

## Connecticut Mathematics Model Curricula Alignment

Resource Name: [REVEAL MATH GRADE 7](#)

Alignment Grade 7				
Model Unit Name	Model Unit Standards	Resource Unit(s) Number	Resources Lessons	Pacing
<i>This is the title of the unit in the model curricula</i>	<i>These are the standards addressed in the unit</i>	<i>This is the unit(s) that aligns with the model unit from the resource</i>	<i>These are the lessons from the identified units that align to the standards within the model unit</i>	<i>This is the expected number of days for instruction</i>
Operating with Rational Numbers (Addition & Subtraction)	7.NS.A.1, 7.NS.A.3	Module 3: Operations with Integers  Module 4: Operations with Rational Numbers  Module 6: Write and Solve Equations  Module 8: Geometric Figures  Module 9: Measure Figures	Lesson 3-1: Add Integers  Lesson 3-2: Subtract Integers  Lesson 3-3: Multiply Integers  Lesson 3-4: Divide Integers  Lesson 3-5: Apply Integer Operations  Lesson 4-1: Rational Numbers  Lesson 4-2: Add Rational Numbers  Lesson 4-3: Subtract Rational Numbers  Lesson 4-4: Multiply Rational Numbers  Lesson 4-5: Divide Rational Numbers	35 days

			<p>Lesson 4-6: Apply Rational Numbers</p> <p>Lesson 6-1: Write and Solve One-Step Equations</p> <p>Lesson 8-4: Scale Drawings</p> <p>Lesson 9-1: Circumference of Circles</p> <p>Lesson 9-2: Area of Circles</p> <p>Lesson 9-3: Area of Composite Figures</p> <p>Lesson 9-4: Volume</p> <p>Lesson 9-5: Surface Area</p> <p>Lesson 9-6: Volume and Surface Area of Composite Figures</p>	
Operating with Rational Numbers (Multiplication & Division)	7.NS.A.2, 7.NS.A.3, 7.EE.A.2, 7.EE.B.3	<p>Module 2: Solve Percent Problems</p> <p>Module 3: Operations with Integers</p>	<p>Lesson 2-1: Percent of Change</p> <p>Lesson 2-2: Tax</p> <p>Lesson 2-3: Tips and Markup</p> <p>Lesson 2-4: Discounts</p> <p>Lesson 2-5: Interest</p> <p>Lesson 2-6: Commission and Fees</p>	59 days

		Module 4: Operations with Rational Numbers	Lesson 2-7: Percent Error	
		Module 5: Simplify Algebraic Expressions	Lesson 3-1: Add Integers	
			Lesson 3-2: Subtract Integers	
			Lesson 3-3: Multiply Integers	
		Module 6: Write and Solve Equations	Lesson 3-4: Division Integers	
			Lesson 3-5: Apply Integer Operations	
		Module 7: Write and Solve Inequalities		
			Lesson 4-1: Rational Numbers	
		Module 8: Geometric Figures	Lesson 4-2: Add Rational Numbers	
			Lesson 4-3: Subtract Rational Numbers	
			Lesson 4-4: Multiply Rational Numbers	
			Lesson 4-5: Divide Rational Numbers	
			Lesson 4-6: Apply Rational Number Operations	
			Lesson 5-1: Simplify Algebraic Expressions	
			Lesson 6-1: Write and Solve One-Step Equations	

