales representative for a personal presentation of *South Carolina Reveal Math*.

Digital Teacher Center Resources

Teachers have access to an intuitive and easy-to-use platform for planning, teaching, and assessment. The teacher digital experience includes:

- Teacher Edition eBooks
- Interactive, customizable lesson presentations
- Editable PowerPoint presentations for every lesson
- Expansive library of professional learning workshops
- Digital practice and assessment banks
- Dynamic digital practice
- Digital exploration activities powered by *WebSketchpad*[®]
- eToolkit (virtual manipulative suite)
- Teacher and administrator reporting suite
- Digital Implementation Guide
- *ALEKS*[®]

PROGRAM DESIGN



Program Design

Table of Contents

South Carolina College- and Career-Ready (CCR) Standards for Mathematics	10
▶ Standards, Focus, and Coherence	10
▶ Mathematical Process Standards	14
Instructional Supports	16
▶ Sense-making Routines	16
▶ Number Routines	18
▶ Shared Language and Math Language Routines	20
▶ Instructional Strategies/ETPs	23
▶ Professional Development Support	24
Address All Learners	26
▶ Equity and Access	26
▶ Develop Community Skills through Math	28
▶ Purposeful Practice	30
▶ Assessment	32
▶ Targeted Intervention	34
▶ Holistic Reporting and Actionable Data	36
Program Table of Contents	38

Built on Standards

Standards Focus

South Carolina 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

6.PAFR.3.7 Add, subtract, multiply, and divide multi-digit positive decimals, up to the thousandths place, to solve problems in mathematical and real-world situations.

Mathematical Process Standards

MPS.SP.1 Identify and apply regularity in repeated reasoning to make generalizations.

Each Lesson includes the South Carolina CCR Standards for Mathematics and Mathematical Process Standards.

Item Analysis

Item	DOK	Lesson	Guided Support Intervention Lesson
1	1	2-1	Statistical Questions
2	3	2-9	Describe Data by Mean Absolute Deviation
3	2	2-2	Create Histograms
4	2	2-2	Interpret Histograms
5	2	2-1	Create Line Plots and Dot Plots
6	2	2-3	Describe Data Using the Median
7	2	2-8	Define and Find the Mean
8	2	2-4	Read, Explore, and Create Box Plots
9	2	2-3	Describe Data Using the Median
10	3	2-5	Range and Interquartile Range
11A–11B	1, 3	2-10	Outliers and Patterns
12	2	2-9	Describe Data by Mean Absolute Deviation
13	3	2-10	Select a Measure of Center or Variation
14	2	2-8	Given Mean, Find Unknown Data Points
15	1	2-4	Read, Explore, and Create Box Plots
16	2	2-7	Divide by Decimal Numbers
17	3	2-4	Interpret Data on a Box Plot
18	2	2-6	Divide by Multi-Digit Numbers

Standards	Description	Class Avg	Questions
7.DPSR.1	Analyze data sets to identify their statistical elements.	82%	9
7.DPSR.1.1	Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations.	82%	9
7.DPSR.1.2	Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set.	82%	9
7.DPSR.1.3	Calculate and interpret the measures of center (mean, median, mode) and spread (mean absolute deviation, interquartile range, range) in mathematical and real-world situations.	100%	4
7.DPSR.1.4	Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets.	80%	2

Teachers can access reports on class performance by South Carolina math standard, including a cumulative score by class and student, as well as the number of questions answered.

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

Coherent Across Grade Levels

The scope and sequence of *South Carolina 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

- understood ratios as a comparison of quantities. They applied ratio reasoning to solve problems. (Unit 3)
- understood rates as a kind of ratio that compares quantities that may have different units. (Unit 3)

What Students Are Learning

Students

- understand the meaning of a percent as a rate per 100.
- understand that percentages greater than 100% represent numbers greater than 1.
- determine equivalent fractions, decimals, and percentages.
- estimate percent of a number using benchmark percentages and rounding strategies.
- determine the percent given a part and a whole, and the whole given a part and the percent.

What Students Will Learn Next

Students

- solve a wide variety of percent problems. (Grade 7)
- calculate probabilities. (Grade 7)

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

Readiness Diagnostic


Administer the Readiness Diagnostic to determine your students' readiness for this unit.

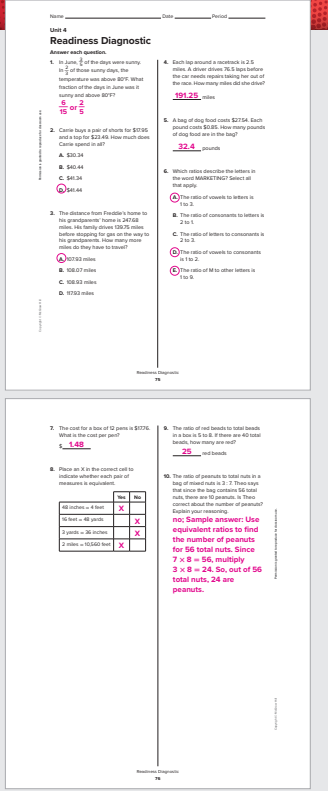
Targeted Intervention
 Use the Intervention Lessons recommended in the table to provide targeted intervention to students who need it. These lessons are available in the Digital Teacher Center and are assignable.

Item	DOK	Skill	Guided Support Intervention Lesson	Standard
1	2	Multiply fractions	Multiply Fractions/Mixed Numbers	5.PAFR.2.2
2	2	Add decimals	Add Multi-Digit Decimal Numbers	6.PAFR.3.7
3	2	Subtract decimals	Subtract Multi-Digit Decimal Numbers	6.PAFR.3.7
4	2	Multiply decimals	Multiply Multi-Digit Decimal Numbers	6.PAFR.3.7
5	2	Divide decimals	Divide by Decimal Numbers	6.PAFR.3.7
6	1	Understand ratios	Ratios	6.PAFR.2.6
7	2	Understand unit rates	Unit Rates	6.PAFR.2.7
8	2	Convert customary measures	Ratios and Measurement	6.PAFR.2.9
9	2	Solve unit rate problems	Solve Unit Rate Problems	
10	3	Solve unit rate problems	Solve Unit Rate Problems	

GO ONLINE

Assign the digital Readiness Diagnostic to students or download and print PDFs from the Digital Teacher Center.





Unit 4 Readiness Diagnostic

Answer each question.

1. In June, $\frac{2}{3}$ of the dog were sunny. In $\frac{1}{3}$ of those sunny days, the temperature was above 80°F. What fraction of the dogs in June saw a sunny and above 80°F?

A. $\frac{2}{9}$ or $\frac{2}{3}$

B. $\frac{1}{3}$

C. $\frac{1}{9}$

D. $\frac{1}{6}$

2. The distance from Teacher's home to his grandmother's house is 240 miles. He travels 120 miles every week. How many weeks will it take him to travel the distance from his home to his grandmother's house?

A. 1200 miles

B. 1000 miles

C. 100 miles

D. 10000 miles

3. The cost for a box of 12 pens is \$10.80. What is the cost per pen?

A. \$1.44

B. \$0.90

C. \$0.9

D. \$0.09

4. Each bag around a notebook is 2.5 inches. A driver drives 75.5 miles before the car needs repair taking her out of the road. How many miles did she drive?

A. 29.25 miles

B. 29.25

C. 29.25

D. 29.25

5. A bag of dog food costs \$27.60. Each pound costs \$2.60. How many pounds of dog food are in the bag?

A. 10.6 pounds

B. 10.6

C. 10.6

D. 10.6

6. Which ratio describes the letters in the word MATHS? Select all that apply.

A. The ratio of vowels to letters is 1 to 5.

B. The ratio of consonants to letters is 3 to 5.

C. The ratio of letters to consonants is 5 to 3.

D. The ratio of vowels to consonants is 1 to 2.

E. The ratio of M to other letters is 1 to 5.

7. The rate for a box of 12 pens is \$10.80. What is the cost per pen?

A. \$1.44

B. \$0.90

C. \$0.9

D. \$0.09

8. The ratio of red beads to total beads in a box is $\frac{3}{8}$. If there are 40 total beads, how many are red?

A. 25

B. 25

C. 25

D. 25

9. The ratio of peanuts to total nuts in a bag of mixed nuts is $\frac{3}{8}$. There are 64 total nuts in the bag. How many are peanuts? Select all that apply.

A. 24

B. 24

C. 24

D. 24

E. 24

F. 24

G. 24

H. 24

I. 24

J. 24

K. 24

L. 24

M. 24

N. 24

O. 24

P. 24

Sample answer: Use equivalent ratios to find the number of peanuts for 64 total nuts. Since $\frac{3}{8} \times 8 = 36$, multiply $3 \times 8 = 24$. So, out of 64 total nuts, 24 are peanuts.

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

South Carolina College- and Career- Ready (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

- Conceptual understanding is not a targeted element of rigor for the standards in this lesson.

Procedural Skill & Fluency

- Students divide multi-digit decimals using an algorithm.

Application

- Application is not a targeted element of rigor for the standards in this lesson.

Conceptual Understanding

South Carolina Reveal Math places a large 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: What do you notice? What do you wonder?

(Lessons 3-1, 3-5) In Lesson 3-1, students explore images that show proportional and non-proportional relationships. In Lesson 3-5, students explore the structure of our solar system.

Notice & Wonder: How are they the same? How are they different?

(Lesson 3-2, 3-4) In Lesson 3-2, students notice similarities and differences between two fun activities. In Lesson 3-4, they compare and contrast orientations of a mobile device.

Which doesn't belong?

(Lessons 3-3) Students explore four different graphs to determine what common attribute three of them have that a fourth does not.

Numberless Word Problem

(Lesson 3-6) Students explore the mathematics in a series of cells of a video.

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:

- Lesson Session Practice
- Additional Practice
- Digital Game Center
- Spiral Review

Unit Practice Opportunities:

- Unit Review
- Performance Task
- Mathematical Modeling Task
- Fluency Practice

Application

Real-world problems are provided throughout each lesson with rich, application-based question types, such as “STEM Connection,” which are embedded in daily practice.

Additional application opportunities are provided through the Performance Task and Mathematical Modeling Projects found in each unit.

For exercises 10 and 11, answer the questions.

10. STEM Connection An object’s potential energy, or energy to potentially move itself downward, is proportional to the height of the object in relationship to the ground. When the person shown is standing with their arms extended down, one barbell has a potential energy of 176.4 joules. Explain how to write an equation to represent the potential energy of the barbell while the person is standing.



Performance Task
For each Part A through C, answer the question and include justifications. DeShawn works at a company that creates reusable packaging.

Part A
DeShawn sent a survey to 560 companies asking if they would be interested in reusable packaging for their products. 255 companies expressed interest. What percent of the companies surveyed expressed interest in reusable packaging? What factors might prevent a company from using the reusable packaging?

Part B
DeShawn sent surveys to the residents of two different cities to find out their thoughts on reusable packaging. In Johnston, 88% of 640 people responded that they would like to see companies use reusable packaging. In Springfield, 64% of 760 were in favor of reusable packaging. In which city did residents have a greater interest in reusable packaging? Explain.

Part C
DeShawn’s company has a goal of increasing the number of companies using their packaging by 10% over a five-year period. Five years ago, 242 companies used their packaging. If DeShawn’s company reached its goal, how many companies would be using their packaging now? Explain.

Unit Reflect
How can you use percents to describe the difference between an estimate and the actual value?

212 Unit 4 • Solve Problems Involving Percentages

Name _____ Date _____ Period _____

Mathematical Modeling

Recycling, It is a Percentage Problem
According to the Environmental Protection Agency (EPA), an average of 5 pounds of trash per person is produced in the United States every day. This means that nearly 300 million tons of garbage is produced per year. Seventy-five percent of this waste is recyclable, but only about 30% of this recyclable-waste is actually recycled.

Choose one of the projects to complete.

Project One
Recycling and recycled products make a positive impact on jobs, wages, and tax generated income. According to the EPA’s Recycling Economic Information report, on a national average, there are 137 jobs, \$65,230 wages, and \$9,420 tax revenues attributable, for every 1,000 tons of recyclables collected and recycled.

The mayor of your town has launched a challenge to middle school students to improve recycling in their town. Think of jobs that the mayor could create, and design a robust recycling program. Then make a presentation using the data and information in the previous paragraphs to convince the people in your town to participate in your program.

Unit 4 • Solve Problems Involving Percentages 213

Mathematical Process Standards

South Carolina Reveal Math helps students build proficiency with these important process standards 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 Thinking and Problem-Solving

In the **Math is... Unit**, students are first introduced to the Math is... prompts. Teachers can model applying Mathematical Process Standards skills within the problem-solving process. With *South Carolina Reveal Math*, developing mathematical thinking becomes a daily expectation within the math classroom.

New Clothing
A clothing manufacturer is looking for a new shade of green for its fall jackets. Different groups of colorists have come up with these mixes.

How does the green color compare between the two mixes?

When we do math, we ask ourselves questions to make sense of the problem.

Math is... Making Conjectures
What do you think the solution is? How do you know?

Math is... Making Sense
What is the problem asking?

I can ask myself:

- How can I compare the two mixtures?
- How can I determine whether the mixtures will result in the same shade of green?

When we do math, we check on our progress towards a solution and adjust our plan as needed.

I can ask myself:

- Which questions have I answered?
- Do my solutions make sense?
- Am I making progress towards a solution?

Math is... Persevering
How could you check your answer?

Let's Explore More

a. What are some strategies you can use when you feel stuck?

14 Unit 1 • Math is...

Self-Monitoring Throughout the Year

Math Is...prompts are embedded 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 throughout the year.

Explore – Session 1 20 min

Launch Explore Assess Practice

CHOOSE YOUR OPTION

Activity-Based Exploration

In the Kitchen

Implement Tasks That Promote Reasoning and Problem Solving
Students explore part-to-part and part-to-whole relationships among quantities.

Materials
Digital: Activity Exploration Journal, pp. AEJ27–AEJ28, 1 per student
Hands-On: Blank Number Lines Teaching Resource; Activity Exploration Journal

Math is... Making Connections

- How is this problem like something you have done before?

MHM Invite volunteers to describe the aspects of the problem that are familiar. Students may recognize notation, terminology, or structure. Helping students make connections to previous work will allow them to draw from their earlier experiences.

Support Productive Struggle
As students explore the activities, check that all pairs understand the task. If students need guidance or support, ask:

- How can you describe the relationship between the two quantities?
- How might you show the relationship between the two quantities?

Math is... Connecting Representations

- How can you connect mathematical ideas to representations?

3PS Students think about how some problems can be represented in different ways. These ways include tape diagrams and double number lines. Some students may also suggest colored counters or tiles, one color representing one quantity and the other the other quantity. Encourage students to describe how each model they make represents the problem and the advantages of each point of view.

Have students complete the **Concluding Question** in their Activity Exploration Journal. How can your representations show the relationships between the quantities in each situation?

MML **Multilingual Learner Scaffolds**
Entering/Emerging Preteach any unknown words. Explain to students that juice and fruit drink are different because a fruit drink is not pure juice. Also, explain that dressing in this context is a sauce to pour on a salad as opposed to the act of putting on clothes. When responding to the Introductory and Concluding Questions, allow students to use short phrases.
Developing/Expanding Ensure that students understand the task. Remind them that cup and tablespoon are units of measure. Encourage them to use complete sentences in their response to the Introductory and Concluding Questions. If needed, provide sentence starters, such as My representation shows the relationship because...
Bridging/Reaching Ask students to use compound and complex sentences in their responses to the Introductory and Concluding Questions.

Guided Exploration

Salt-Water Aquarium
Students explore the concepts of equivalent ratios and proportions in a problem about constructing a salt-water aquarium.

Materials
none

Introduce the problem situation on Student Edition p. 122.

Salt Water Aquarium
Jacob is setting up a salt-water aquarium. The aquarium needs to have a salinity level of 35 grams of salt per kilogram of water (1,000 cm³ = 1 kg). How much salt will Jacob need to add to the water for the salinity level to be correct?

Use ratio reasoning to solve the problem.

One Way Use a table of equivalent ratios.

The ratio of salt to water is	$\frac{35 \text{ g}}{1 \text{ kg}}$
	$\times 75$
	$\frac{2,625}{75}$

75 cm³ of water holds 35 g of salt. 750 cm³ of water holds 350 g of salt. 7,500 cm³ of water holds 3,500 g of salt. 75,000 cm³ of water holds 2,625 g of salt.

Another way Use an equation.

Write an equation using two equivalent ratios.

$$\frac{35}{1} = \frac{x}{75}$$

Two equivalent ratios written as an equation is a proportion.

Use multiplication to determine the unknown term.

$$\begin{array}{r} \times 75 \\ 35 = \frac{2,625}{75} \\ \times 75 \end{array}$$

Jacob needs to add 2,625 grams of salt to the water.

Math is... Making Connections
How is this problem like something you have done before?

Let's Explore More

- How is finding an unknown in a proportion similar to determining equivalent ratios?
- Ayana is setting up a salt-water aquarium that holds 120 kilograms of water. How much salt will she need if she maintains the same salinity level?

Sense-Making

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.

Lesson 3-1
Connect Ratios, Rates, and Proportions

Be Curious
What do you notice?
What do you wonder?

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Megan Mayo/Imagine Source

Lesson 3-1 • Connect Ratio

The focus of **Be Curious** is to

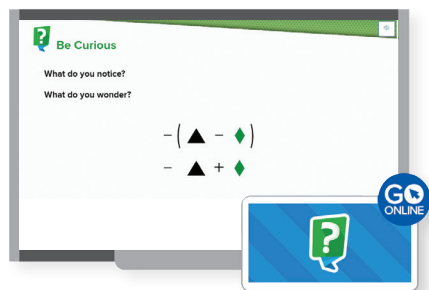
- Engage the classroom community.
- Allow students to make sense of the problem.
- Encourage mathematical curiosity.

Be Curious
What do you notice?
What do you wonder?

GO ONLINE

Every lesson launches with a Be Curious sense-making routine. These routines present students with a low-floor, high ceiling activity and also helps them develop the habit of making sense of a situation, a foundational part of problem-solving.

South Carolina Reveal Math sense-making routines follow one of four formats:



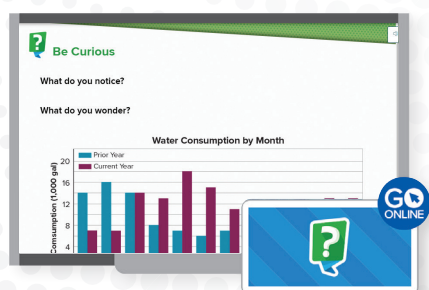
Notice and Wonder focuses students on making sense of the story, the quantities, and the real-world relationships of the mathematical concept.



Same/Different presents students with images or situations that require thought about the relationship among the objects in the image.



Which Doesn't Belong? presents a series of images, quantities, or numbers. Students compare and contrast the images or use reasoning to help identify which item "doesn't belong." The problem has multiple solutions depending on the reasoning students use.



Numberless Word Problems provide scaffolding that allows students the opportunity to develop a better understanding of the underlying structure of the problem itself.

Building Student Fluency with Number Routines

South Carolina Reveal Math Number Routines are a daily opportunity to focus on student development and strengthening of number sense.

Number Routines 3–5 min

About, Between, or Exact

Build Fluency Students build fluency with estimation and operations strategies as they decide whether to determine an estimate, a range, or the exact solution to the given expression.

These prompts encourage students to talk about their estimates:

- What was it easiest to find about the value of the expressions—an estimate, a range, or the exact number?
- Why might it be easiest to find a range?
- How were you able to think of an exact answer?
- What rounded numbers were you thinking about?
- How does ___'s approach compare to your approach?

Or You Could...

Build Fluency Students build fluency with flexibility with operations as they look for different ways to evaluate or compare expressions.

These prompts encourage students to talk about their estimates:

- What was your strategy for comparing?
- What numbers did you use? Did you use rounded numbers or the exact numbers?
- How does your strategy compare to ___?

The Teacher Edition includes two Number Routines for the launch. Choose to use a Number Routine for both Lesson Session 1 and Lesson Session 2 or choose between the two for a single session.

Number Routines are found in the Teacher Digital Center for presentation to the class.

This or That?

This or That? is a take on the classic conversation or party game “Would You Rather.” In this routine, students compare two different values or expressions with a given context. They are then asked to determine which of the choices they would prefer by comparing the values.


Number Routine

GO
ONLINE

Student Engagement through Number Routines

Students revisit Number Routines across grades using the same structure, but with more complex numbers or quantities.

About How Many?

This routine is an opportunity for students to practice mathematical reasoning in the real world. Pictures are posed and students estimate quantity, determine probability, and much more. Students share their insights and justify their thinking.

About, Between, or Exact

In this routine, students estimate the result by using friendly numbers (finding the about) or a range (finding the between). Students could also choose to determine the exact result. Students decide which strategy to use and share out.

Five Breaks

Five Breaks provides opportunity for students to hone their skills with number decomposition and flexible thinking about numbers. A number is given, and students identify five different ways to break it apart. Then small groups of students compare their decompositions and share with the other groups.

Give Me 5

Students are given five numbers and a target number. Students then use all the numbers in any order with any operation to arrive at the target number. Extensions of this routine include giving students three numbers and a target number and students determine which two missing numbers in addition to the three get them to the target number.

If I Know This...

This routine is similar to the Number String Matrix routine. Students are given a single fact and four or five equations that are related in some way. Students explain how they used the given fact to determine the solutions to the equations.

In My Head?

In My Head? empowers students to think flexibly about computing and evaluating on paper or in their head. Students determine which of the given expressions they could do mentally and share how they would do so. Students also talk about why certain problems are better done on paper or even with a calculator.

Is It Reasonable?

Students are presented with three or four statements like $6.76 \div 6$ is 1.21. They then discuss whether the statement is reasonable. They do not look to determine whether the statement is accurate but simply whether it is reasonable. Students work with a collection of different numbers and operations.

It's About

This is a routine for estimating with fractions or percent. Students are shown a shaded amount, a point on an open number line, or even a progress or status bar, and they have to estimate the value shown. The prompts have no exact amounts. Instead, students have to reason about benchmarks to make estimates.

More or Less Than...

In this routine, students estimate a result using any strategy and then compare their estimate to a given value. The intent is for them to estimate results rather than determine the exact result.

Number String Matrix

A Number String is a list of related equations. Students use the solution strategy for the first equation to solve the subsequent equations. A number string matrix is a set of related problems that are presented in rows and columns. Students pick a row or a column and solve the equations.

Or You Could...

Students are prompted to think about different ways to evaluate or compare expressions. For example, given $2.99 - 7$, a student might say "Or you could do $2.99 - 3$ is -0.01 and $-0.01 - 4$ is -4.01 ." For 3.9×6 , one student might think of it as 4×6 and take away 0.6 whereas another student might think of it as $3 \times 6 + 0.9 \times 6$.

This or That?

This or That? is a take on the classic conversation or party game "Would You Rather." In this routine, students compare two different values or expressions with a given context. They are then asked to determine which of the choices they would prefer by comparing the values.

A full listing of Number Routines is found in the Teacher Edition Appendix.

Supports to Build a Shared Language

South Carolina Reveal Math helps students develop the language of math with language routines and comprehensive vocabulary support. These embedded features support teacher facilitation and student acquisition of mathematical language and vocabulary.

Math Language Routines

Math Language Routines embedded within every lesson provide a framework for teachers to seamlessly promote language development every day.

- 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 Collect and Display

As students discuss the questions, listen and write on the board any key words they use. Display the words and phrases for student reference. Use the student-generated expressions to help make connections between student language and math vocabulary. Update the collection with new understandings as the lesson progresses.

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.

MLD Math Language Development

Analyzing Word Parts

In this unit, students will read, hear, and say several closely related and important words. Some are math-specific while others represent general academic vocabulary. To expand both receptive and expressive vocabulary, explain that words can be broken down into parts that have shared, or similar, meanings across words. By learning these meanings, students can increase comprehension and be more clear. Tell students that the first word part they should identify is the root or base word. Explain the distinction by saying that the former cannot stand on its own as a word (geology → geo) while the latter can (friendship → friend). Lead the group to brainstorm for common root and/or base words, writing them on the board. Ask:

- What root or base word do you think will produce the greatest number of words?
- How many words can you think of that include that root or base word?

Use these secondary words as a springboard to introduce the concept of prefixes and suffixes. Highlight or circle recurring affixes, encouraging students to deduce their meanings by observing how they consistently alter the meaning of a root or base. Make sure that these include common affixes such as re- or -ity. Show how such affixes can retain the overall meaning of the root or base word but change the part of speech of a word.

Finally, preview related words in the unit, encouraging students to try to define them and their individual parts. These could include rate/ratio, equation/equivalent, proportion/proportional/proportionality.

LANGUAGE OBJECTIVE

Language Objectives

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

Students distinguish between the different uses and definitions of multiple-meaning words.

Multilingual Learner Scaffolds

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

MLL Multilingual Learner Scaffolds

Entering/Emerging

Allow students struggling with identifying English word parts to analyze words in their home language. Work with them to list words that can be altered with affixes to form others. Point out that the same is true in English.

Developing/Expanding

Have students write sentences using base words, and then add affixes to form new words that they use in new sentences. Challenge students to make the two sentences connect logically to highlight the shift in meaning or part of speech.

Bridging/Reaching

Ask students to write sample sentences that highlight the math domain words shown above. They can look these up in a dictionary or glossary, or preview the text, skimming it to determine how the words are used in context.

Building the Language of Mathematics

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

Graphic organizers, tools, and tips are provided to build students' academic and math vocabulary and support their precision with mathematical language.

Building the Language of Mathematics

Complete the graphic organizer as you work through the unit.

Proportional Relationships

Way to Represent	Example	Non-example
Table		

Building the Language of Mathematics

As students work through each lesson, have them complete the graphic organizer to build understanding of and proficiency with key mathematical terms and concepts.

Encourage students to come up with their own definitions and descriptions of terms. When students generate their own definitions or descriptions of terms, they are more likely to remember them long term.

Word Wall

If there is a Math Word Wall in the classroom, ask students to add their words, examples, and counterexamples of proportional relationships to the wall. As they share them, have each student explain their entry.

Effective Teaching Practices

The instructional design with *South Carolina 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 *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

Elicit and Use Evidence of Student Thinking

As students progress through the unit, ask them to explain their reasoning. Understanding the reasoning for their answers—whether they are correct or incorrect—allows for targeted instruction to reinforce and expand or enhance their understanding or address misconceptions and misunderstandings in a timely way.

As students learn about proportionality, there are multiple possibilities for errors in execution. Students may have misconceptions about:

- the difference between proportional and nonproportional relationships;
- linear graphs that do not pass through the origin;
- common factors that define equivalent ratios and proportions.

Ask frequent questions, especially those that require reasoning. Use students' responses to inform instruction and determine what kinds of practice and review might be necessary.

For example, if students struggle to determine equivalent ratios or to identify the constant of proportionality, spend some time revisiting multiplication and division of fractions.

In Lessons 3-2, 3-3, and 3-4, students are introduced to proportional relationships. Monitor closely students' responses and thinking in these lessons to ensure they are understanding proportional relationships accurately.

- 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.

Continue with your selected option from Session 1.

Activity-Based Exploration

Activity Debrief

MS-D Discussion Supports: Numbered Heads Together

- Groups:** Each student in the group is assigned a number.
- Assign the Task:** Have students review the **Concluding Questions**, including formulating justifications or explanations.
- Heads Together:** As students work together to discuss the questions, they make sure that everyone in the group is prepared to provide their answers and explanations to the entire class.
- Report:** Choose a student number at random. The students with this number are the reporters for their group. The reporters share their answers and explanations with the entire class. Reporters either agree or provide their own answers and explanations.



ETP Elicit Evidence of Student Understanding

As students discuss their approaches, connect their thinking to these new key terms and concepts:

- proportional relationship: If the ratios between two quantities in a table have a constant ratio, then the quantities are in a proportional relationship.
- constant of proportionality: The constant ratio observed in a proportional relationship is called the constant of proportionality.
- the constant of proportionality has the same value as the unit rate.

ETP Facilitate Mathematical Discourse

Facilitate a whole-class discussion of the activities and approaches, reinforcing these key terms: constant of proportionality and proportional. Ask:

- What does the proportional relationship tell us?
- How can tables help you see patterns in data resulting from functions?
- What other representations can you use?

Math is... Making Conjectures

What do you think the solution is?

ETP Encourage students to make a habit of predicting answers. In order to make a reasonable prediction, students must understand the problem situation and how the pieces of the problem fit together. Prediction forces students to think about their solution strategy and whether it makes sense.

Have students complete the **Concluding Questions** in their Activity Exploration Journal.

- What can you learn by analyzing ratios between quantities of a function?
- How can you describe a ratio relationship?

MLL Multilingual Learner Scaffolds

Entering/Emerging Help students formulate their justifications or explanations. Create a word bank with non-linguistic representations, including *stayed the same, changed, and I think*. Provide sentence frames: *I think the ratio ... because ... My group said ... because ... and ...*

Developing/Expanding Remind students to include data examples in their justifications and explanations. Tell them to ask clarifying questions during the group discussion, and consider providing an academic word bank for them. Also, encourage them to restate other group members' explanations.

Bridging/Reaching Have students give a summary of the full-group discussion. If they

Guided Exploration

Popcorn

Students explore the constant of proportionality in a situation about making popcorn.

Materials
none

Introduce the problem situation on Student Edition p. 129.

ETP Use and Connect Mathematical Relationships

- How can you choose numbers in the table to help you solve the problem?
- How can you use a table to show a pattern?

MS-D Discussion Supports

As students engage in discussing the answers to the questions, have them pay attention to each others' understandings in order to increase their fluency in mathematical discussions about proportions and constant of proportionality. Restate statements they make as questions to seek clarification and to confirm comprehension, providing validation or correction when necessary. Encourage students to challenge each others' ideas when warranted, as well as to elaborate on their ideas and give examples.

Collaborate and Connect

Students work in small groups to answer the question. Have a member from each group report to the class.

- How could you determine the constant of proportionality?

Math is... Making Conjectures

What do you think the solution is?

ETP Encourage students to make a habit of predicting answers. In order to make a reasonable prediction, students must understand the problem situation and how the pieces of the problem fit together. Prediction forces students to think about their solution strategy and whether it makes sense.

Let's Explore More

Students work with partners or in small groups to complete the questions. Check that students understand how using a constant of proportionality relates to the importance of following a recipe. Mention that recipes pose common situations in which ratios involve complex fractions because amounts are often given as fractions.

Popcorn

Agape is using 2 cups of unpopped kernels to make some popcorn. How many tablespoons of seasoning does she need to add to the unpopped kernels?



The table asks a table to determine the constant of proportionality.

Seasoning (t)	Amount (c)	Amount (t)
1	2	1/2
2	4	1
3	6	1 1/2
4	8	2
5	10	2 1/2
6	12	3

How many tablespoons of seasoning are needed for every 2 cups of unpopped kernels?

You can use the constant of proportionality to determine the amount of seasoning Agape needs for 2 cups of kernels.

Seasoning (t)	Amount (c)	Amount (t)
1	2	1/2
2	4	1
3	6	1 1/2
4	8	2
5	10	2 1/2
6	12	3

How many tablespoons of seasoning are needed for every 2 cups of unpopped kernels?

Let's Explore More

- What will happen to the ratio if Agape uses the incorrect amount of seasoning? If either too much or too little seasoning is used the popcorn **never** would taste different than expected.
- Why is it important to maintain proportionality in a situation like this one? **Sample responses:** If the quantities don't remain proportional, the final product might not come out right.

Lesson 3.1 Use Tables to Determine Proportionality, 189

ETP Elicit Evidence of Student Understanding

As students discuss their approaches, connect their thinking to these new key terms and concepts:

- proportional relationship: If the ratios between two quantities in a table have a constant ratio, then the quantities are in a proportional relationship.
- constant of proportionality: The constant ratio observed in a proportional relationship is called the constant of proportionality.
- the constant of proportionality has the same value as the unit rate.

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

Teach with Confidence

Unit Overview

The **Unit Overview** provides professional development to support the unit’s instruction at point-of-use, including:

- Objectives
- Learning Progression
- Effective Teaching Practices
- Mathematical Process Standards
- Thinking Like a Mathematician
- Language Supports
- Routines

ETP Effective Teaching Practices

Elicit and Use Evidence of Student Thinking

As students progress through the unit, ask them to explain their reasoning. Understanding the reasoning for their answers—whether they are correct or incorrect—allows for targeted instruction to reinforce and expand or enhance their understanding or address misconceptions and misunderstandings in a timely way.

As students learn about proportionality, there are multiple possibilities for errors in execution. Students may have misconceptions about:

- the difference between proportional and nonproportional relationships;
- linear graphs that do not pass through the origin;
- common factors that define equivalent ratios and proportions.

Ask frequent questions, especially those that require reasoning. Use students’ responses to inform instruction and determine what kinds of practice and review might be necessary.

For example, if students struggle to determine equivalent ratios or to identify the constant of proportionality, spend some time revisiting multiplication and division of fractions.

In Lessons 3-2, 3-3, and 3-4, students are introduced to proportional relationships. Monitor closely students’ responses and thinking in these lessons to ensure they are understanding proportional relationships accurately.

MPS Mathematical Process Standards

Identify and apply regularity in repeated reasoning to make generalizations

Analyzing and understanding the structure of proportional relationships is an important big idea in middle school and a foundational concept for high school mathematics. Helping students see the structure of proportional relationships will increase the likelihood of them being successful with high-level mathematics.

- Encourage students to see patterns when looking at a series of ratios before they carry out any operations to determine constant ratios. Have students predict whether the ratios represent a proportional relationship and justify their prediction based on patterns they notice.
- Focus students’ attention on the representations used in this unit. When students see ratios in tables and graphed as ordered pairs, they are more likely to recognize patterns that will help them recognize proportional relationships.

Provide consistent opportunities for students to focus on structure. Some suggestions include:

- Students work with partners to create tables of values, some of which represent proportional relationships, while others do not. Partner-groups can exchange their tables of values with other partner-groups who determine which tables represent proportional relationships. Partner-groups can opt to plot the table of values as ordered pairs on a coordinate grid or determine whether there is a constant of proportionality.
- Give student-groups a constant of proportionality value, and have them create a data set that aligns to the constant of proportionality. Student-groups share their data sets and explain how and why the data set represents a proportional relationship.

TLM Thinking Like a Mathematician

Throughout the unit students will build agency and mathematical thinking habits as they engage with the Mathematical Process Standards. The lessons cultivate problem-solving abilities, critical thinking, and creativity. The Math is...Thinking promotes throughout the unit are designed to build student agency and understanding by highlighting the ways students think like a mathematician as they engage in the lessons.

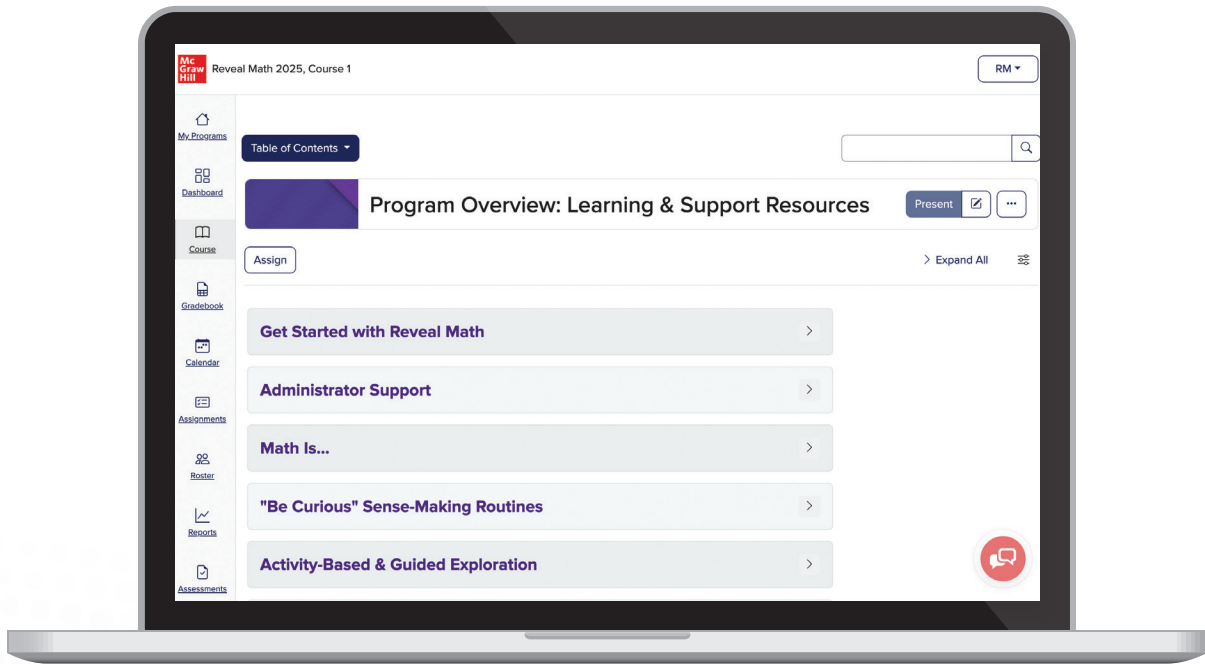
These prompts build student communication as they:

- Explain what and how they think about math
- Justify and provide evidence of their strategies and solutions
- Listen to and make sense of their thinking and the thinking of others
- Ask questions that clarify, challenge, and reinforce thinking

Unit 3 • Unit Overview 241

Continued Learning Led by Experts

Teachers and administrators have access to a comprehensive set of online professional learning resources to support successful implementation and continued learning throughout the year.



Quick Start

Concise resources designed to quickly get teachers up to speed with *South Carolina Reveal Math*.

Digital Walkthrough

Short videos guide teachers and students through the digital platform.

Instructional Videos

South Carolina Reveal Math authors showcase key features and provide implementation recommendations.

- Annie Fetter: Be Curious and Sense-Making Routines
- Raj Shah: Ignite! Activities
- Cheryl Tobey: Math Probes
- John SanGiovanni: Number Routines

High Quality Math for All Learners

South Carolina Reveal Math emphasizes a productive classroom culture where all students have access to rigorous instruction, make meaningful connections, and share their ideas freely.

Each *South Carolina Reveal Math* Unit emphasizes one of the six key areas for ensuring access and opportunity for all learners of mathematics.

Unit Overview

Go Deep with the Math

What is it, and why does it matter?
 Going deep with math ensures that all students develop deep conceptual knowledge¹. Students need time to learn math so they can make sense of it and explain it to themselves and others. When students have the time to go deep with the math, they increase their confidence as doers of math.

How does it come about in South Carolina Reveal?
 Every lesson has an Activity-Based Exploration activity where students can go deep with mathematics. These activities give the students opportunities to make sense of mathematics. The key is to be sure you allow them the time to engage in those activities!

Descriptor	Actionable Strategies for Teachers
Make sure you know the math before you teach it.	<ul style="list-style-type: none"> Access the multiple professional resources to deepen your understanding of math concepts. Consider implementing the Activity-Based Exploration. Review the unit assessment so you know what students are expected to learn. Plan for instruction with your math coach or colleagues.
Encourage students to explore new mathematical ideas and seek the intrinsic reward in being doers of math.	<ul style="list-style-type: none"> Use math games to provide opportunities for practice and strategic thinking. Have students play the digital math games or create your own games. Have students complete the Mathematical Modeling tasks or create additional projects. Allow sufficient time for students to engage in the mathematics.
Allow time for students to engage with mathematical ideas.	<ul style="list-style-type: none"> Allow for sufficient time for students to do and discuss the content of each lesson. Monitor how long it takes for students to engage and adjust lesson timing. Allow students time to explore math ideas they are interested in. Have students share their ideas with classmates.
Anticipate what students might do, but be prepared to misconceptions and/or alternative approaches.	<ul style="list-style-type: none"> Students engage with games. Students reflect on the purpose of games, the skills they support, and how new learning can be used in new settings. Students look for math around them. Students ask questions about math to help explore. Students work collaboratively and complete tasks. Students remain open to different ideas, strategies, and representations. Students listen to, make sense of, and build on one another's ideas.

Unit Overview

Build Connections

What is it, and why does it matter?
 Building connections both to a math community and among math concepts when solving mathematics problems is critical to helping all students achieve success in mathematics. "When students learn to represent, discuss, and make connections among mathematical ideas in multiple forms, they demonstrate deeper mathematical understanding and enhanced problem-solving abilities." Building connections helps to deepen conceptual understanding while making the classroom a more joyful place.

How does it come about in South Carolina Reveal Math?
 Building connections is an ongoing activity that starts in Unit 1, *Math is...* where students build the classroom community by getting to know one another and establishing classroom norms for the math class. It is important that you continue to foster connections among students to build a strong classroom community. It is also important that when you debrief lessons, you encourage students to share the different ways they solve problems and allow them to talk about the connections between the different strategies.

Descriptor	Actionable Strategies for Teachers
Build understanding of different approaches to thinking about and reasoning with mathematics.	<ul style="list-style-type: none"> Make explicit the connections between topics on reflection days or at the end of a unit. Have the students complete the Mathematical Modeling tasks that address more than one mathematics concept. Have students share different approaches to doing math. Encourage students to teach their peers math using different approaches.
Promote a classroom culture of respectful discourse, interaction, and risk-taking.	<ul style="list-style-type: none"> Co-create and reinforce norms for interaction during discourse. Have nonverbal signals or use discussion protocols. Students solve complex math problems that cover multiple math concepts. Students engage in discussions about the math concepts and processes. Students explain their thinking in a variety of methods.
Create a culture of discourse that encourages student participation.	<ul style="list-style-type: none"> Co-create and reinforce norms for interaction during discourse. Model norms of interaction for classroom discourse that include respectful interactions. Use the Math Language Routines to support student participation in discourse. Monitor student participation and honor different ways of participating. Students hold themselves and peers accountable to co-created expectations. Students expect to be asked to explain, clarify, and elaborate. Students focus on the process and reasoning, not the correct answer. Students explain their thinking in a variety of methods.

Access and Opportunity for All

¹ National Council of Teachers of Mathematics. (2016). *Principles to Actions: Ensuring Mathematical Success for All*. Boston, MA: National Council of Teachers of Mathematics.