			<p>Lesson 6-2: Solve Two-Step Equations <math>px + q = r</math></p> <p>Lesson 6-3: Write and Solve Two-Step Equations: <math>px + q = r</math></p> <p>Lesson 6-4: Solve Two-Step Equations: <math>p(x + q) = r</math></p> <p>Lesson 6-5: Write and Solve Two-Step Equations: <math>p(x + q) = r</math></p> <p>Lesson 7-1: Solve One-Step Addition and Subtraction Inequalities</p> <p>Lesson 7-2: Write and Solve One-Step Addition and Subtraction Inequalities</p> <p>Lesson 7-3: Solve One-Step Multiplication and Division Inequalities with Positive Coefficients</p> <p>Lesson 7-4: Solve One-Step Multiplication and Division Inequalities with Negative Coefficients</p> <p>Lesson 7-5: Write and Solve One-Step Multiplication and Division Inequalities</p> <p>Lesson 7-6: Write and Solve Two-Step Inequalities</p>	
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			<p>Lesson 8-1: Vertical and Adjacent Angles</p> <p>Lesson 8-2: Complementary and Supplementary Angles</p> <p>Lesson 8-4: Scale Drawings</p>	
Two and Three Dimensional Geometry	7.G.A.2, 7.G.A.3, 7.G.B.4, 7.G.B.5, 7.G.B.6	<p>Module 8: Geometric Figures</p> <p>Module 9: Measure Figures</p>	<p>Lesson 8-1: Vertical and Adjacent Angles</p> <p>Lesson 8-2: Complementary and Supplementary Angles</p> <p>Lesson 8-3: Triangles</p> <p>Lesson 8-5: Three-Dimensional Figures</p> <p>Lesson 9-1: Circumference of Circles</p> <p>Lesson 9-2: Area of Circles</p> <p>Lesson 9-3: Area of Composite Figures</p> <p>Lesson 9-4: Volume</p> <p>Lesson 9-5: Surface Area</p> <p>Lesson 9-6: Volume and Surface Area of Composite Figures</p>	17 days
Proportional Reasoning	7.RP.A.1, 7.RP.A.2, 7.RP.A.3, 7.G.A.1	<p>Module 1: Proportional Relationships</p> <p>Module 2: Solve Percent Problems</p>	<p>Lesson 1-1: Unit Rates Involving Ratios of Fractions</p> <p>Lesson 1-2: Understand Proportional Relationships</p>	28 days

		<p>Module 8: Geometric Figures</p> <p>Module 9: Measure Figures</p> <p>Module 11: Sampling and Statistics</p>	<p>Lesson 1-3: Tables of Proportional Relationships</p> <p>Lesson 1-4: Graphs of Proportional Relationships</p> <p>Lesson 1-5: Equations of Proportional Relationships</p> <p>Lesson 1-6: Solve Problems Involving Proportional Relationships</p> <p>Lesson 2-1: Percent of Change</p> <p>Lesson 2-2: Tax</p> <p>Lesson 2-3: Tips and Markup</p> <p>Lesson 2-4: Discounts</p> <p>Lesson 2-5: Interest</p> <p>Lesson 2-6: Commission and Fees</p> <p>Lesson 2-7: Percent Error</p> <p>Lesson 8-4: Scale Drawings</p> <p>Lesson 9-6: Volume and Surface Area of Composite Figures</p> <p>Lesson 11-2: Make Predictions</p>	
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			Lesson 11-3: Generate Multiple Samples	
Algebraic Reasoning II	7.EE.A.1, 7.EE.A.2, 7.EE.A.4	<p>Module 2: Solve Percent Problems</p> <p>Module 4: Operations with Rational Numbers</p> <p>Module 5: Simplify Algebraic Expressions</p>	<p>Lesson 2-2: Tax</p> <p>Lesson 2-3: Tips and Markup</p> <p>Lesson 2-4: Discounts</p> <p>Lesson 2-6: Commission and Fees</p> <p>Lesson 4-6: Apply Rational Number Operations</p> <p>Lesson 5-1: Simplify Algebraic Expressions</p> <p>Lesson 5-2: Add Linear Expressions</p> <p>Lesson 5-3: Subtract Linear Expressions</p> <p>Lesson 5-4: Factor Linear Expressions</p> <p>Lesson 5-5: Combine Operations with Linear Expressions</p>	14 days
Probability	7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.8	Module 10: Probability	<p>Lesson 10-1: Find Likelihoods</p> <p>Lesson 10-2: Relative Frequency of Simple Events</p> <p>Lesson 10-3: Theoretical Probability of Simple Events</p>	11 days

			Lesson 10-4: Compare Probabilities of Simple Events  Lesson 10-5: Probability of Compound Events  Lesson 10-6: Simulate Chance Events	
Inferences and Populations	7.SP.A.1, 7.SP.A.2, 7.SP.B.3, 7.SP.B.4	Module 11: Sampling and Statistics	Lesson 1: Biased and Unbiased Samples  Lesson 2: Make Predictions  Lesson 3: Generate Multiple Samples  Lesson 4: Compare Two Populations  Lesson 5: Assess Visual Overlap	8 days

Reveal Math® was designed based on a learning progression of mathematical content and connecting concepts across all grades and within each grade. A program scope and sequence is available in the Teacher Digital Center: Program Resources. In support of effective implementation and best practices, guiding principles of the instructional design & pedagogy, professional learning videos, and other program features can be found in the Teacher Digital Center: Program Resources.