458 Unit 5 • Sampling and Statistics

Develop Student Confidence

When students believe that mistakes are learning opportunities, they are willing to try and challenge themselves. This strong agency as doers of math leads to a growth in confidence when solving mathematical problems.

Encourage Ownership of Learning

The Activity-Based Exploration offers problem-based activities that promote productive struggle and agency as students decide what strategies to use. Daily reflection opportunities drive accountability for their understanding.

Make STEM Connections

Each Unit has a STEM focus to engage students, help them make sense of the world, and help make predictions on impacts to the future.

STEM connections are embedded within student practice problems to help them make a daily connection to math applicability to everyday situations.

Lesson 1-1
Math is Mine

Be Curious
What do you notice?
What do you wonder?




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Reflect
How can you explain to a classmate how to use a proportion to find an unknown value?

126 Unit 3 - Proportional Relationships

Explore Through STEM
Air in Flight
Airlines have systems in place to create a healthy cabin environment for their passengers where the air is replaced every few minutes. Filters are used to prevent viruses and bacteria from spreading. The air flow design has most air leaving the cabin in the same row in which it enters the cabin.



Think About It
Under what conditions would air purification be necessary?

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Develop Community Skills through Math

A focus on mathematical thinking helps establish a productive math classroom community where students are encouraged and motivated to engage in mathematics.

The instructional design of *South Carolina Reveal Math* promotes an active classroom with daily opportunities for collaboration, discourse, creativity, critical thinking, and hands-on learning. In addition to the mathematical objectives for the lesson, each lesson has a language objective that supports the comprehension and use of mathematical language.

LESSON 3-2

Use Tables to Determine Proportionality

<p>Learning Targets</p> <ul style="list-style-type: none"> I can represent equivalent ratios using tables and determine whether those quantities are proportional. I can make sense of and identify the constant of proportionality from a table. 	<p>Vocabulary</p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>Math Terms</p> <ul style="list-style-type: none"> constant of proportionality function </td> <td style="vertical-align: top;"> <p>Academic Terms</p> <ul style="list-style-type: none"> display identical </td> </tr> </table>	<p>Math Terms</p> <ul style="list-style-type: none"> constant of proportionality function 	<p>Academic Terms</p> <ul style="list-style-type: none"> display identical 	
<p>Math Terms</p> <ul style="list-style-type: none"> constant of proportionality function 	<p>Academic Terms</p> <ul style="list-style-type: none"> display identical 			

Focus

<p>Math Objectives</p> <ul style="list-style-type: none"> Students use tables to determine whether two quantities are in a proportional relationship. Students identify the constant of proportionality from a table. 	<p>Language Objectives</p> <ul style="list-style-type: none"> Students will practice using academic language. To optimize output, students will participate in <i>MLR: Co-Craft Problems</i> and <i>MLR: Discussion Supports</i>. 	<p>Thinking Like a Mathematician</p> <ul style="list-style-type: none"> Students identify strategies that can help them be good doers of math.
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Focus

<p>Math Objectives</p> <ul style="list-style-type: none"> Students use tables to determine whether two quantities are in a proportional relationship. Students identify the constant of proportionality from a table. 	<p>Language Objectives</p> <ul style="list-style-type: none"> Students will practice using academic language. To optimize output, students will participate in <i>MLR: Co-Craft Problems</i> and <i>MLR: Discussion Supports</i>. 	<p>Thinking Like a Mathematician</p> <ul style="list-style-type: none"> Students identify strategies that can help them be good doers of math.
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Coherence

<p>Previous</p> <ul style="list-style-type: none"> Students used tables to find equivalent ratios. Students determined unit rates. 	<p>Now</p> <ul style="list-style-type: none"> Students use tables to identify proportional relationships. Students calculate the unit rate from a table. 	<p>Next</p> <ul style="list-style-type: none"> Students calculate slope from a table. Students use tables to analyze functions.
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Rigor

<p>Conceptual Understanding</p> <ul style="list-style-type: none"> Students use tables to identify the constant of proportionality. 	<p>Procedural Skill & Fluency</p> <ul style="list-style-type: none"> Students use the constant of proportionality to fill in a table. 	<p>Application</p> <ul style="list-style-type: none"> Students apply the constant of proportionality to solve a real-world problem.
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264 Unit 3 • Proportional Relationships

Thinking Like a Mathematician

Students first encounter the Math is... content in Unit 1 to help them think like a mathematician.

- Students build self-awareness and self-management as they think about their strengths and attitudes towards math.
- Students focus on community participation and relationship skills as they think about and discuss classroom norms for a productive learning environment.

At the close of the year, students will revisit Math is... content in the final unit of the course to reflect on their school year journey, see examples of math in our world, and apply mathematical thinking habits.

Math is About Doing
What is math?
Math is about solving problems.
When we do math, we solve problems.


When we work together, we collaborate and support each other.

- We make sense of problems.
- We think about what we know and don't know about the problem.
- We look for patterns and relationships among quantities.
- We visualize the problem and choose a useful representation.
- We select and use tools that are appropriate.
- We develop a solution plan.
- We are aware of our progress in solving the problem and shift strategies when needed.

When we do math, sometimes we get stuck.

- We think of questions to ask a classmate or the teacher.
- We try to imagine the problem or draw pictures of it.
- We think of problems we have seen like this before.
- We identify what we know about the problem and what we don't understand.

Let's Explore More
a. What part of problem solving is easy for you? What part is challenging?



38 Unit 1 • Math Is...
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Math is... Thinking

- What can you do to persevere with math?

Encourage students to share strategies they use in math. Focus on strategies that can help students stay productive.

Lesson 2-1

Solve Problems Involving Scale Drawings

Be Curious

What do you notice?
What do you wonder?



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Lesson 2-1 • Solve Problems Involving Scale Drawings 53

Purposeful Practice

South Carolina 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
Lesson Practice	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.	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 performance tasks.	Student Edition	✓
ALEKS®	Adaptive practice focused on ready-to-learn topics to fill gaps or accelerate learning.		✓ Autoscored

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.

Mc
Graw
Hill 03-03 Additional Lesson Practice (RM25 C2)

Question 10 of 16

Question 10

The total time you watch television is proportional to the number of shows watched. What do the points (0, 0) and (1, 48) represent?

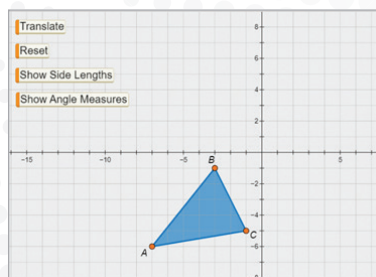
The point (0, 0) represents shows watched in minutes.

The point (1, 48) represents show(s) watched in minutes.

Need help with this question?

Next Question
Check Answer
Done and Review

eToolKit



Hints

Hint
Close

The title of each axis indicates the meaning of each coordinate. In each ordered pair, the x-coordinate is the number of shows. The y-coordinate is the number of minutes the shows were watched.

Glossary

English
Search...

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

N

negative integer NEG-uh-lee-juh-eej An integer that is less than zero. It is written with a - sign.

net NET A two-dimensional figure that can be used to build a three-dimensional figure.

nonproportional non-pruh-por-shun-ee-lee The relationship between two ratios with a rate or ratio that is not constant.

numerical expression nu-mer-ee-khl-ee-spre-sh-uh-lee A combination of numbers and operations.

O

obtuse angle uh-b-TOOS-ANG-uh-lee Any angle that measures greater than 90° but less than 180°.

obtuse triangle uh-b-TOOS-TRAY-ee-ang-uh-lee A triangle having one obtuse angle.

opposite uh-uh-uh-lee Two integers are opposites if their sum is zero. For example, 5 and -5 are opposites. For more information, see the number line.

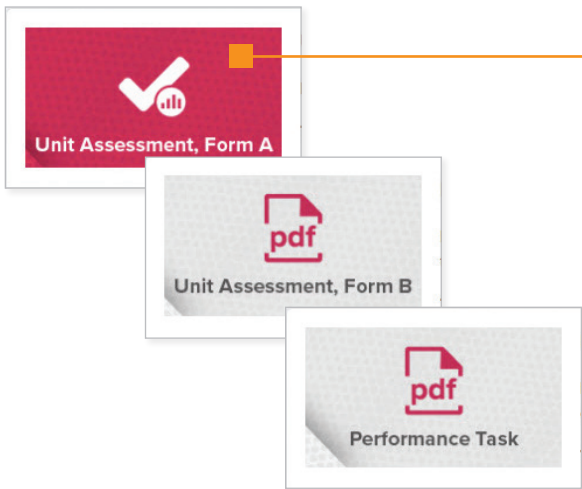
Assessment

Monitor student understanding throughout the year

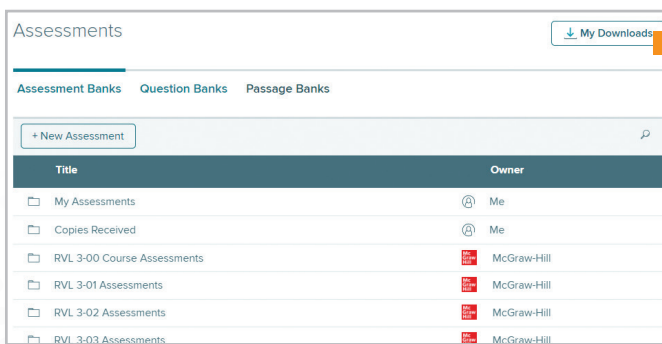
South Carolina Reveal Math offers a comprehensive set of assessment resources that include diagnostic, formative, and summative tools.

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	Exit Ticket	During a lesson	Assesses students' understanding of the concepts and skills following the Explore phase.
	Lesson Quiz	After a Lesson	Assesses students' conceptual understanding 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.
	Summative Assessment	At the end of the school year	Evaluates students' proficiency with concepts and skills taught over the school year.

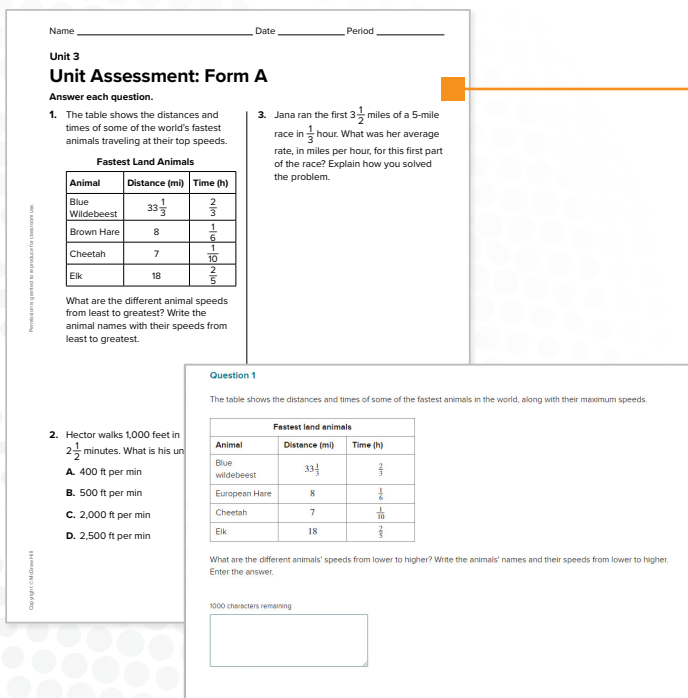
All assessments are available for either print or digital administration.



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 with **South Carolina College- and Career-Ready Standards for Mathematics item banks** to build additional assessments as needed. Many of the digital assessment items are autoscorable. Teachers can access more digital reporting information in the Reporting Dashboard within the Digital Teacher Center.



South Carolina Reveal Math assessments include a range of item types that students are likely to encounter on end-of-year state 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

Ensure Student Readiness with Targeted Intervention and Acceleration

McGraw Hill is committed to helping all students achieve high academic results. To that end, *South Carolina Reveal Math* offers targeted intervention and acceleration resources that provide additional instruction for students as needed. These resources are available to assign students based on their performance on the unit readiness diagnostics and unit assessments. The Item Analysis table lists the appropriate resource for the identified concept or skill gaps.

Guided Support

Materials

- Pencils (10 per group)
- Pens (10 per group)

Begin the Activity

Work with students individually or in pairs. Lay 6 pencils next to 4 pens. Say: *The number of pencils compared to the number of pens is 6 to 4. Another way to describe the relationship is to say that the ratio of pencils to pens is 6 to 4. A ratio is a comparison of two quantities. You can write ratios using the word “to,” using a colon, or using a fraction.* Demonstrate how to write 6 to 4, 6:4, and $\frac{6}{4}$.

Say: *You can also use words, such as “out of” and “for every” to express a ratio. For example, you can say “for every 6 pencils, there are 4 pens.”*

Ask: *What is the number of pens compared to the number of pencils?* [4 to 6] Ask: *How can you use the word ratio to describe the relationship?* [Sample answer: The ratio of pens to pencils is 4 to 6.] Ask: *How can you use the word ratio to describe the relationship?* [4 to 6, 4:6, $\frac{4}{6}$] *How can you use the words “for every” to describe the ratio?* [Sample answer: for every 6 pencils there are 4 pens]

Say: *We just used ratios to compare two parts. Suppose we want to compare the total number of writing tools to the number of pens. Point out that there are 10 writing tools in all. Ask: What is the number of writing tools to the number of pens?* [10 to 4] *How can you use the word ratio to compare the two numbers?* [Sample answer: The ratio of writing tools to pens is 10 to 4.] *How can you write the ratio?* [10 to 4, 10:4, $\frac{10}{4}$]

Explain to students that they can use “out of” to compare parts to wholes. Say: *The ratio of the number of pens to the total number of writing tools is 4 out of 10.* Ask: *What is the ratio of the number of pencils to the number of writing tools using the words “out of?”* [Sample answer: 6 out of 10]

Guided Support provides a teacher-facilitated small group mini-lesson that uses concrete modeling and discussion to build conceptual understanding.

What Is a Ratio?

Key Concept

A **ratio** is a comparison of two quantities using division. You can describe ratios in writing with the word to, with a colon (:), or with a fraction. Here are some examples using shapes. These 6 shapes include 2 circles, 3 triangles, and 1 rectangle.



You can write the ratio of triangles to circles like this: 3 to 2, 3:2, or $\frac{3}{2}$.

You can write the ratio of the total number of shapes to rectangles like this: 6 to 1, 6:1, or $\frac{6}{1}$.

You can write the ratio of the total number of shapes to round shapes like this: 6 to 2, 6:2, or $\frac{6}{2}$.

Try It

Describe the comparisons and write the ratios.



- Bicycles to tricycles:
How many bicycles are there? ____
How many tricycles are there? ____
For every 3 _____ there is 1 _____.
The ratio of bicycles to tricycles is ____ : ____.
- Tricycles to total number of cycles:
How many tricycles are there? ____
How many cycles are there in all? ____
There is 1 _____ out of 4 _____.
The ratio of tricycles to cycles is ____ : ____.
- Wheels on 1 tricycle to wheels on 1 bicycle:
How many wheels are on 1 tricycle? ____
How many wheels are on 1 bicycle? ____
What is the ratio of wheels on 1 tricycle to wheels on 1 bicycle? $\frac{\square}{\square}$
- Total number of cycles to bicycles:
How many cycles are there in all? ____
How many bicycles are there? ____
What is the ratio of the total number of cycles to bicycles? ____ to ____.

12 Ratios and Rates

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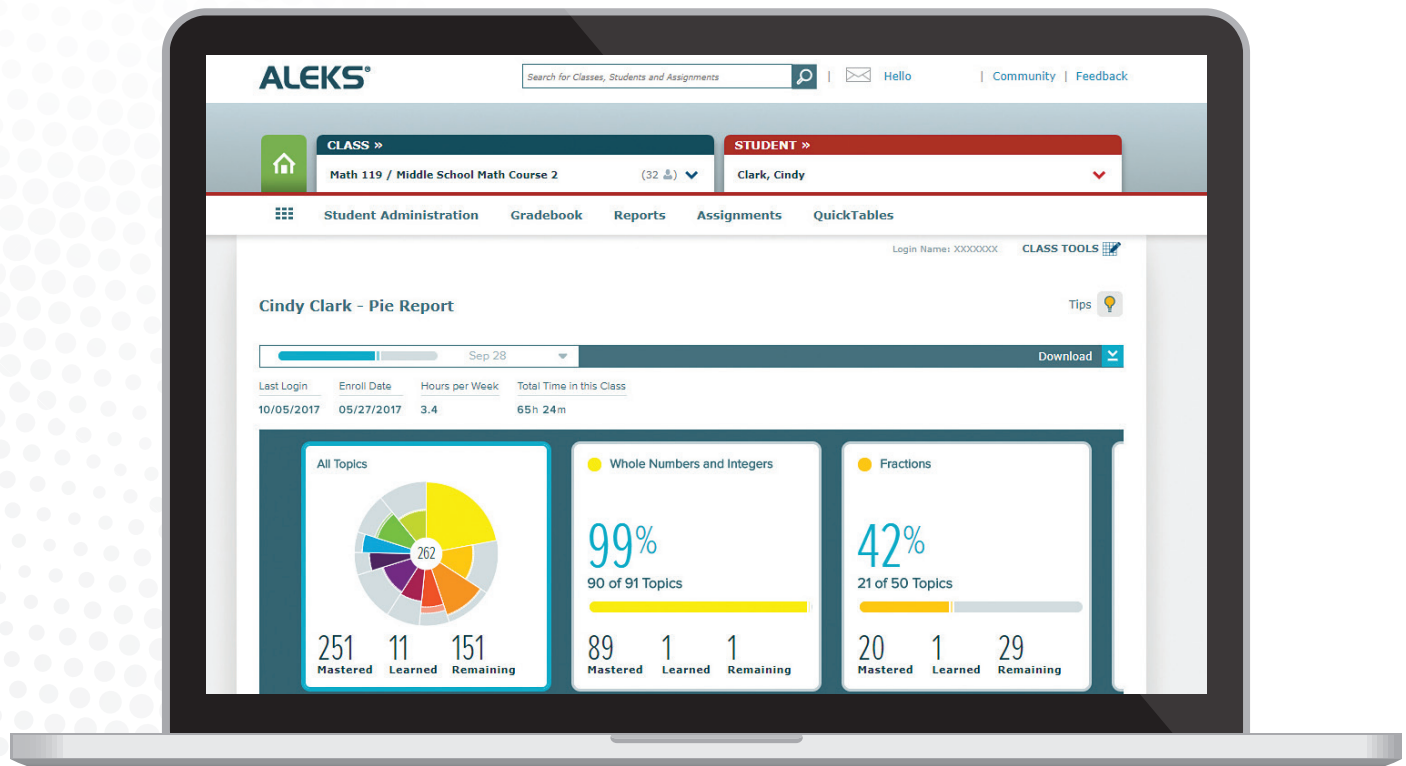
Skills Support Sheets are skill-based practice sheets that offer targeted practice of previously taught items.

Meet Students at Their Level with *South Carolina Reveal Math* and *ALEKS*

The Perfect Pairing for Personalized Learning

South Carolina Reveal Math and *ALEKS* provide students the added advantage of a personalized learning pathway continuously adapting to them.

- *ALEKS* can be used effectively for all students targeting the exact topics each is most ready to learn. This approach minimizes frustration, accelerates learning momentum, and builds confidence.
- Teachers can create *ALEKS* assignments from an infinite number of questions directly connected to *South Carolina Reveal Math* scope and sequence, so students work on lesson-level content with prerequisite topic support.
- For students who need more challenge, *ALEKS* provides additional extension opportunities and allows students to progress at their own pace.



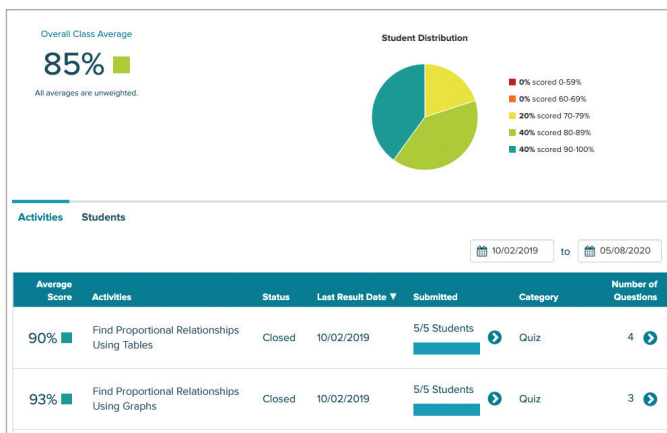
Dynamic Reporting

Actionable data is a click away in the Digital Teacher Center with the Reporting Dashboard. Combined with adaptive and personalized instructional assets, data-informed instruction is easier than ever.

Reporting includes:

Activity Performance 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



Activity Performance Report

South Carolina Standards Performance Report

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

Administrator Report

Activity, standards, progress, and usage reports

South Carolina | College- and Career- | Mathematics (2023) | Grade 7

Show: Assessed | Show Description

Standards	Description	Class Avg	Questions
7.DPSR.1	Analyze data sets to identify their statistical elements.	82%	9
7.DPSR.1.1	Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations.	82%	9
7.DPSR.1.2	Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set.	82%	9
7.DPSR.1.3	Calculate and interpret the measures of center (mean, median, mode) and spread (mean absolute deviation, interquartile range, range) in mathematical and real-world situations.	100%	4
7.DPSR.1.4	Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets.	80%	2

South Carolina Standards Performance Report

Discover and Track More Data with Gradebook

Within the digital gradebook, teachers can:

- Edit and manage classroom scores.
- Sort grades by group, student, grading period, and performance.
- Customize grading scales.
- Export data.
- View score sheets.

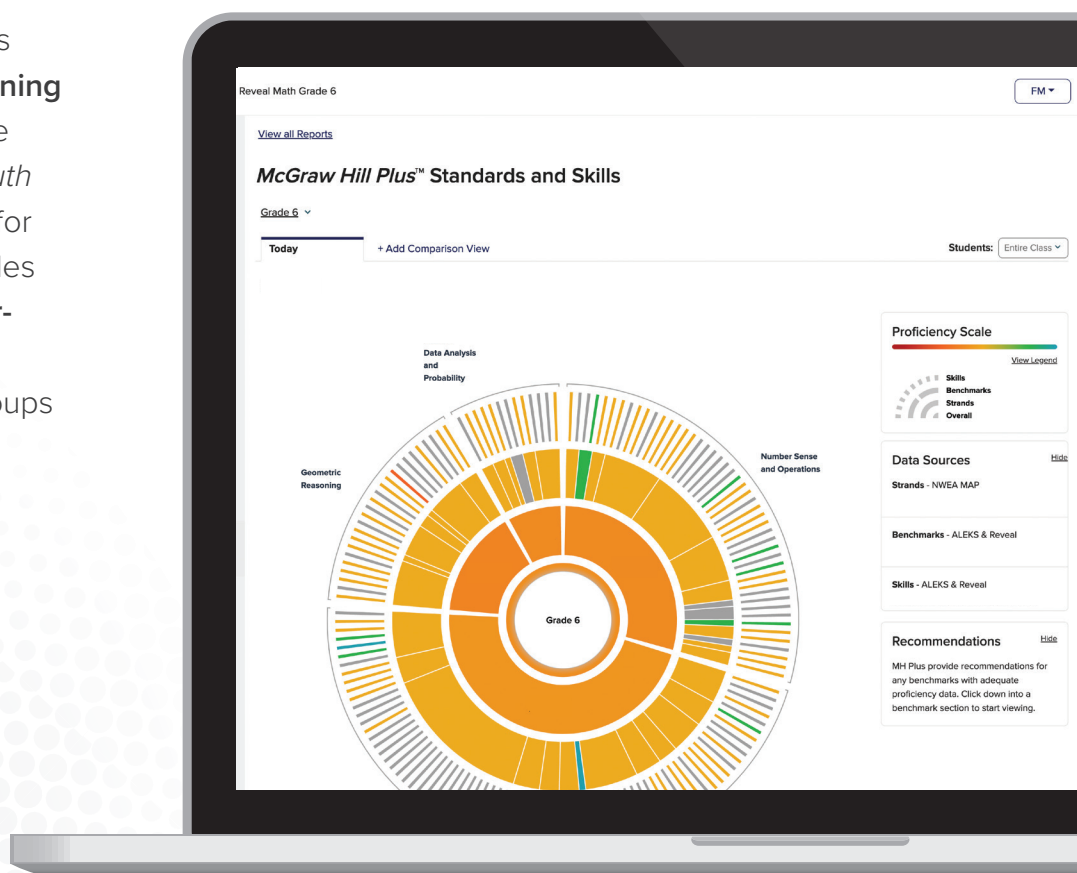
Student ID	Total Grade	Take Anoth ... Fractions 10/04/2019	Take Anoth ... Numbers 10/04/2019	Take Another ... Models 10/04/2019	Take Another L ... Lines 10/04/2019	Module Tes ... Fr 10/04/2019
Average	84 %B	90%	93%	90%	67%	82%
Hinkle, Crystal	93% A	100%	100%	100%	67%	89%
Price, Samantha	81% B	100%	100%	100%	67%	67%
Smith, Tom	74% C	50%	67%	75%	67%	78%
Tucker, Chris	81% B	100%	100%	75%	67%	89%
Tyler, Kacy	93% A	100%	100%	100%	67%	89%

Charting Unique Paths to Growth: Actionable Data

Designed to simplify your daily workflow, *McGraw Hill Plus™* connects data from all student online learning interactions in *South Carolina Reveal Math* and *ALEKS* with interim assessment data to create a holistic picture of student learning in math through the **Standards and Skills Graph**.

Real-time insights aligned to South Carolina College- and Career- Ready Standards for Mathematics and skills help your teachers make data-driven decisions and support students' unique paths to math growth—and the data stays with the student from year to year.

McGraw Hill Plus also surfaces skill-based **Personalized Learning Recommendations** at the time of need within the current *South Carolina Reveal Math* lesson for individual students and provides **turnkey Small Group Teacher-Guided Lessons** for dynamic, proficiency-based student groups for remediation, on-level, and extension on every standard.



Grade 6 Contents in Brief

VOLUME 1

1	Math Is...	2
2	Understanding the World Around Us Through Statistics	90
3	Ratios and Rates	210
4	Understand and Use Percentages	340
5	Solve Area, Surface Area, and Volume Problems	432
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

VOLUME 2

6	Numerical and Algebraic Expressions	2
7	Integers, Rational Numbers, and the Coordinate Plane	138
8	Equations and Inequalities	258
9	Relationships Between Two Variables	352
10	Math Is...	430
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

Grade 7

Contents in Brief

VOLUME 1

1	Math Is....	2
2	Solve Problems Involving Geometry	90
3	Proportional Relationships	238
4	Solve Problems Involving Percentages	346
5	Sampling and Statistics	452
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

VOLUME 2

6	Solve Problems Involving Operations with Integers and Rational Numbers	2
7	Work with Linear Expressions	182
8	Solve Problems Using Equations and Inequalities	274
9	Probability	396
10	Math Is	488
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

Grade 8

Contents in Brief

VOLUME 1

1	Math Is....	2
2	Congruence and Similarity	90
3	Linear Relationships and Equations	224
4	Understand and Analyze Functions	346
5	Patterns of Association	452
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

VOLUME 2

6	Angles, Triangles, and the Pythagorean Theorem	2
7	Volume	124
8	Systems of Linear Equations	216
9	Irrational Numbers, Exponents, and Scientific Notation	310
10	Math Is	442
	Appendix	A1
	Reference Sheet	R1
	Activity Exploration Journal	AEJ1
	Glossary	GL1
	Index	IN1

UNIT & LESSON WALKTHROUGH



Unit & Lesson Walkthrough

Unit Planner	42
Readiness Diagnostic	44
STEM Connections	45
Lesson Model	46
▶ Launch	48
▶ Explore & Develop	52
▶ Practice & Reflect	54
▶ Assess	56
▶ Differentiate	57
Math Probes by Cheryl Tobey	60
Unit Review & Assessment	62
Real-World Application	64

Unit Planner

South Carolina Reveal Math includes a range of embedded supports to assist teachers in planning and providing effective learning experiences. In the Teacher Edition, the unit opens with at-a-glance information to help get planning started.

1. Ignite!

Collaborative activities are designed to engage students, spark curiosity, and motivate problem-solving.

2. Math Probes

A formative assessment activity is found in every unit to uncover students' misconceptions.

3. Mathematical Modeling

Students choose between two Mathematical Modeling tasks to complete at the end of each unit.

1

2

3

UNIT PLANNER				
Proportional Relationships				
Pacing: 17 days*				
LESSON	DURATION	MATH OBJECTIVE	LANGUAGE OBJECTIVE	THINKING LIKE A MATHEMATICIAN
Unit Opener with <i>Ignite!</i> 45 min				
3-1 Connect Ratios, Rates, and Proportions	90 min	Students describe a proportion as a comparison between two quantities.	Students distinguish between the different uses and definitions of multiple-meaning words.	Students consider their role in contributing to math success.
3-2 Use Tables to Determine Proportionality	90 min	Students use tables to determine two quantities are in a proportional relationship. Students identify the constant of proportionality.	Students will practice using academic language.	Students identify strengths that can help them be good doers of math.
3-3 Use Graphs to Determine Proportionality	90 min	Students use graphs to determine proportional relationships.	Students ask and answer open-ended questions using <i>because</i> clauses.	Students identify criteria for success in the math classroom.
3-4 Represent Proportional Relationships with Equations	90 min	Students represent proportional relationships with equations in the form of $y = kx$.	Students practice justifying their thinking in speech and writing.	Students develop and refine strategies for building understanding of others' math strategies and ideas.
3-5 Describe Proportional Relationships	90 min	Students describe proportional relationships using different representations.	Students recognize and respond to various question formation structures.	Students build proficiency with communicating mathematically.
Math Probe 20 min				
3-6 Use Proportional Reasoning to Solve Multi-Step Ratio Problems	90 min	Students solve problems using proportional reasoning.	Students will practice describing a process.	Students consider the applicability of mathematics to solving real-world problems.
Unit Review (independent practice)				
Mathematical Modeling	90 min			
Fluency Practice (independent practice)				
Unit Assessment	45 min			
Benchmark Assessment	45 min			
238 Unit 3 • Proportional Relationships				
*based off of a 45 min class session				

UNIT ESSENTIAL QUESTION:
How can you determine proportionality between two varying quantities?

4

5

6

7

KEY VOCABULARY		MATERIALS TO GATHER	RIGOR FOCUS	STANDARD
Math Terms	Academic Terms			
3-1	Equivalent ratios Proportion Unit rate	Adapt Transform	<ul style="list-style-type: none"> <i>Dog Breed Cards and Diagnosis and Medication Cards Teaching Resource</i> 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.2, 7.PAFR.2.3
3-2	Constant of proportionality Proportional	Display Identical	<ul style="list-style-type: none"> calculators <i>Sort Tables Teaching Resource</i> 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.1.3, 7.PAFR.2.3
3-3	Constant of proportionality Proportional Unit rate	Accurate Inspection	<ul style="list-style-type: none"> <i>Proportional and Nonproportional Graphs Teaching Resource</i> ruler 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.1.3, 7.PAFR.2, 7.PAFR.2.3
3-4	Constant of proportionality Proportional	Denote Explicit	<ul style="list-style-type: none"> <i>Card Sort: Representations of Proportional Relationships</i> tape 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.1.3, 7.PAFR.2, 7.PAFR.2.3
3-5	Constant of proportionality Proportional	Compute Reinforce	<ul style="list-style-type: none"> rulers spring scales weights <i>Coordinate Plane Teaching Resource</i> 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.1.3, 7.PAFR.2, 7.PAFR.2.3
3-6	Proportion	Clarify Presume	<ul style="list-style-type: none"> full rolls of wrapping paper scissors 	Conceptual Understanding Procedural Skill & Fluency Application 7.PAFR.1, 7.PAFR.1.1, 7.PAFR.1.2, 7.PAFR.1.3, 7.PAFR.2, 7.PAFR.2.3

Unit 3 • Unit Planner 239

4. Key Vocabulary Math Terms

These lists include math-specific vocabulary that students should know and be able to use as they progress through each lesson in the unit.

5. Academic Terms

These lists include vocabulary that students will use throughout the lesson that are not specific to mathematics but will help to contextualize it through modeling and application.

6. Materials to Gather

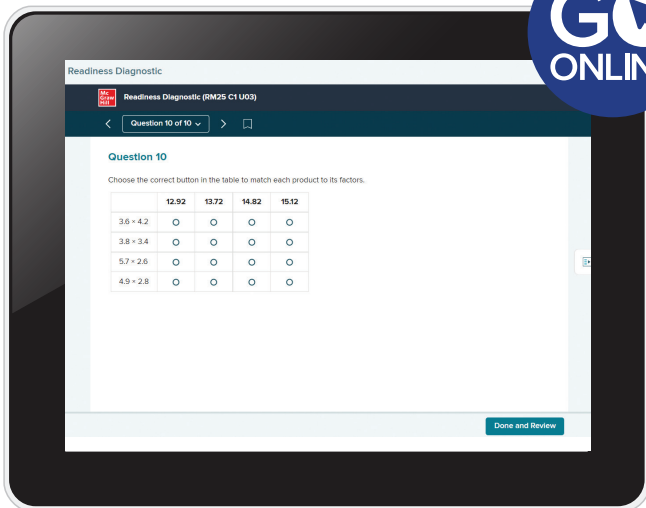
Teachers can know at a glance what classroom materials are needed for each lesson.

7. South Carolina CCR Standards for Mathematics

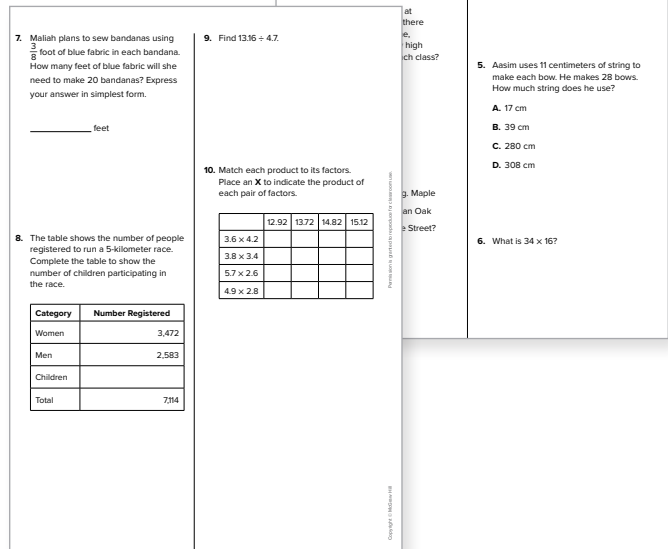
Teachers may review the South Carolina Math Standards coverage in each lesson within the unit.

Readiness Diagnostic

Before beginning the unit, students complete the **Readiness Diagnostic** to identify any learning gaps. The diagnostic can be delivered online or in print.



Online Diagnostic



Print Diagnostic

Provide Targeted Intervention

The Teacher Edition includes an **Item Analysis** table which recommends **Guided Support Intervention Lessons** for students who need them. These lessons are assignable through the Digital Teacher Center.

Targeted Intervention

Use the Intervention Lessons recommended in the table to provide targeted intervention to students who need it. These lessons are available in the Digital Teacher Center and are assignable.

Item Analysis

Item	DOK	Skill	Guided Support Intervention Lesson	Standard
1	1	Understand ratios	Ratios	6.PAFR.2.6
2	2	Find unit rate	Unit Rates	6.PAFR.2.7
3	2	Find unit rate	Unit Rates	6.PAFR.2.7
4	2	Find unit rate	Unit Rates	6.PAFR.2.7
5	2	Find unit rate	Unit Rates	6.PAFR.2.7
6	3	Find equivalent ratios	Use Ratios and Tape Diagrams	6.PAFR.2.8
7	3	Find equivalent ratios	Use Ratios and Double Number Lines	6.PAFR.2.8
8	2	Compare ratios in tables	Use Tables to Compare Ratios	6.PAFR.2.6
9	2	Compare ratios in tables	Use Tables to Compare Ratios	6.PAFR.2.6

For situations where students have gaps in one or more essential concepts and need more intervention support, *Number Worlds* is available* as our research-based, teacher-led intervention program. The program is designed to provide targeted and/or intensive intervention for students who are significantly below grade level and in need of MTSS Tier 2 and 3 support.



*Available for additional purchase.

STEM Connections

Within *South Carolina Reveal Math*), students explore unit concepts through recognizable STEM scenarios.

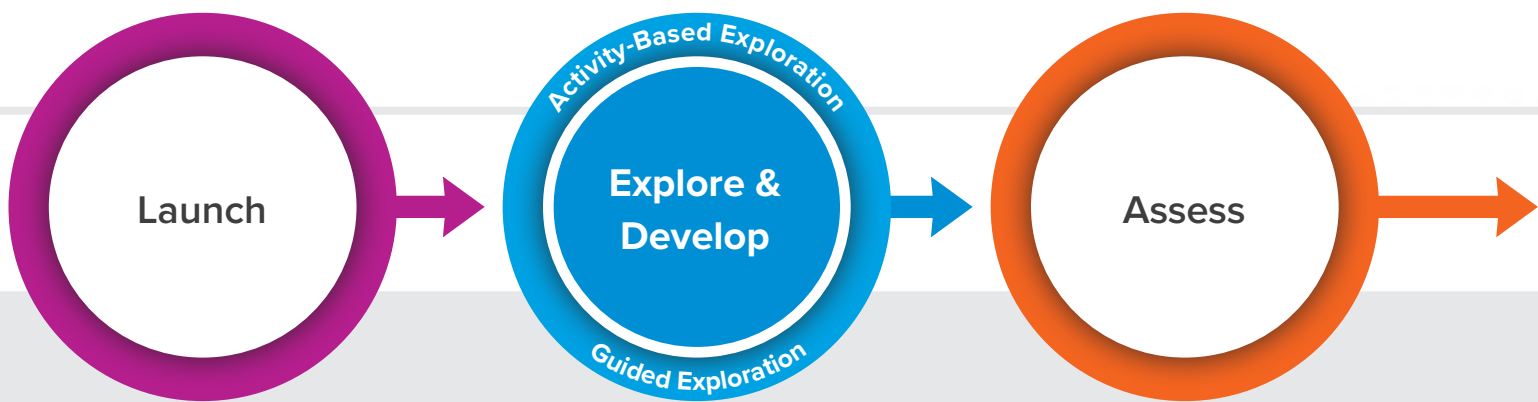
- **Explore Through STEM** in the Unit Opener identifies a STEM scenario that sets the theme to be revisited throughout the unit.
- **STEM Adventures** are digital activities where students can engage in experiments, make hypotheses, and apply mathematical knowledge to analyze data.
- The **Mathematical Modeling** tasks at the end of each unit tie back to the STEM scenario in the Unit Opener. See page 68 for an example of a Mathematical





Lesson Model

The *South Carolina Reveal Math* lesson model keeps sense-making and exploration at the heart of learning. Every lesson provides **two instructional options** to develop the math content and tailor the instruction to students' learning needs.



Every lesson begins with **Be Curious**, a sense-making activity:

- Students focus on noticing and wondering, not problem-solving.
- Teachers foster students' thinking through meaningful discussion.

Explore & Develop unpacks the lesson content through either an Activity-Based or Guided Exploration:

- Students explore concepts in small groups during which they can formalize their emergent ideas.
- Teachers facilitate the exploration of concepts through rich discourse.

Each *South Carolina Reveal Math* lesson includes two opportunities to gauge student learning:

- The **Exit Ticket** is completed after Session 1 and helps to inform instruction for Session 2.
- The **Lesson Quiz** is completed after Session 2 and helps inform differentiation.

Create Consistency in Learning

Instructional routines are embedded within every *South Carolina Reveal Math* lesson to help students become proficient doers of mathematics.

Build Fluency

Number Routines

Support the development of flexibility with numbers and fluency with operations.

MLR

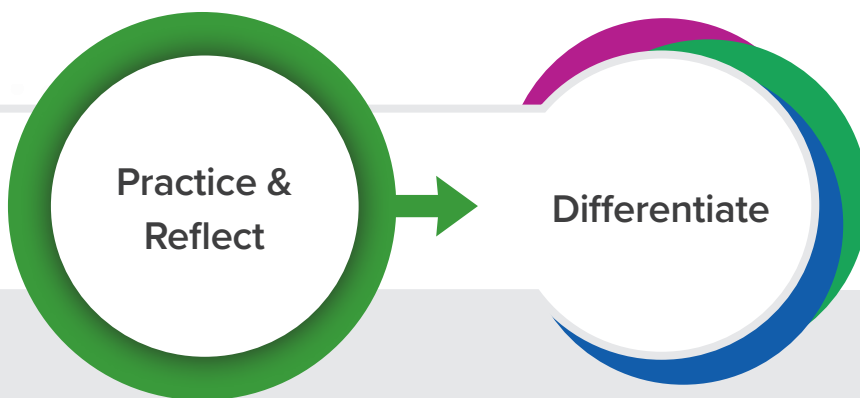
Math Language Routines

Promote mathematical language development as part of instruction.



Sense-Making Routines

Build sense-making as a foundation for problem-solving and mathematical modeling.



The **Practice** pages offer students opportunities to engage with the math and reflect on their learning:

- Students practice lesson concepts by completing the exercises.
- Teachers monitor progress and have students reflect on the lesson learning targets.

Lesson **Differentiation** supports all students in their path to understanding:

- Students work on differentiated tasks to reinforce their understanding, build their proficiency, and/or extend their thinking.

Types of Differentiation

- R Reinforce Understanding**
Resources designed to revisit lesson concepts.
- B Build Proficiency**
Resources to build proficiency with lesson skills.
- E Extend Thinking**
Resources to enrich lesson concepts.

Lesson Overview

1. Learning Targets

Every lesson has two learning targets: one based on a concept or skill and one based on a math practice.

2. South Carolina CCR Standards for Mathematics

Each lesson highlights the content standard covered and the Mathematical Process Standards.

3. Focus Objectives

Each lesson has three learning objectives: content, language, and Thinking Like a Mathematician.

4. Coherence

This section shows the learning progression for the content of the lesson.

5. Rigor

Every lesson focuses on one or more elements of rigor based on the content standards.

LESSON 3-5

Describe Proportional Relationships

1 Learning Targets

- I can represent proportional relationships using table, graphs, and equations.
- I can make use of the structure of the equation $y = kx$ to describe a proportional relationship.

2 Standards

Content

- ☑ **7.PAFR.1** Use tables, graphs, verbal descriptions, or equations to represent a function.
- ☑ **7.PAFR.1.1** Apply proportional reasoning to solve problems in mathematical and real-world situations involving ratios and percentages.
- ☑ **7.PAFR.1.2** Create a model with functions that address a proportional relationship in real-world situations.
- ☑ **7.PAFR.1.3** Identify the constant of proportionality within proportional relationships.
- ☑ **7.PAFR.2** Write, simplify, and evaluate algebraic expressions; write and solve algebraic equations and inequalities.
- ☑ **7.PAFR.2.3** Compute unit rates, including those involving complex fractions with like or different units.

Mathematical Process Standards

MPS.AJ.1 Use critical thinking skills to reason both abstractly and quantitatively.

Vocabulary

<p>Math Terms</p> <ul style="list-style-type: none"> constant of proportionality function proportional 	<p>Academic Terms</p> <ul style="list-style-type: none"> compute reinforce
--	---

Materials

The materials may be for any part of the lesson.

- rulers
- springs
- weights
- *Coordinate Plane* Teaching Resource

3

Focus

<p>Math Objective</p> <ul style="list-style-type: none"> • Students describe proportional relationships using different representations. 	<p>Language Objectives</p> <ul style="list-style-type: none"> • Students recognize and respond to various question formation structures. • To optimize output, students will participate in <i>MLR: Compare and Connect</i> and <i>MLR: Stronger and Clearer Each Time</i>. 	<p>Thinking Like a Mathematician</p> <ul style="list-style-type: none"> • Students discuss how to work productively with classmates to learn math.
--	--	--

4

Coherence

<p>Previous</p> <ul style="list-style-type: none"> • Students determined the unit rate. (Grade 6) • Students identified proportional relationships, using tables, graphs, and equations. (Unit 3) 	<p>Now</p> <ul style="list-style-type: none"> • Students describe proportional relationships using different representations. 	<p>Next</p> <ul style="list-style-type: none"> • Students solve problems using proportional reasoning. (Unit 3) • Students graph proportional relationships and interpret the unit rate as the slope. (Grade 8)
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5

Rigor

<p>Conceptual Understanding</p> <ul style="list-style-type: none"> • Students deepen their understanding of ways to represent proportional relationships. 	<p>Procedural Skill & Fluency</p> <ul style="list-style-type: none"> • Students represent the multiplicative relationship between x, k, and y. 	<p>Application</p> <ul style="list-style-type: none"> • Students use the constant of proportionality to solve a real-world problem.
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306 Unit 3 • Proportional Relationships

6

Lesson Highlights and Key Takeaways

In this lesson, students use different representations to make sense of proportional relationships. They identify the constant of proportionality using these different representations and interpret it in the context of the problem situation.

- Proportional relationships can be represented with tables, graphs, and equations.
- The constant of proportionality can be determined in each representation.

7

Math Background

Students' study of proportionality draws on concepts and skills students have gained in previous grades and units.

- **Plotting points** Grade 5 and Grade 6 students plotted points on the coordinate plane.
- **Division** Students have divided multi-digit numbers and will divide to find the constant of proportionality.
- **Unit rates** Grade 6 students determine unit rates and describe the unit rate as the constant of proportionality.
- **Equivalent ratio tables** Grade 6 students use tables to determine equivalent ratios.

6. Lesson Highlights and Key Takeaways

This section identifies the mathematical concepts a student will learn in the lesson.

7. Math Background

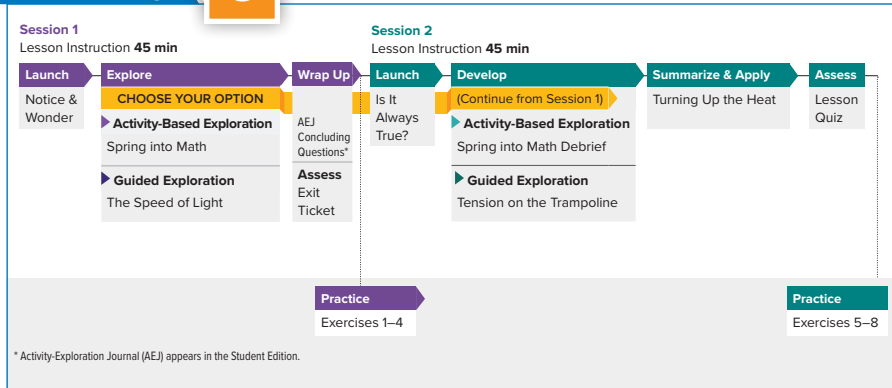
Teachers are provided with an explanation of the mathematics concepts and skills taught in the lesson.

8. Lesson Pacing

This diagram gives teachers a visual of the lesson that spans two sessions. It also shows the flexibility of the lesson model, offering a choice between activity-based or guided exploration.

Lesson Pacing

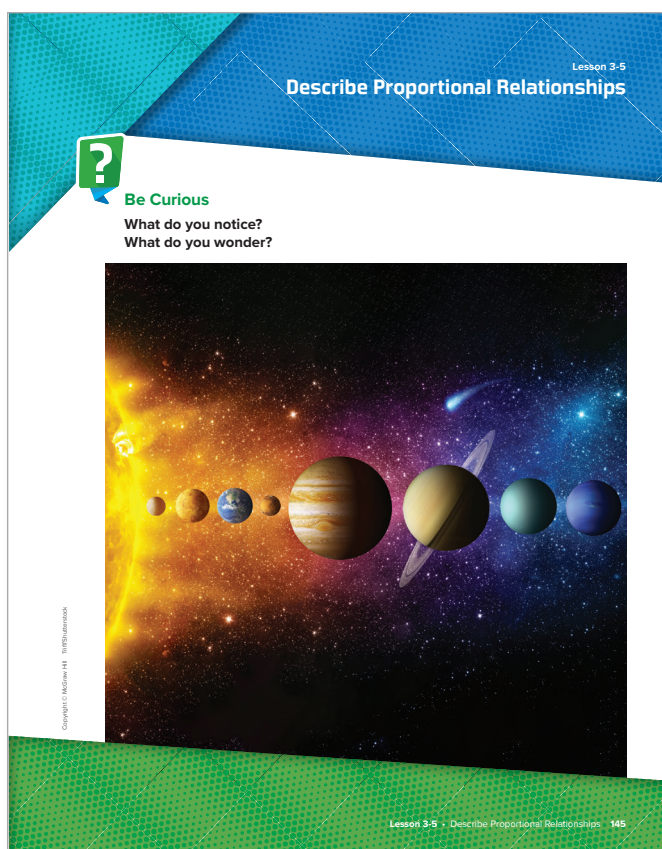
8



Use Questions to Promote Student Ideas and Thinking

Be Curious

Be Curious, written by Annie Fetter, launches each session using a low-floor, high-ceiling sense-making activity with multiple entry points to help create a classroom culture where all ideas are welcome and respected.



Print



Annie Fetter
Contributing Author



Digital

Number Routines

More or Less Than

Students build fluency with estimation strategies as they determine whether the value of a given expression is more or less than the target number.

These prompts encourage students to talk about their estimates:

- What numbers helped you think about your solution?
- How did you reason about the results?
- How does your strategy compare to ____'s?

More or Less Than...

In this routine, students estimate a result using any strategy and then compare their estimate to a given value. The intent is for them to estimate results rather than determine the exact result.



Number String Matrix

Students build fluency with operations as they use the solution to an equation to solve equations with the same digits with different base ten values.

These prompts encourage students to talk about their estimates::

- How are the factors related in the rows or columns?
- How does knowing $[9] \times [5]$ help you think about $[90] \times [500]$?
- What new problems could you solve because you know $[9] \times [5]$?

Number String Matrix

A Number String is a list of related equations. Students use the solution strategy for the first equation to solve the subsequent equations. A number string matrix is a set of related problems that are presented in rows and columns. Students pick a row or a column and solve the equations.



Number Routines

Every lesson includes two **Number Routines**, written by John SanGiovanni, M.Ed., that help students build number sense and proficiency with numbers. This supports their ability to fluently and flexibly apply strategies to solve problems.



**John SanGiovanni,
M.Ed.**

Contributing Author

Mathematical Discourse

In every lesson, students have the opportunity to engage in discussion about the math concepts from the lesson to build deeper understanding.

Orchestrating Rich Mathematical Discourse

In this lesson, students are introduced to and explore concepts related to ratio reasoning, a big idea in middle school mathematics. It's important that students have opportunities to engage in discussion about these concepts as they build their understanding of them. These suggestions from can help optimize the discussion of ratio concepts during either the Activity-Based or Guided Exploration.

1. Anticipate likely student responses.

- Activity-Based Exploration: As you plan for the lesson, think about the strategies your students are likely to use and misconceptions some students may have.
- Guided Exploration: As you plan for the lesson, review the questions in the teacher presentation and anticipate student responses to those questions. Think about which questions may pose challenges for students.

5 Practices for Orchestrating Productive Mathematical Discourse

Smith and Stein (2011)

1. **Anticipate** likely student responses.

2. **Monitor** students' thinking

3. **Select** student thinking to feature

4. **Sequence** student responses

5. **Connect** student thinking

Build Understanding Through Exploration

Teachers have their choice of two instructional strategies to facilitate student learning during the **Explore & Develop** phase:

- **Activity-Based Exploration**

Students work together to explore concepts, develop and test hypotheses, and—most importantly—engage in productive struggle as they problem solve and generalize learning. Options for hands-on or digital activities are provided.

Launch **Explore** Assess Practice

CHOOSE YOUR OPTION

Activity-Based Exploration

Spring Into Math

ETP **Implement Tasks That Promote Reasoning and Problem Solving**

Students explore the relationship between the stretch of a spring and the amount of weight applied to it. The goal is to have students notice that constant of proportionality can be interpreted as the amount of stretch per unit of weight applied to the spring, and it can be used to calculate the stretch of the spring.

Materials
Digital: *Activity Exploration Journal*, pp. AEJ39–40, 1 per student
Hands-On: spring, 1 per group, weights, 1 set per group, rulers, 1 per group, *Coordinate Plane Teaching Resource*, 1 per group *Activity Exploration Journal*, pp. AEJ39–40, 1 per student.

Directions
 Group students in pairs or small groups. Have students read and respond to the Introductory Question in their *Activity Exploration Journal*.
How does the amount of weight applied to a spring compare to the amount that the spring stretches?
 After students have shared their ideas, present the activity.
Digital: Students will be using a simulation that shows the amount of stretch on a spring as weight is added. They will be graphing their data on the coordinate plane. Ensure that they can use each tool and advance to the next and previous pages.
Hands-On: Students will use a spring and a set of weights to explore the relationship between the length of the spring and the weight applied to the spring. Ensure that students understand how to use the weights and measure the stretch of the spring. Give students time to explore and record their findings. Challenge students to model the relationship between weight added and the length of stretch that they observe using a table, a graph, and an equation. Monitor students' progress and ensure that students are recording their observations.

ETP **Support Productive Struggle**

- How can you use a unit rate to represent the relationship between the amount of weight and the amount of stretch?
- How can you interpret the unit rate that you used?
- How might the accuracy of the measuring tools affect the relationship that you observe?
- How can you know whether the relationship between the stretch and the weight is proportional?

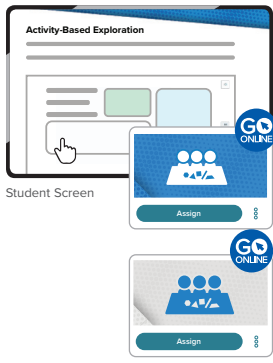
Math is... Reasoning

- What do you anticipate the answer to be?

MPS Have students communicate how finding the constant of proportionality can help them to anticipate an answer to the problem. Encourage students to highlight that the proportion will remain the same and can be used to predict the answer to any question utilizing the same relationship.

Have students complete the **Concluding Questions** in their *Activity Exploration Journal*.

- How can you use each representation to find unknown values?
- What does the constant of proportionality mean in this context?



Activity-Based printables available for this lesson. Download and print for students.

MLL **Multilingual Learner Scaffolds**

Entering/Emerging Review the abbreviations *lbs* and *in*. The syntax of the Introductory Question may be challenging in that an abstract noun, amount, is presented as a passive object. Rephrase it by adding clarifying words *amount of weight that someone/a person applies*.

Developing/Expanding Clarify the meanings of any challenging words or phrases, such as *context* or *stretch* being used as a noun. Remind students to use parts of the questions in their responses to ensure alignment, modeling this strategy as needed.

Bridging/Reaching Review that open-ended questions call for responses that require support and stimulate further discussion. Have students identify the words and phrases (How are...?, What does...?) that signal such questions and then devise their responses accordingly.

310 Unit 3 • Proportional Relationships



Effective Teaching Practices



Math Language Routines



Mathematical Process Standards



Multilingual Learner Scaffolds

Guided Exploration

The Speed of Light

Students explore whether the relationship between the distance and the time is proportional.

Materials

Coordinate Plane Teaching Resource

Introduce the problem situation on Student Edition p. 146.

ETP Pose Purposeful Questions

- How can you find the constant of proportionality?
- How can you interpret the constant of proportionality in the context of this problem?

Collaborate and Connect

- How could you graph the time it takes for light from the Sun to reach each planet?

Give each student-group a copy of the *Coordinate Plane* Teaching Resource. Have students share with the class their answers to the question and provide evidence to support their ideas.

Math is... Reasoning

- What do you anticipate the answer to be?

MPS Have students communicate how finding the constant of proportionality for the planets can help them to anticipate the answer for other planets in the solar system. Encourage students to highlight that the proportion will remain the same and can be used to predict the answer to any question utilizing the same relationship. Mention that a proportional relationship is a linear function.

Let's Explore More

Students work with partners or in small groups to complete the questions.

MLR Stronger and Clearer Each Time: Successive Pair Share

1. **Think Time:** Give students 5–10 minutes to complete the **Let's Explore More** questions and to think about what they will say to their first partner to explain and justify their responses.
2. **Structured Pairing:** Using a successive pairing structure, students explain their responses to at least two different partners. Each time, the student speaking focuses on explaining their reasoning clearly and precisely. The student listening asks clarifying questions to help their partner be clearer and more precise in their communication.
3. **Post-Write:** Students revisit and revise (as needed) their responses to the **Let's Explore More** questions.

Check that students understand why a graph is not useful for some constants of proportionality. Also, check that they understand the reciprocal relationship between unit rates if the order of the ratio is switched.

The Speed of Light
The time it takes for light from the Sun to reach a planet depends on the distance the planet is from the Sun.

Mercury 35.7 million mi
Venus 67.0 million mi
Earth 92.6 million mi
Mars 141.6 million mi

How does the distance that a planet is from the Sun compare with the time it takes light from the Sun to reach it?

One Way Use a table to compare.

Planet	Distance (mi)	Time (min)	Distance (million mi)	Time (min)
Mercury	35.7 million	3.2	$\approx 11.2 : 1$	
Venus	67.0 million	6.0	$\approx 11.2 : 1$	
Earth	92.6 million	8.3	$\approx 11.2 : 1$	

The relationship is proportional and the constant ratio is about 11.2 million : 1. This means that light travels about 11,200,000 miles every minute.

Another Way Use a graph.

The graph is a straight line that passes through the origin.

Math is... Reasoning
What do you anticipate the answer to be?

Let's Explore More

Suppose you want to compare time to distance. Would this affect the relationship between the Sun and the time it takes light to reach an object?
no; Students should recognize that the relationship between time and distance is still proportional.

MLL Multilingual Learner Scaffolds

Entering/Emerging Preteach unknown content area vocabulary, such as the names of the planets as well as the academic word *depends*. Also, the constructions *the time it takes and to reach it* are somewhat idiomatic, and students might benefit from a clarification of their meaning.

Developing/Expanding To support student responses, ask students to identify the interrogatives in the questions and coach them to make their answers fit them. Help students understand that although *how* can often call for a more open-ended description or explanation, in the boldfaced question it requires a single, specific response.

Bridging/Reaching Point out that the purpose of the Let's Explore More question is to stimulate thought and discussion even though it is close-ended. Have students not simply answer *yes* or *no* but also explain why. Discuss words (*affect*) that would be good to repeat in responses.

Guided Exploration

Teachers facilitate exploration through thoughtful discourse and collaboration using an interactive, digital presentation.

How Do I Choose?

Teachers can reference guidance in each Unit Opener or online in the Digital Teacher Center Unit Resources to help them decide which exploration to implement for lessons in a unit. The **How Do I Choose?** print and digital resources provide considerations for student engagement, scheduling, personal preference, and a variety of pairings or groupings.

How Do I Choose?

To decide which exploration is best for your class, consider the following:



Activity-Based Exploration

- My students need practice working in pairs.
- During the **Be Curious** conversation, my students demonstrated they have the mindset to explore the concept on their own.

Guided Exploration

- My students are engaged during class conversations.
- My students need practice presenting ideas to the entire class.
- My students struggled to see the math in the **Be Curious** conversation and need extra support to make connections during the **Explore & Develop**.

Strengthen Understanding With Practice

Practice & Reflect provides students with opportunities to solidify their understanding of the lesson concepts through independent practice pages. Two practice pages can be completed in the Interactive Student eBook or in the print Student Edition.

Dynamic Practice MATH

Name _____ Date _____ Period _____

Practice

For exercises 1-4, answer the questions.

1. The relationship between the recommended diameter of an exercise hoop and a person's height is shown. How do the diameters compare to the different heights?

Height (in.)	Diameter (in.)
58	29
60	30
62	31
64	32

2. Aspect ratio is the ratio of width to height of a television screen. The table shows the width and height of several different televisions. How does the width to height compare?

Width (in.)	Height (in.)
27.9	15.7
37.5	21.1
43.6	24.5
56.7	31.9

3. The number of points Imani earns while playing a video game is proportional to the number of stars that she collects. The graph of this relationship passes through the points (0, 0) and (2, 600). How can you use this information to determine the number of points Imani earns for collecting one star?

4. **STEM Connection** An engineer is studying the amount of time it takes to charge the battery for three different electric cars and the distance the car can travel on a fully charged battery. Is the relationship between the time and distance proportional? Explain.

Car	Charge Time	Distance on Full Charge
Car A	8 hour	240 miles
Car B	4 hour	120 miles
Car C	5 hour	200 miles

Lesson 3.5 • Describe Proportional Relationships 149

For exercises 5 and 6, use a graph, table, or equation to represent the proportional relationships. Then answer the questions.

5. A bagger at a grocery store earns \$48.75 for working 5 hours. How much would she earn for working 1 hour? 12 hours?

6. At the farmer's market, Hari paid \$3.99 for 3 pounds of bananas. How much would he pay for 5 pounds of bananas?

For exercises 7 and 8, answer the questions.

7. The equation $y = 2.54x$ represents the relationship between centimeters and inches. What is the constant of proportionality and how could you use it to find the number of centimeters in 50 inches?

8. **Error Analysis** The graph shows the fee scale for a cleaning service. A sales representative says that the service charges \$25 per hour for cleaning. What feedback would you give the sales representative?

Cleaning Rates

Reflect

Explain to a classmate how to determine if a relationship is proportional.

150 Unit 3 • Proportional Relationships

Print Practice

Additional practice exercises are available online in **Extra Practice** with algorithmic question functionality, which changes question values upon attempt and includes learning aids.

GO ONLINE

Additional Practice: Compare Ratio Relationships

03-05 Additional Lesson Practice (RM25 C1)

Question 11 of 15

Question 11

Two bicyclists are traveling around the same track. The number of laps completed by bicyclist A and the time it took in minutes is shown in the table. The number of laps completed by bicyclist B and the time it took in minutes is shown in the graph.

Bicyclist A			
Number of laps	2	4	6
Time (in minutes)	5	10	15

Bicyclist B

Digital Practice

Applied Learning

Students complete exercises related to the lesson content. The exercises for each lesson target students' understanding of the concept or skill, their proficiency (fluency) with the skills, and include opportunities to apply the concepts and skills to new or unfamiliar situations. The section ends with a **Reflect** question that has students reflect on either the lesson concepts or specific mathematical thinking habits.

Reflect

Explain to a classmate how to determine if a relationship is proportional.



Math Replay Videos

Every lesson contains a one- to two-minute video explanation of the lesson concept for students to reference as they complete independent practice assignments.

Math Replay: Compare Ratio Relationships

Reginald's Mixture

Red Paint	Blue Paint
3	4
6	8

Anwar's Mixture

Red Paint	Blue Paint
2	3
4	6
6	9

The video interface shows two paint mixtures. Reginald's Mixture is represented by 3 red and 4 blue paint cans, with a table showing a ratio of 3:4. Anwar's Mixture is represented by 2 red and 3 blue paint cans, with a table showing a ratio of 2:3. The video also shows that doubling the red paint in Anwar's mixture (2 to 4) results in doubling the blue paint (3 to 6), and doubling again (4 to 6) results in doubling the blue paint (6 to 9). A "GO ONLINE" button is visible in the bottom right corner.

Assess to Inform Instruction and Differentiation

Name _____ Date _____ Period _____

Lesson 3-5
Exit Ticket

For item 1, use the information in the tables to complete the exercise.

The ratio tables show the number of red circles that Anna and Ruth each used in a design.

Anna			
Red Circles	3	6	9
Shapes	5	10	15

Ruth			
Red Circles	5	10	15
Shapes	8	16	24

1. Who has the greater ratio of red circles to shapes? Explain how you determined the answer.

Exit Ticket

At the end of Session 1, students demonstrate their understanding of lesson concepts by completing the **Exit Ticket**. Data from the Exit Ticket will help teachers inform instruction for the next session of that lesson.

Name _____

Lesson 3-5
Lesson Quiz

For item 1, use the tables to answer the question.

1. Each table represents an equivalent ratio. Complete the sentences.

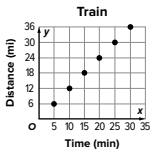
Orange Juice			
Size (fl oz)	12	16	32
Cost (\$)	\$1.80	\$2.40	\$4.80

Grapefruit Juice			
Size (fl oz)	8	20	40
Cost (\$)	\$1.44	\$3.60	\$7.20

Based on the cost per fluid ounce, _____ juice is the less expensive drink.
It is _____ cents per fluid ounce less expensive.

For item 2, use the graph to answer the question.

2. In the last 30 minutes, a car has traveled at a constant speed of 65 miles per hour on a highway. The graph shows the distance a train has traveled in the last 30 minutes.



Complete the sentence.
The _____ is traveling at a greater constant speed by _____ miles per hour.

For items 3 and 4, use the tables that show the ratio of chilies to all ingredients in two hot sauce recipes.

Recipe 1			
Chilies (g)	3	6	9
All Ingredients (g)	5	10	15

Recipe 2			
Chilies (g)	7	14	21
All Ingredients (g)	12	24	36

3. Which can you use as the second term in the ratio to compare the ratios of both recipes?
A. 24 B. 30 C. 42 D. 60

Lesson Quiz

At the end of Session 2, students complete the Lesson Quiz. Quiz data informs decisions for differentiation using the **Lesson Quiz Skill Tracker**.

Lesson Quiz Skill Tracker

The Lesson Quiz Skill Tracker in the Teacher Edition identifies Depth of Knowledge (DOK) and standards covered by the Lesson Quiz to help teachers determine the next steps for each student based on quiz performance.

Lesson Quiz Skill Tracker

Item	DOK	Skill
1	1	Compute unit rate
2	2	Compute unit rate
3	2	Compute equivalent rates
4	2	Compute unit rate
5	2	Use proportions
6	3	Compare unit rates



Differentiation for Diverse Learners

Robust differentiation resources help teachers meet the learning needs of students who would benefit from enrichment to extend learning or provide additional reinforcement for students requiring support.

B Build Proficiency

GO ONLINE **INDEPENDENT WORK**

Interactive Additional Practice
Assign students either the print or digital assignment to practice lesson concepts. The digital assignment includes algorithmic exercises.

Spiral Review
Assign students either the print or digital version to review these concepts and skills.
• Recognizing Place Values and the Relation to Each Other

Additional Practice
Lesson 2-1
For exercises 1-6, determine whether or not each question is a statistical question.
1. How many students in the class brought a lunch today?
statistical question
2. How many students in the class brought a lunch today?
not a statistical question
3. How many students in the class brought a lunch today?
not a statistical question
4. How many students in the class brought a lunch today?
not a statistical question
5. How many students in the class brought a lunch today?
not a statistical question
6. How many students in the class brought a lunch today?
not a statistical question

Spiral Review
Lesson 2-1
For exercises 7-10, answer each question.
7. How many students in the class brought a lunch today?
A. 10
B. 15
C. 20
D. 25
E. 30
8. How many students in the class brought a lunch today?
A. 10
B. 15
C. 20
D. 25
E. 30
9. How many students in the class brought a lunch today?
A. 10
B. 15
C. 20
D. 25
E. 30
10. How many students in the class brought a lunch today?
A. 10
B. 15
C. 20
D. 25
E. 30

E Extend Thinking

GO ONLINE **INDEPENDENT WORK**

STEM Adventures
In this STEM Adventure, students display, describe, and analyze data about daily household water consumption. Then they use statistics to investigate how water consumption is affected by wasteful or conserving behaviors and compare data sets.

Extend Thinking
Lesson 2-1
For exercises 1-3, identify whether the question is statistical or not statistical. Then rewrite the question so it is in the other type. For example, if the question is statistical, rewrite the question so that it is not statistical.
1. In which year did Seattle have the most rainfall?
not statistical
Answers will vary.
Sample answer: What was the yearly rainfall in Seattle for each year over the last 50 years?
2. How many letters are in your first name?
statistical
Answers will vary.
Sample answer: How many letters are in the alphabet?
3. What is your favorite flavor of ice cream?
not statistical
Answers will vary.
Sample answer: How many cups of ice cream are in a pint of ice cream?
4. How many feet tall is the Empire State Building?
not statistical
Answers will vary.
Sample answer: What are the heights of the buildings within a 4-block radius of the Empire State Building?

R Reinforce Understanding

GO ONLINE **INDEPENDENT WORK**

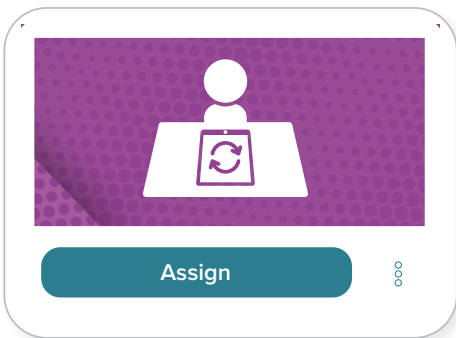
Take Another Look Lessons
Assign the interactive lessons to reinforce targeted skills.
• Statistical Questions
• Create Line Plots and Dot Plots
• Describe a Data Distribution

Reinforce Understanding
Lesson 2-1
Determine whether or not each question is a statistical question. Write statistical or not statistical.
1. How many students are in the United States?
not statistical
2. How many students are in the United States?
not statistical
3. How many students are in the United States?
not statistical
4. How many students are in the United States?
not statistical
5. How many students are in the United States?
not statistical
6. How many students are in the United States?
not statistical
7. How many students are in the United States?
not statistical
8. How many students are in the United States?
not statistical
9. How many students are in the United States?
not statistical
10. How many students are in the United States?
not statistical



Enrich Learning with Differentiated Resources

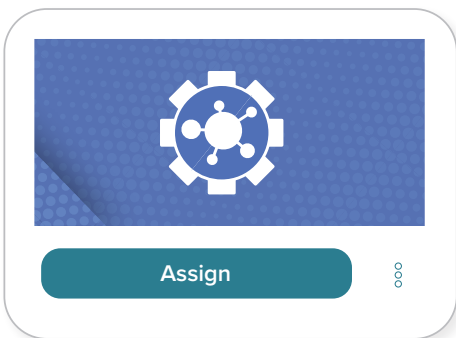
South Carolina Reveal Math offers a variety of engaging, multi-modal activities with different delivery options to meet the individual needs of all students.



Take Another Look

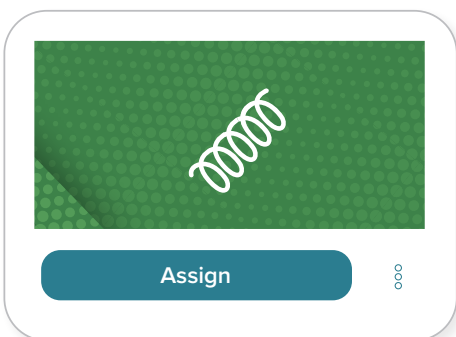
On-Level Reteach Mini-Lessons

Self-paced, digital mini-lessons consist of a three-part, gradual release activity: Model, Interactive Practice, and Check.



Extend Thinking Activities

Extend Thinking Activities challenge students who are ready to learn more. STEM Adventures is one Extend Thinking activity that involves students conducting experiments, making hypotheses, and analyzing data.



Spiral Review

Use the Spiral Review assignments at the end of a lesson to practice concepts presented in prior lessons.



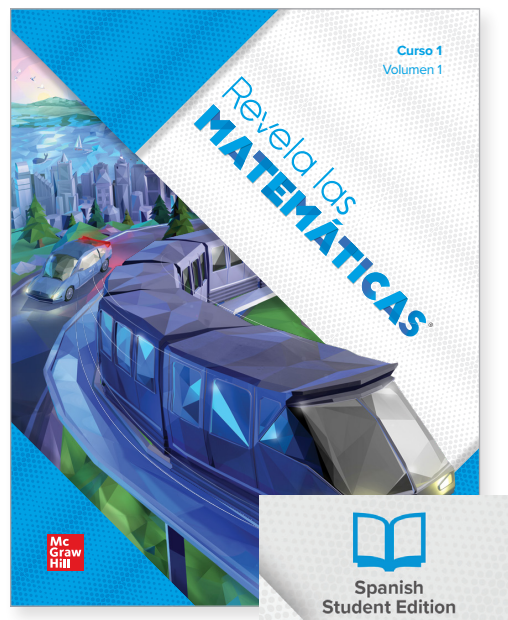
Digital Game Center

Digital Games help students become proficient with grade-level concepts in a fun and engaging practice environment.

Support for Multilingual Learners

In addition to Multilingual Language Scaffolds found in the Teacher Edition for each lesson, *South Carolina Reveal Math* includes these components and resources to assist multilingual learners as they build language and mathematical proficiency:

- Spanish Student Edition eBook
- English/Spanish Glossary
- Audio to improve listening comprehension skills
- ALEKS bilingual courses in Spanish



Spanish Student eBook

Math Language Development

South Carolina Reveal Math is rife with mathematical language and specialized terms that may be new to students. Built-in academic language and text features help them grow their mathematical vocabulary and master key terms they are expected to know.

Math Language Development

Language Development - Academic Language

These mini-lessons focuses on the academic terms listed in the Unit 3 planner.

Emerging/Entering

Write this sentence on the board and then read them aloud for the group.

*There are about [500] people in the photo on the Unit opener. Ask: Do we know the number of people in the photo? [No]. We can make a guess. A guess is an **estimate**. Let's estimate the number of [leaves on a tree/stars in the sky/people in a stadium]. Have students use this sentence frame: I estimate the number of... to be... Students can ask one another questions that lend themselves to estimates, such as, "Can you estimate the cost of...?" "I estimate the cost to be..."*

Developing/Expanding

Direct students to the Be Curious image in Lesson [x-x]. Say, *Let's analyze the different springs. What do we do when we **analyze** something?* [We look closely at it.] *What kinds of statement might we make when analyzing the springs?* [the number of values in each category] Write down students' ideas on the board or white board. Then have students work with a partner to analyze the data and then share out with the groups.

Bridging/Reaching

Display these two words: **estimate** and **predict**. Have students decide whether the statements below reflect estimating or predicting.
If I want to buy new sneakers and headphones, I'll need about \$200.
I think our team will win the game tomorrow.
It will probably take us 40 minutes to run 5 miles.
Have students discuss the difference between estimating and predicting.

Math Probes by Cheryl Tobey

Target Common Misconceptions

Math Probes, written by Cheryl Tobey, a leading expert in formative assessment, are designed to uncover students' mathematical misconceptions. These formative assessments, placed at the point-of-use in every unit, allow teachers to make sound instructional choices while teaching students that mistakes are an opportunity for growth.



Cheryl Tobey, M.Ed.
Contributing Author

Short, Formative Assessment

Each **Math Probe** features three to four items that assess students' conceptual understanding. Each item consists of two parts:

- **Part One** assesses students' understanding of concepts.
- **Part Two** asks students to share their thought process and ideas.

Name _____ Date _____ Period _____

Proportional Relationships

Circle the item(s) in each exercise that show a proportional relationship. You may select more than one item. Select none of the above if none of the items show a proportional relationship.

Circle your choice(s).	Explain your choice(s).
<p>1.</p> <p>A. $c = 3.75n$</p> <p>B. $p = 4m$</p> <p>C. $x = y$</p> <p>D. $y = x + 4$</p> <p>E. none of the above</p>	
<p>2.</p> <p>A. </p> <p>B. </p> <p>C. </p> <p>D. </p> <p>E. none of the above</p>	

Math Probe - Lesson Title 151

Circle the item(s) in each exercise that show a proportional relationship. You may select more than one item. Select none of the above if none of the items show a proportional relationship.

Circle your choice(s).	Explain your choice(s).																														
<p>3.</p> <p>A. Aiden and Isabella are running at the same rate around a track. Isabella had already run 4 laps before Aiden started. How many laps had Aiden run after Isabella had run n laps?</p> <p>B. Riley can type 30 words in 14 seconds on her phone. At this rate, how many words can she type in m minutes?</p> <p>C. Javier paints 50 square feet in 1.25 hours. How long will it take Javier to paint x square feet?</p> <p>D. none of the above</p>																															
<p>4.</p> <p>A. <table border="1"> <tr><td>Time (h)</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>Number of Items</td><td>4</td><td>8</td><td>12</td><td>16</td></tr> </table></p> <p>B. <table border="1"> <tr><td>Number of Items</td><td>2</td><td>4</td><td>6</td><td>8</td></tr> <tr><td>Cost (\$)</td><td>5</td><td>10</td><td>12</td><td>15</td></tr> </table></p> <p>C. <table border="1"> <tr><td>Gallons</td><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>Miles</td><td>25</td><td>50</td><td>75</td><td>100</td></tr> </table></p> <p>D. none of the above</p>	Time (h)	1	2	3	4	Number of Items	4	8	12	16	Number of Items	2	4	6	8	Cost (\$)	5	10	12	15	Gallons	1	2	3	4	Miles	25	50	75	100	
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Gallons	1	2	3	4																											
Miles	25	50	75	100																											

152 Unit 3 - Proportional Relationships

Take Action

The teacher support materials that accompany the **Math Probes** are designed around a three-part ACT cycle:

- **Analyze** the probe.
- **Collect** and assess student work.
- **Take Action** to correct misconceptions quickly and efficiently.

A

Math Probe

Analyze the Probe ✓ Formative Assessment

Review the probe prior to assigning it to your students. In this probe, students will determine which item(s) in each set show a proportional relationship and explain their choices.

Targeted Concept Understand proportional relationships in equations, tables, and verbal descriptions in which there is a constant ratio between two quantities.

Targeted Misconceptions

- Students may not recognize a proportional relationship when given a form other than $y = mx + 0$.
- Students may incorrectly assume that any graph that forms a straight line is proportional.

Authentic Student Work

Below are examples of correct student work and explanations.

Correct Example A

Set 4	a)	<table border="1"> <tr> <th>Time (hour)</th> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <th>Number of Items</th> <td>0</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> </tr> </table>	Time (hour)	0	1	2	3	4	Number of Items	0	4	8	12	16	<p>a + c are both through (0,0) and constant rate.</p> <p>b doesn't seem to have a constant rate that I can find.</p>
	Time (hour)	0	1	2	3	4									
Number of Items	0	4	8	12	16										
b)	<table border="1"> <tr> <th>Number of Items</th> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> </tr> <tr> <th>Cost (\$)</th> <td>0</td> <td>5</td> <td>10</td> <td>12</td> <td>15</td> </tr> </table>	Number of Items	0	2	4	6	8	Cost (\$)	0	5	10	12	15		
Number of Items	0	2	4	6	8										
Cost (\$)	0	5	10	12	15										
Set 1	c)	<table border="1"> <tr> <th>Gallons</th> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <th>Miles</th> <td>0</td> <td>25</td> <td>50</td> <td>75</td> <td>100</td> </tr> </table>	Gallons	0	1	2	3	4	Miles	0	25	50	75	100	
	Gallons	0	1	2	3	4									
Miles	0	25	50	75	100										
	d)	none of the above													

Correct Example B

Set 1	a)	$c = 3.75n$	<p>$c = 3.75n$</p> <p>$0 = 3.75(0)$</p> <p>$0 = 0$</p> <p>$p = 4n$</p> <p>$0 = 4(0)$</p> <p>$0 = 0$</p> <p>$x = y$</p> <p>$x = 1$</p> <p>$0 \neq 0$</p> <p>$y = x + 4$</p> <p>$0 \neq 0 + 4$</p> <p>$0 \neq 4$</p> <p>g.d (a,p) test</p>
	b)	$p = 4n$	
	c)	$x = y$	
	d)	$y = x + 4$	
	e)	none of the above	

C

Collect and Assess Student Work

IF the student selects...	THEN the student likely...	Sample Misconceptions
1. d. Does not select a, b, and/or c	does not understand that for a relationship to be proportional, y must equal 0 when x = 0, or may not recognize a proportional relationship when given a form other than $y = mx + 0$.	
2. a and/or d	assumes that all linear relationships are proportional.	In this case, the student includes linear relationships shown in a and d. <i>The lines stay straight at all times.</i>
3. a and/or c	assumes that a constant rate of change automatically implies a proportional relationship.	In this case, the student assumes a constant rate for square feet per minute. <i>proportional = same rate or constant rate</i>
4. b or d; Does not select a and/or c	does not understand that for a relationship to be proportional, each ratio has the same unit rate.	

*Combinations of correct and incorrect responses. For correct responses, be sure to check for sound reasoning.

T

Take Action

- Choose from the following resources or suggestions.
- Provide opportunities for students to see the same proportional context in a variety of representations in order to make connections between the various components of each representation in Lesson 5.
 - Have students compare and contrast proportional relationships with non-proportional relationships to help them generalize the characteristics of a proportional relationship. Focus on the key features of the proportional relationships in Lesson 3.
 - To help solidify concepts, have students create, represent algebraically, solve, and share their own problems involving contexts of proportionality in Lessons 4 and 5. This gives students the opportunity to observe key features in others' representations.

- Technology can enhance learning opportunities and allow students to concentrate on the connections between the various representations. Students will begin to see that key features of a graph look different based on the form of the written equation in Lesson 3.
- **Revisit the Probe** After additional instruction, have students review their initial answers to the probe. Use these questions for discussion.
 - What answers, if any, would you like to change? Why might you want to change them?
 - What questions do you still have about any of the items in this probe?

Unit Review

Resources for Assessment Preparation

Teachers can select the appropriate review activities to prepare students for unit assessments.

Name _____ Date _____ Period _____

Unit Review

Revisit the **What Do I Already Know?** page and complete the **After** section of the chart.

Vocabulary Activity

Use the words from the word bank to complete each sentence. Some words may be more than once.

- constant of proportionality
- nonproportional
- proportion
- proportional
- proportional relationship
- ratio
- unit rate

- In a proportional relationship, the constant ratio is called the _____.
- Two quantities that do not relate by a constant multiple are _____.
- The relationship between two quantities is _____ if the ratios comparing the two quantities are equivalent.
- The constant of proportionality is also the _____.
- A _____ is an equation stating that two ratios or rates are equivalent.
- A _____ is a comparison between two quantities, in which for every a units of one quantity, there are b units of another quantity.
- There is no _____ in a nonproportional relationship.
- Two quantities are in a _____ if the two quantities vary and have a constant ratio between them.

Unit 3 • Proportional Relationships 15

Students can use the **Vocabulary Activity** in the Student Edition to review mathematical language and terminology.

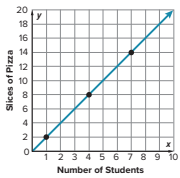
Review

For exercises 9-10, solve each problem.

- Last week, Karen sold 15 bracelets and made a profit of \$71.25. Assuming her costs and selling price stay the same, how much profit will she make from selling 25 bracelets? (Lesson X)
- Approximately how many pounds does a 2-kilogram jellyfish weigh? Round your answer to the nearest tenth. (Lesson X)

For exercise 11, select all statements that are true.

- The relationship between the number of slices of pizza purchased and the number of students served is shown in the graph. Which of the statements are true? (Lesson X)



- The relationship is proportional.
- The point $(9, 18)$ satisfies this relationship.
- The constant of proportionality is $\frac{1}{2}$.
- The constant of proportionality is 2.
- The graph shows that every two students had one piece of pizza.

For exercises 12-13, use the scenario below.

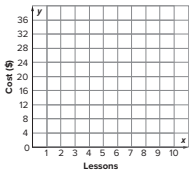
Mrs. Jameson paid \$202.50 for a group of 9 students to visit an amusement park.

- Write an equation that can be used to determine the cost for x students to visit the amusement park. (Lesson X)
- What would be the total cost if four more students wanted to join the group? (Lesson X)

For exercises 14-15, use the scenario below.

The cost of dance lessons is \$12 for 1 lesson, \$22 for 2 lessons, and \$32 for 3 lessons.

- Graph the ordered pairs on the coordinate plane. (Lesson X)



- Is the cost of dance lessons proportional to the number of lessons? Explain your reasoning. (Lesson X)

Unit 3 • Proportional Relationships 16

Review exercises prepare students for assessments with practice targeted to mathematical content standards.

Item Analysis tables in the Teacher Edition align lesson content to Depth of Knowledge (DOK) levels and the math content standard for each item.

Review

Item Analysis

Item	DOK	Lesson	Standards
7	2	3-1	7.PAFR.2.3
8	3	3-3	7.PAFR.1
9	2	3-6	7.PAFR.1.1
10	3	3-4	7.PAFR.1.3
11	2	3-1	7.PAFR.2.3
12	2	3-3	7.PAFR.1
13	3	3-3	7.PAFR.1

Fluency Progression and Practice

The **Fluency Objective** and **Fluency Progression** at the close of each unit helps teachers evaluate student progress. **Fluency Practice** provides students with opportunities to build procedural fluency.

Build Fluency Objective Students build fluency with decimals. As students work to develop fluency with adding, subtracting, multiplying, and dividing decimals, have them reflect on and share with classmates the strategies they find the most useful.

Fluency Progression

Unit	Skill
1	Division with Multi-Digit Decimals
2	Fraction Multiplication and Division (no negative rational numbers)
3	Apply Operations with Multi-Digit Decimals
4	Finding Unit Rates Including Terms with Fractions
5	Percent Increase and Percent Decrease
6	Equations in Proportional Relationships
7	Adding and Subtracting Positive and Negative Rational Numbers
8	Multiplying and Dividing Positive and Negative Rational Numbers
9	Two-Step Equations ($px + q = r$)
10	Solving $p(x + q) = r$

1. Fluency Strategy

Students review the mathematical strategies.

2. Fluency Check

Students complete the practice.

3. Fluency Talk

Students explain the mathematical strategy.

Name _____ Date _____ Period _____

Fluency Practice

Fluency Strategy

Add or subtract decimals.

Align the decimal points. Annex zeros, if needed. Add or subtract as with whole numbers.

$$\begin{array}{r} 1 \\ 4.560 \\ + 13.246 \\ \hline 17.806 \end{array} \quad \begin{array}{r} 6 \text{ } 10 \\ 26.79 \\ - 3.45 \\ \hline 23.25 \end{array}$$

Multiply decimals.

Multiply. To place the decimal point, find the sum of the number of decimal places in each factor. The product has the same number of decimal places.

$$\begin{array}{r} 3.4 \\ \times 0.56 \\ \hline 204 \\ + 1700 \\ \hline 1.904 \end{array}$$

Divide decimals.

Multiply both the divisor and dividend by a power of 10 so that the divisor is a whole number. Divide. Place the decimal in the quotient directly above the decimal in the dividend.

$$\begin{array}{r} 3.4 \\ 12 \overline{) 40.8} \\ \underline{36} \\ 48 \\ \underline{48} \\ 0 \end{array}$$

1

2

3

Fluency Check

Add, subtract, multiply, or divide.

- $5.1 + 8.2 =$ _____
- $7.68 - 1.49 =$ _____
- $2.3 \times 1.4 =$ _____
- $55.9 \div 13 =$ _____
- $2.74 + 3.029 =$ _____
- $2.5 - 0.586 =$ _____
- $0.85 \times 0.09 =$ _____
- $3.6 \div 0.09 =$ _____

Fluency Talk

How would you describe the differences between operations with whole numbers and operations with decimal numbers to a classmate?

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Real-World Application

Students are asked to demonstrate and apply their learning from the unit in real-world contexts.

Performance Task

For Part A through C, answer the question and include justifications.

Miranda and Juan want to rent bicycles for the afternoon. They will rent from either City Cycles or Biking Adventures. The rental rates are shown in the posters.

Part A

Which company should they rent from if they plan to rent bicycles for 2 hours or less?



Part B

Which company should they rent from if they plan to rent bicycles for 5 hours or less?



Part C

Miranda and Juan decide to rent for 3 hours. They find out that City Cycles charges a flat fee of \$2.50 to rent a bicycle helmet, but Biking Adventures includes helmet rental in the rental cost. From which store should they rent if they want to pay the lower price?

Unit Reflect

What helps you recognize a proportional relationship?

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Performance Tasks

Each unit culminates in two Performance Tasks that challenge students to apply skills from the current unit in real-world settings.

For each unit, one Performance Task is available in the Student Edition. A second, secure Performance Task is available in the Digital Teacher Center for use as an assessment. Teachers can navigate to the Assess section for the specific unit to assign the Performance Task.

Mathematical Modeling

The Mathematical Modeling tasks wrap up each unit with a real-world scenario related to the STEM unit focus and incorporating the South Carolina College- and Career-Ready Standards for Mathematics. Students are provided with the opportunity to model with mathematics while utilizing appropriate tools to solve real-world problems and constructing viable arguments to present to their peers.

Students can choose between two different projects, increasing engagement and developing student agency. Teacher support is provided, including a guide for project development and facilitation.

Name _____ Date _____ Period _____

Mathematical Modeling

Measuring and Comparing Air Quality

The Air Quality Index (AQI) is a scale that informs the public on the quality of the air for the day. The AQI looks at five different pollutants in the air to determine air quality.

Air Quality Index (AQI) Values	Levels of Health Concern
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy to Sensitive Groups
151 to 200	Unhealthy
201 to 300	Very Unhealthy
301 to 500	Hazardous

Choose one of the projects to complete.

Project One

The U.S. Olympic Committee is planning to build a new training facility for the track and field team. The committee is considering two possible locations: Hershey, Pennsylvania or Rockford, Illinois. Among the considerations for the new site is the average air quality. Good air quality is important for athletes, especially runners.

The graphs show the average air quality index for each site over a period of 11 years.

You are part of the site selection team and your team will make a recommendation to the U.S. Olympic Committee. Your task is to analyze the data in the graphs for quality over the ten-year period, noting any trends that you think might continue. Also consider the differences in the air quality for each specific site, for the state in which the site is located, and the country.

UNIT 3 • Proportional Relationships 163

Project Two

The superintendent in your school district has received a complaint of poor indoor air quality in one of the district schools. Four key indicators of indoor air quality with maximum acceptable levels are described in the table.

Pollutant	Source	Level
Carbon Dioxide (CO ₂)	Exhaled air from human breathing; combustion processes of carbon fuels	< 1,000 parts per million (ppm)
Carbon Monoxide (CO)	Improperly vented furnaces, malfunctioning gas ranges,	< 9 ppm
Particle Pollution PM ₁₀	Particulates with a diameter of 10 micrometers or less. Includes dust from soil, pollen, mold, burning of wood, oil, or coal	< 50 mg/m ³ for one hour
Particle Pollution PM _{2.5}	Particulates with a diameter of 2.5 micrometers or less. Includes soot from diesel engines in trucks and buses	< 12.0 mg/m ³

The superintendent has asked you and your classmates to analyze the results of the air quality tests. What do the results shown in the table suggest about the indoor air quality at the school in question?

Pollutant	Reading 1	Reading 2	Reading 3	Reading 4
Carbon Dioxide (CO ₂)	729 ppm	1030 ppm	956 ppm	1106 ppm
Carbon Monoxide (CO)	4 ppm	5 ppm	3 ppm	5 ppm
Particle Pollution PM ₁₀	52 mg/m ³	56 mg/m ³	6 mg/m ³	6 mg/m ³
Particle Pollution PM _{2.5}	10 mg/m ³	10 mg/m ³	6 mg/m ³	6 mg/m ³

UNIT 3 • Proportional Relationships

Unit Assessments

Item Analysis tables with lesson, standard, and Guided Support Intervention lesson correlation provides specific steps for remediation.

Unit Assessment

Two forms of the Unit Assessment, Form A and Form B, are available for either print or digital administration. The items on the two assessments are parallel items, assessing the same concept and standard. The table below provides the item analysis for both forms. Both Unit Assessments are available in the Assessment Resource Book or as downloadable files from the Digital Teacher Center.

Item Analysis

Item	ORC Lesson	Guided Support Intervention Strategy	Standard
1-2	2-3-1	Compute Unit Rates—Complex Fractions	7.PAFR.2.3
3	3-3-1	Compare Unit Rates—Complex Fractions	7.PAFR.2.3
4	3-3-2	Proportional Relationships—Tables	7.PAFR.1.1
5	2-3-2	Proportional Relationships—Tables	7.PAFR.1.1
6-7	1-3-3	Proportional Relationships—Graphs	7.PAFR.1.1
8	2-3-2	Constant of Proportionality—Tables	7.PAFR.1.3
9	2-3-3	Constant of Proportionality—Graphs	7.PAFR.1.3
10	1-5	Constant of Proportionality—Descriptions	7.PAFR.1.3
11-12	1-2	Constant of Proportionality—Tables	7.PAFR.1.3
13-14	2-3-5	Proportional Relationships as Equations	7.PAFR.1.2
15	3-3-5	Proportional Relationships as Equations	7.PAFR.1.2
16	3-3-4	Interpret Proportional Relationships	7.PAFR.1.1
17	2-3-6	Solve Multi-Step Ratio Problems	7.PAFR.1.1
18	2-3-4	Interpret Proportional Relationships	7.PAFR.1.1
19-20	2-3-6	Solve Multi-Step Ratio Problems	7.PAFR.1.1

Assign the digital Unit Assessment (Form A or B) to students or download and print PDFs from the Digital Teacher Center.

UNIT 3 • Proportional Relationships

Notes

DIGITAL QUICK START



Digital Quick Start

Table of Contents

Get Started	68
Teacher Dashboard	69
Program Resources and Professional Development	70
Unit Resources	71
Lesson Resources for Teachers	72
Lesson Resources for Students	73
Differentiation Resources	74
Classroom Management Tools	75
Digital Assessment Resources	76
Dynamic Reporting	78

South Carolina Reveal Math®

The Digital Experience

South Carolina Reveal Math develops the problem solvers of tomorrow with a blend of purposeful print and digital resources. Featuring integrated technology and plentiful opportunities for students to explore, collaborate, practice, and reflect, *South Carolina Reveal Math* increases both student engagement and confidence.

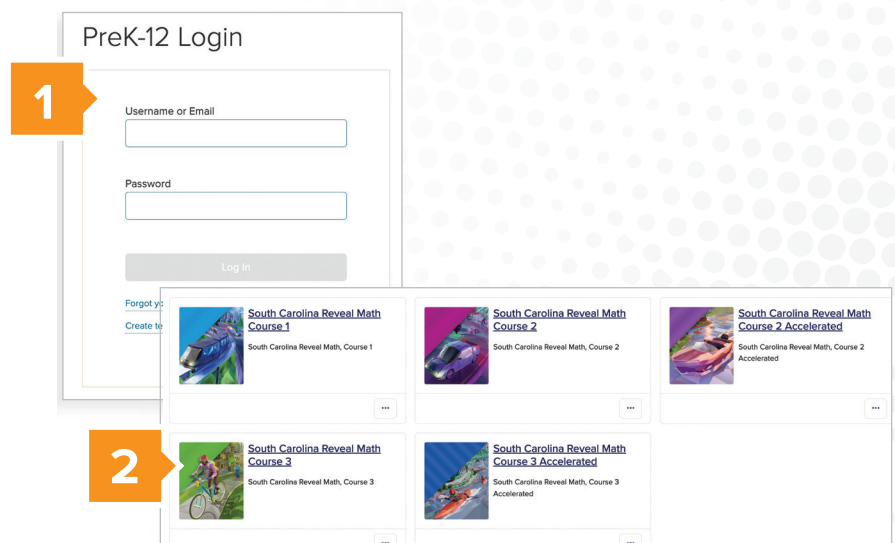
South Carolina Reveal Math currently integrates with the following Federated Standards: SAML 2.0 IDP, LTI 1.0, and Clever. Integration is possible with most learning management systems. Grade Passback and Assignment Sync are available with Canvas, Schoology, and Google Classroom; new integration required.

Use this Quick Start to review the Digital Teacher Center:

- Teacher Dashboard
- Program Resources and Professional Development
- Unit Resources
- Lesson Resources for Teacher and Students
- Differentiation Resources
- Class Management Tools
- Assessments
- Reporting

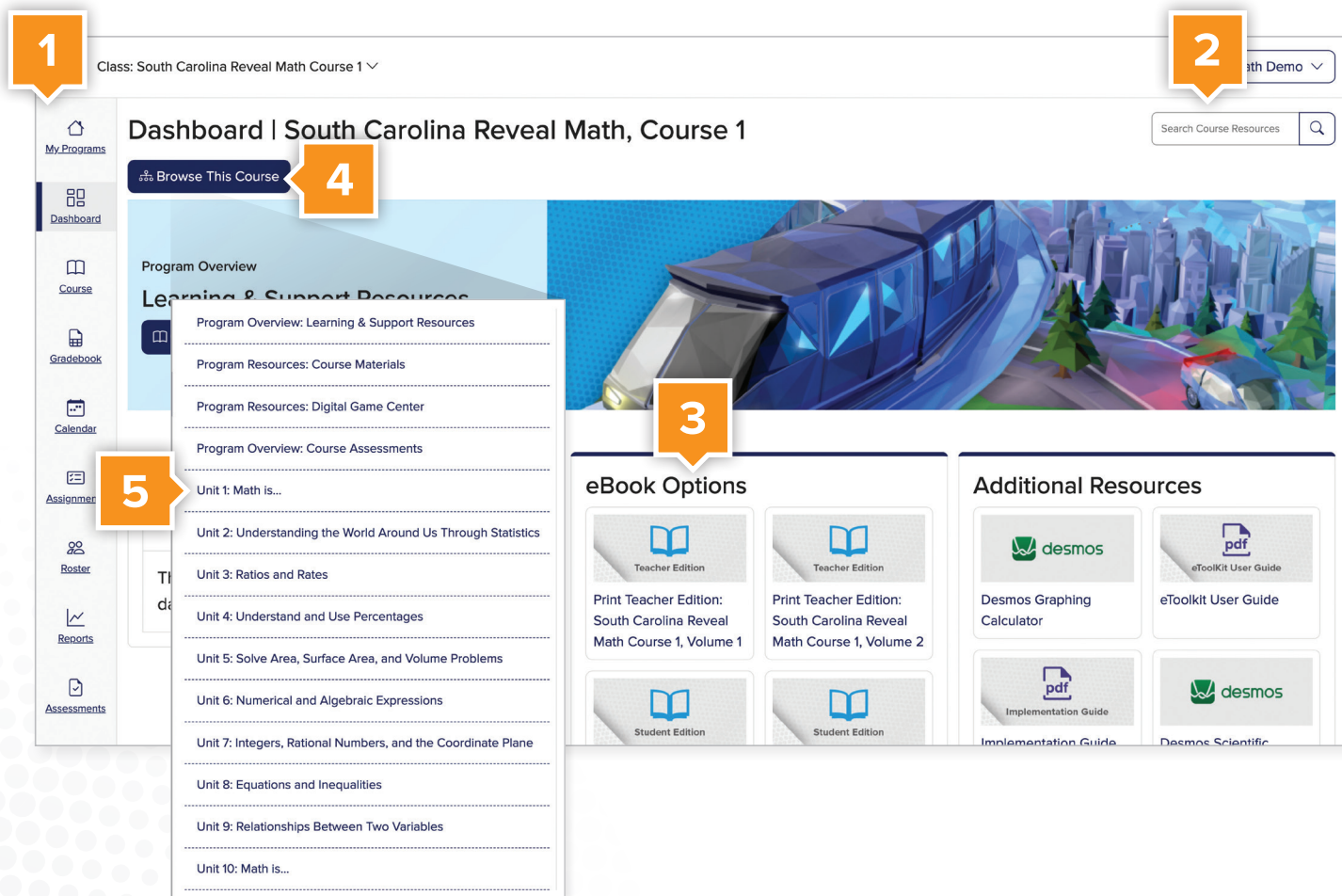
Get Started

1. Visit mheducation.com/southcarolina today to begin your digital sample or contact your McGraw Hill sales representative for a personal presentation of South Carolina Reveal Math.
2. Select desired grade-level class.



Teacher Dashboard

Use the Teacher Dashboard as a central location to navigate the Digital Teacher Center:



1. Use side menu to locate:

- Dashboard
- Course
- Gradebook
- Calendar
- Assignments
- Roster
- Reports
- Assessments

2. Search content by keyword or standard.

3. Access eBooks including Teacher Editions and Interactive Student Editions.

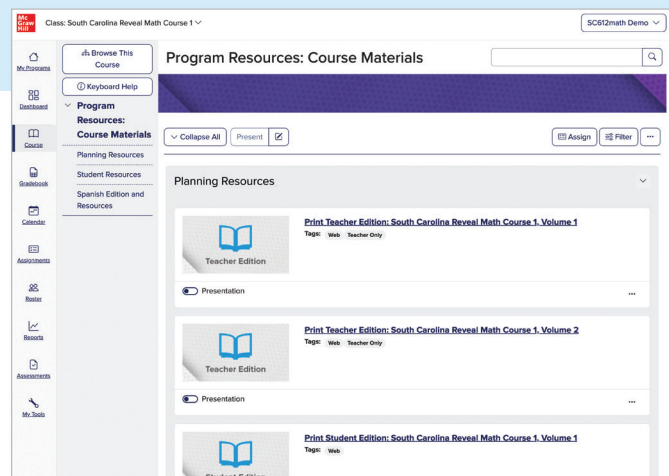
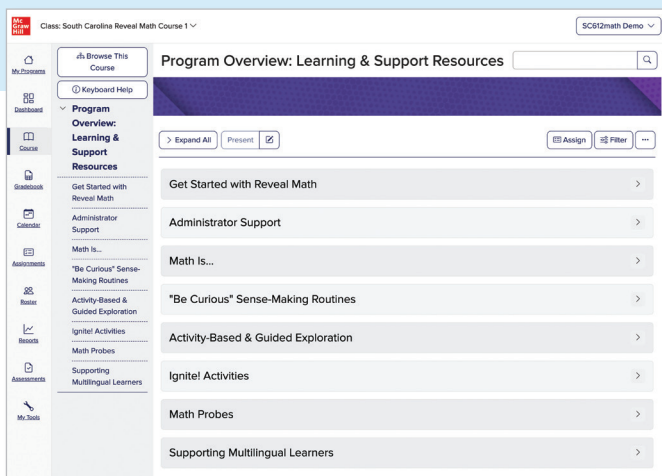
4. Click on **Browse This Course** to quickly navigate the course.

5. From **Browse This Course**, click on the unit or lesson name to access the instructional resources.

Program Resources and Professional Development

Locate Program Resources from the Teacher Dashboard:

- Click **Table of Contents**.
- **Program Overview and Program Resources** are located at the top of the **Table of Contents**.
- Click on the name of the resource you would like to review.



Program Overview:

Learning & Support Resources

Teachers and administrators have access to self-paced, on-demand **Learning and Support Resources**, including:

- A Quick Start Course
- Family Support Resources
- Digital Walkthrough Support
- Instructional Videos
- Workshop Modules

Program Resources:

Course Materials

The following resources are available under **Course Materials**:

- Teacher and Student eBooks
- Teacher Planning Resources
- eToolkit
- Glossary
- Foldables Study Guide

Unit Resources

Click the **Table of Contents** and select a unit. Once you've reached your unit landing page, click **Expand All** to see the resources within each menu.

1. Easily Plan with Point-of-Use Resources:

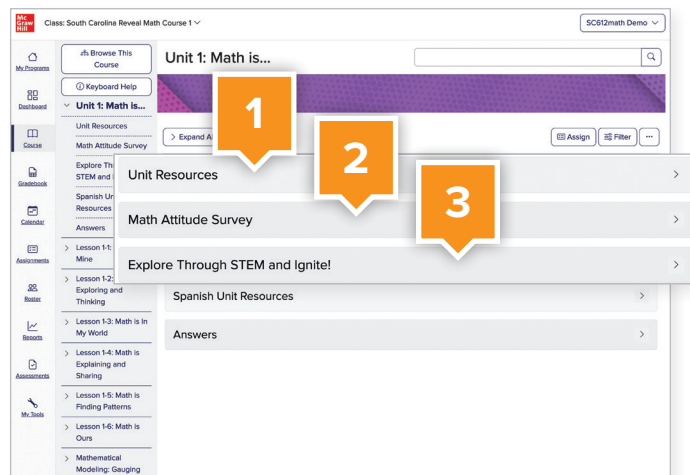
- How Do I Choose? Teacher Support
- Interactive Student eBook and Teacher eBook
- Family Letters (English and Spanish)

2. Ensure Student Readiness:

- Use the **Math Attitude Survey** to uncover any gaps in prerequisite knowledge needed to access the unit.
- Targeted Intervention** resources, including Guided Supports and Skills Support Sheets, align to the beginning- and end-of-unit assessment items.

3. Explore STEM and Ignite!

- Each unit opens with a STEM theme and an Ignite! activity, an interesting problem or puzzle that sparks students' interest and curiosity.



Question 9

The table shows the relationship between distance walked in meters and the time it takes in seconds. Which correctly explains whether the ratios of meters to seconds are equivalent? Choose the correct answer.

Meters	Seconds
7	4
14	8
21	12
28	16

They are not equivalent ratios because they are not all equal.
 They are equivalent ratios because each is equal to $\frac{7}{4}$: 1.
 They are equivalent ratios because each is equal to $\frac{4}{7}$: 1.
 They are equivalent ratios because each is equal to $1 : \frac{4}{7}$.

Guided Support

Materials

- Green connecting cubes (20 per group)
- Red connecting cubes (20 per group)

Begin the Activity

Work with students individually or in pairs. Lay 12 green connecting cubes next to 4 red connecting cubes. Say: *The number of green cubes to red cubes is 12 to 4. The rate of green to red cubes is 12 to 4. This can be simplified by finding 12 divided by 4.*

A rate is a ratio comparing two quantities with different kinds of units. A unit rate is a rate that is simplified so that, when written as a fraction, it has a denominator of 1. You can write 12 to 4 as a unit rate by simplifying $\frac{12}{4}$. To do this divide both 12 and 4 by 4.

Demonstrate how to write the unit rate: $\frac{12}{4} = \frac{3}{1}$. Ask: *Why don't we want to write the rate as 3? Explain.* [Sample answer: A rate is a ratio between two numbers. 3 is not two numbers.] Ask: *What does the unit rate 3 to 1 mean for 12 green cubes to 4 red cubes?* [Sample answer: It means that for every 3 green cubes, there is 1 red cube. Therefore, there would be 4 groups of 3 green cubes and 1 red cube.] Arrange connecting cubes in four groups, each with 3 green cubes and 1 red cube, to illustrate the meaning.

Ignite Activity: Proportional Relationships

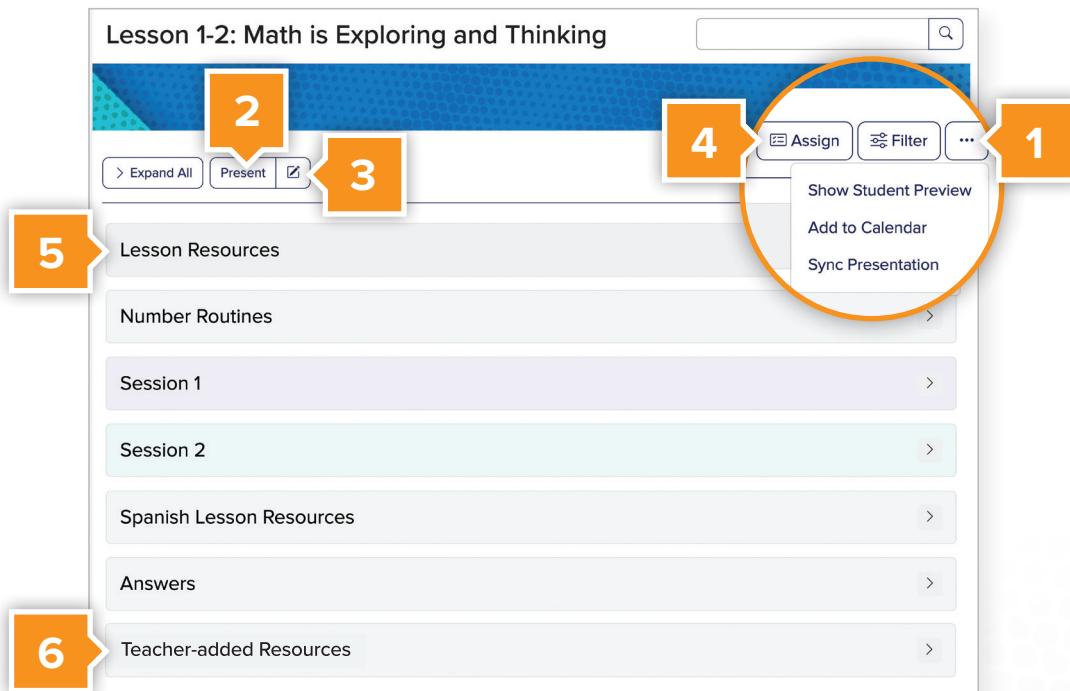
Description: This activity ignites student interest in the unit content by studying air sensors and air purifiers.

Tags: eBook Visible to Students

Presentation

Lesson Resources for Teachers

Click the **Table of Contents** and select a lesson. Once you've reached your lesson landing page, click **Expand All** to see the resources within each menu.



1. **Add** a lesson to your class calendar.
2. Select **Present** to launch your lesson presentation.
3. You can also rearrange or **Edit** the presentation by clicking the edit button.
4. **Assign** activities or assessments to an individual or a whole class.
5. **Download** an Editable PowerPoint Lesson Presentation from Lesson Resources.

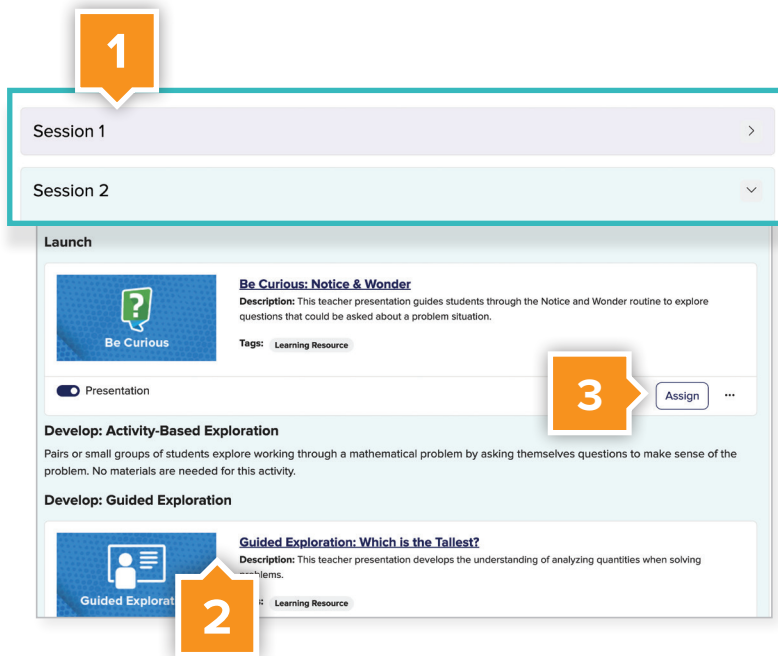
6. Add your own resources to include in presentations or to assign to your students from the **Teacher-added Resources** menu.

You can easily plan and prepare using the simple layout organization that aligns with your print Teacher Edition.

Lesson Resources for Students

Teachers can assign students access to several instructional resources, including their **Interactive Student Edition** and **Math Replay Videos**.

1. Click the section titled **Session 1** or **Session 2**.
2. Click on the tile images to view the instructional resources.
3. Click the **Assign** button.



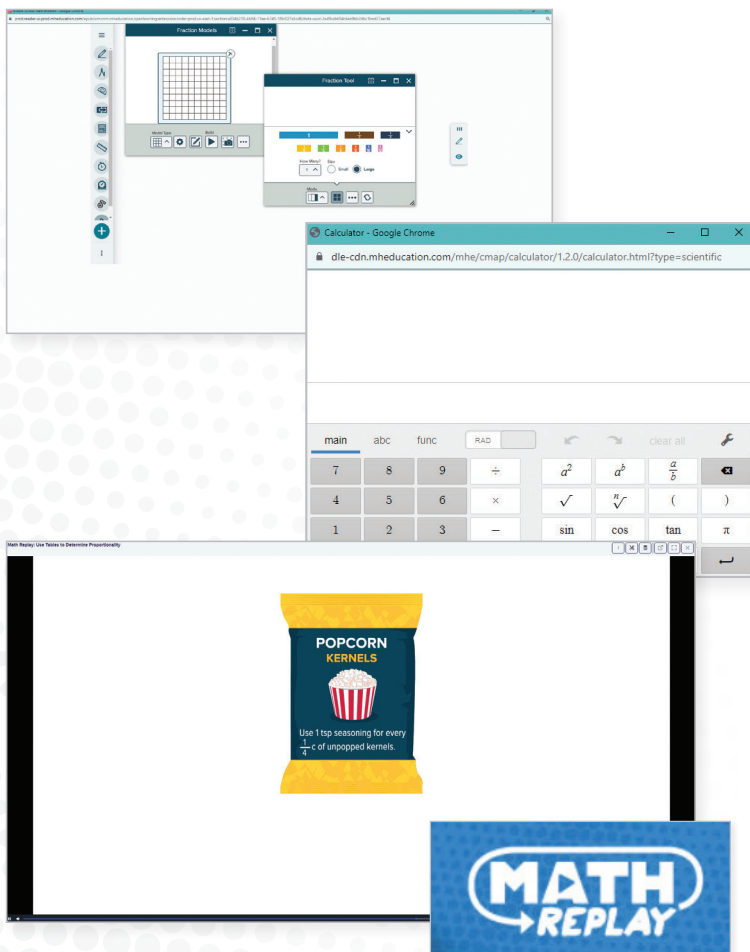
Interactive Student Edition

When using their **Interactive Student Edition**, students can digitally take notes and answer questions, while accessing multimedia resources, virtual manipulatives, and a scientific calculator.

- Access virtual manipulatives using the **eToolkit** located on the top right corner of their Interactive Student Edition.
- Access the **calculator** by using the button in the top right corner next to the eToolkit.

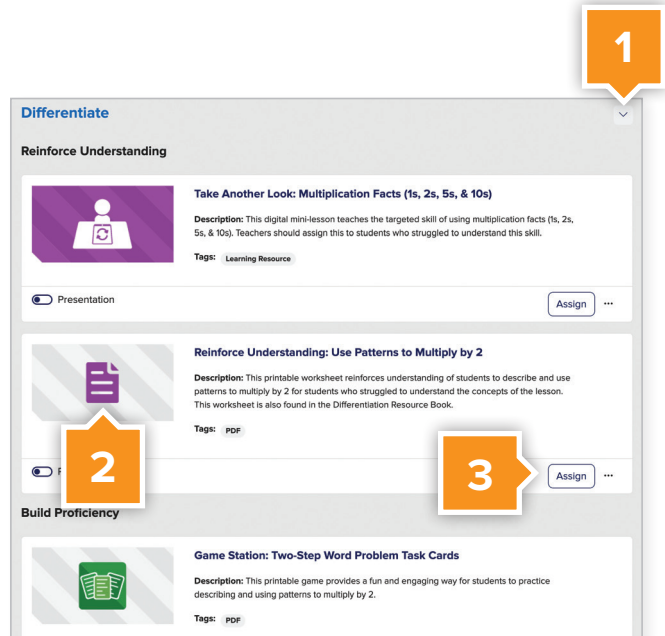
Math Replay

Math Replay videos review the lesson concept for students and parents and can be referenced while completing independent work.



Differentiation Resources

1. Review digital differentiation resources by clicking the section titled **Differentiate** within the lesson.
2. Click on the tile images to view the instructional resources.
3. Click the **Assign** button.



Assignable Differentiated Activities

Following the Exit Ticket, teachers can deploy a variety of differentiated digital activities in addition to the purposeful practice provided with hands-on practice sheets.

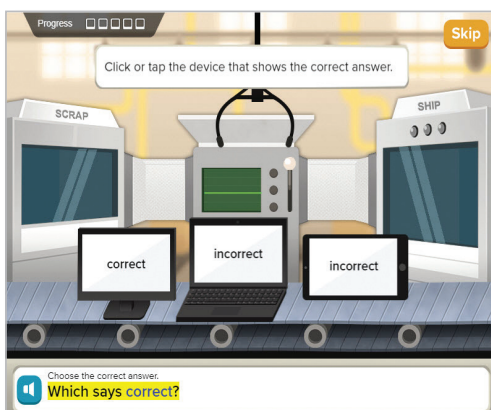
Reinforce Understanding

Sculpting Classes	2	4	6
Cost (\$)	40	70	100

$\frac{2}{40} = \frac{1}{20}$ $\frac{4}{70} = \frac{2}{35}$ $\frac{6}{100} = \frac{3}{50}$

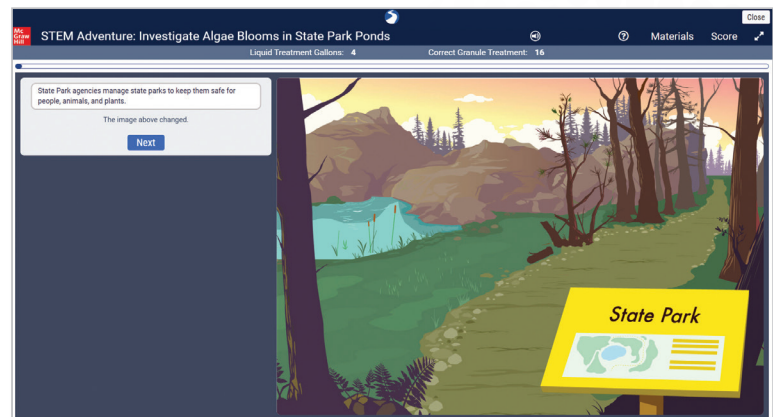
Take Another Look: Mini-Lesson

Build Proficiency



Digital Game

Extend Thinking



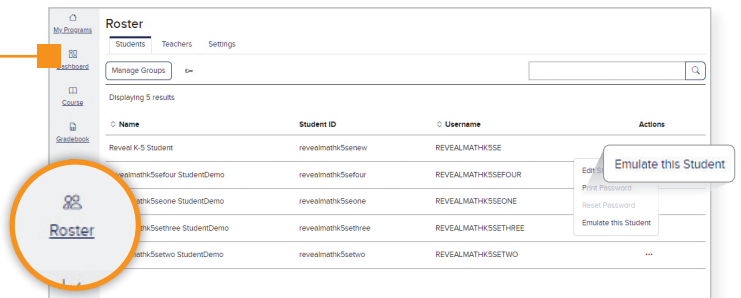
STEM Adventure

Classroom Management Tools

From the **Main Menu** on the left of the screen, click **Roster** to view some of the tools that make planning easier.

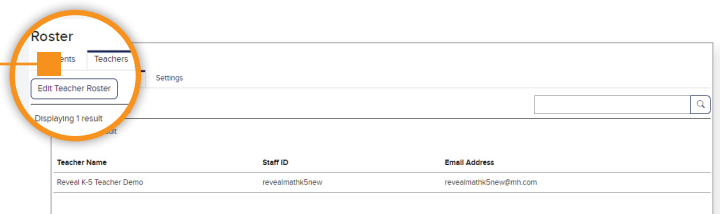
Preview Student Experience

Emulate this Student allows teachers to view which resources students will see and have access to in their Digital Student Center.



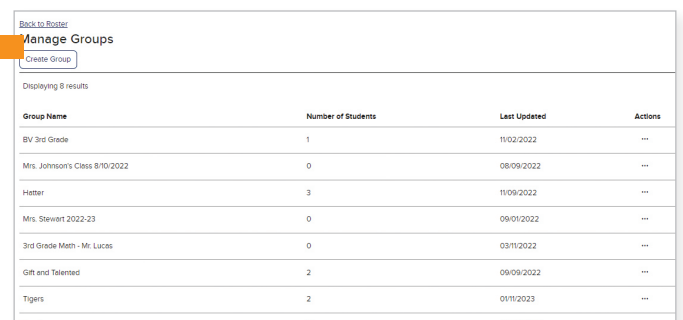
Share Your Class

Teachers can share class rosters, groupings, reports, assignments, lesson plans, and more with colleagues for the purpose of co-teaching, intervention, or instructional planning.



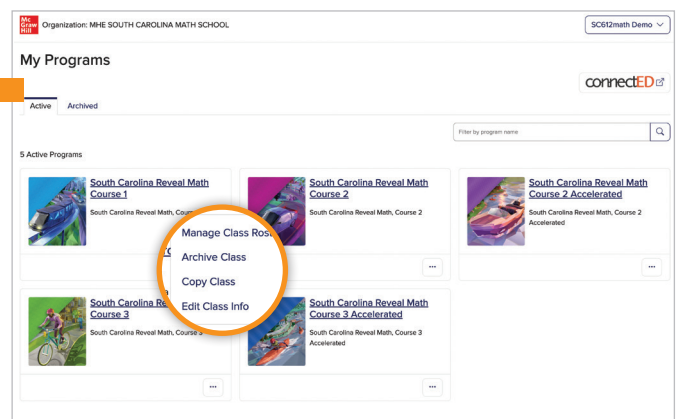
Group Your Students

Groups can be defined and used to differentiate assignments or assessments.



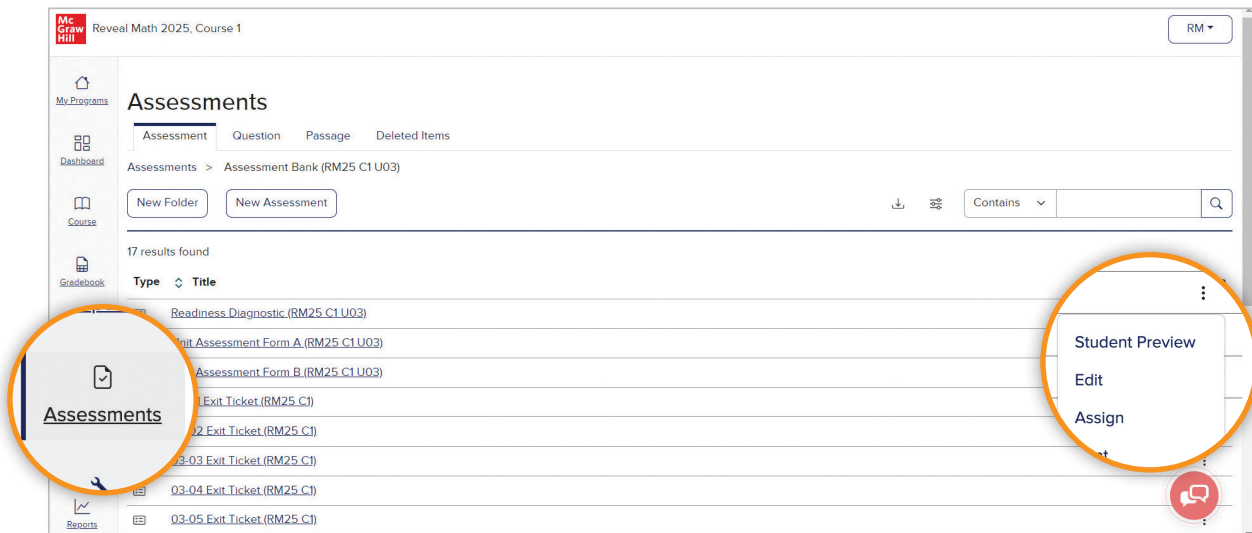
Copy Class

From the **My Programs** page, a teacher is able to copy all course assignments and customizations to another class.



Digital Assessment Resources

From the **Main Menu** on the left of the screen, click **Assessments** to view all assessment items. Click into any folder.



From the right of any assessment, click the three-dot menu to view questions as a student, edit, assign, or export question metadata including South Carolina CCR Standards by question.

South Carolina Reveal Math offers a comprehensive set of assessment tools. Assessments can be assigned from unit and lesson landing pages within the Digital Teacher Center. All digital assessments have a PDF alternative. Digital assessments include:

- Course Diagnostic
- Course Benchmark Assessments
- Unit Readiness Diagnostic
- Unit Assessment Form A
- Unit Assessment Form B
- Summative Assessment
- Lesson Exit Tickets

Customize for Classroom Needs

You can assign assessments to an individual student, group, or whole class and customize the assessment experience settings and support tools to meet student needs. You can also share customized assessments with other teachers.

Easily edit existing assessments or create your own using question banks and authoring tools that offer the following question types:

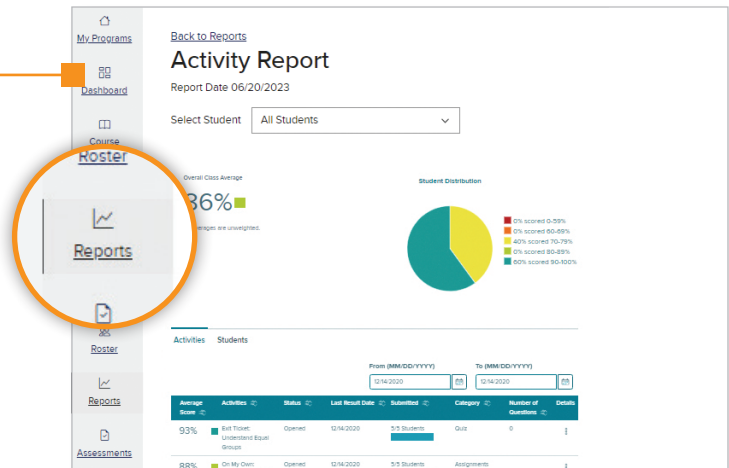
- Multiple choice
- Fill-in-the-blank
- True/False
- Multiple choice, multi-select
- Equation entry
- Matching
- Bucketing
- Ordering
- Choice matrix
- Grid-in
- Audio recording
- Number line and more!

Dynamic Reporting

From the **Main Menu** on the left of the screen, click **Reports**. *South Carolina Reveal Math's* interactive performance reports provide immediate feedback that allows teachers to make data-driven instructional decisions.

Activity Performance Report

You can review useful data points for class activities, including item analysis by student and class. On the Reporting Dashboard, the overall class average for all completed activities is displayed alongside the distribution of student scores in the pie chart.



Standards Performance Report

You can access information on class performance by South Carolina CCR Mathematics Standard, including a cumulative score by class and student.

The screenshot shows the 'Standards Performance Report' for South Carolina, College- and Career- Mathematics (2023), Grade 7. It includes a legend for score ranges: 0-59% (red), 60-69% (orange), 70-79% (yellow), 80-89% (green), and 90-100% (dark green). The table below lists standards with their descriptions, class averages, and question counts.

Standards	Description	Class Avg	Questions
7.DPSR.1	Analyze data sets to identify their statistical elements.	82%	9
7.DPSR.1.1	Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations.	82%	9
7.DPSR.1.2	Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set.	82%	9
7.DPSR.1.3	Calculate and interpret the measures of center (mean, median, mode) and spread (mean absolute deviation, interquartile range, range) in mathematical and real-world situations.	100%	4
7.DPSR.1.4	Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets.	80%	2

Notes

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Notes

Lined writing area consisting of horizontal lines for notes.

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