Scope and Sequence			
<i>If a district uses this resource to implement the state model curriculum for grade 7, the following scope and sequence should be followed to ensure alignment and attention to the progressions of mathematics.</i>			
Unit Number/Title and Lessons	Lesson Objectives	# of days (assume 1 hour of instruction)	Number of weeks
<b>Module 1: Proportional Relationships</b>			



Lesson 1-1: Unit Rates Involving Ratios of Fractions	Students will find unit rates when or both quantities are fractions.	2	2 Weeks 3 Days
Lesson 1-2: Understand Proportional Relationships	Students will use models and ratio reasoning to understand how a proportional relationship can exist between quantities.	2	
Lesson 1-3: Tables of Proportional Relationships	Students will analyze the relationship between two quantities represented in tables to determine proportionality.	2	
Lesson 1-4: Graphs of Proportional Relationships	Students will analyze the relationship between two quantities graphed on a coordinate plane to determine proportionality.	3	
Lesson 1-5: Equations of Proportional Relationships	Students will write equations to represent proportional relationships.	2	
Lesson 1-6: Solve Problems Involving Proportional Relationships	Students will solve problems involving proportional relationships.	2	
Module 2: Solve Percent Problems			
Lesson 2-1: Percent of Change	Students will solve problems involving percent of increase and percent of decrease.	2	1 Week 4 Days
Lesson 2-2: Tax	Students will solve multi-step ratio and percent problems involving taxes.	2	
Lesson 2-3: Tips and Markups	Students will solve multi-step ratio and percent problems involving tips and markups.	1	
Lesson 2-4: Discounts	Students will solve multi-step ratio and percent problems involving discounts.	1	
Lesson 2-5: Interest	Students will solve problems involving simple interest.	1	
Lesson 2-6: Commission and Fees	Students will solve problems involving commission and fees.	1	
Lesson 2-7: Percent Error	Students will solve problems involving percent error.	1	

Module 3: Operations with Integers			
Lesson 3-1: Add Integers	Students will solve problems adding integers.	3	2 Weeks 2 Days
Lesson 3-2: Subtract Integers	Students will solve problems subtracting integers.	3	
Lesson 3-3: Multiply Integers	Students will solve problems multiplying integers.	3	
Lesson 3-4: Divide Integers	Students will solve problems dividing integers.	2	
Lesson 3-5: Apply Integer Operations	Students will solve problems by applying all operations to integers.	1	
Module 4: Operations with Rational Numbers			
Lesson 4-1: Rational Numbers	Students will identify terminating and repeating decimals, and use long division to convert rational numbers to decimals.	2	2 Weeks
Lesson 4-2: Add Rational Numbers	Students will demonstrate application of the additive inverse, and an understanding of addition of rational numbers.	2	
Lesson 4-3: Subtract Rational Numbers	Students will demonstrate understanding of subtraction of rational numbers as adding the additive inverse and apply it to solve real-world problems.	1	
Lesson 4-4: Multiply Rational Numbers	Students will apply understanding of multiplication to rational numbers, and use the order of operations to solve real-world problems.	1	
Lesson 4-5: Divide Rational Numbers	Students will apply understanding of division to rational numbers, and use the order of operations to solve real-world problems.	1	

Lesson 4-6: Apply Rational Number Operations	Students will apply understanding of the four operations with rational numbers to evaluate mathematical expressions.	1	
Module 5: Simplify Algebraic Expressions			
Lesson 5-1: Simplify Algebraic Expressions	Students will simplify algebraic expressions by combining like terms and using the Distributive Property.	2	1 Week 3 Days
Lesson 5-2: Add Linear Expressions	Students will add linear expressions and express the sum in simplest form.	2	
Lesson 5-3: Subtract Linear Expressions	Students will subtract linear expressions and express the difference in simplest form.	1	
Lesson 5-4: Factor Linear Expressions	Students will find the GCF of monomials and factor algebraic expressions.	2	
Lesson 5-5: Combine Operations with Linear Expressions	Students will combine operations to simplify linear expressions.	1	
Module 6: Write and Solve Equations			
Lesson 6-1: Write and Solve One-Step Equations	Students will write and solve one-step equations with rational numbers.	3	2 Weeks 3 Days
Lesson 6-2: Solve Two-Step Equations $px + q = r$	Students will solve two-step equations of the form $px + q = r$ .	3	
Lesson 6-3: Write and Solve Two-Step Equations: $px + q = r$	Students will write and solve two-step equations of the form $px + q = r$ .	2	
Lesson 6-4: Solve Two-Step Equations $p(x + q) = r$	Students will solve two-step equations of the form $p(x + q) = r$ .	3	
Lesson 6-5: Write and Solve Two-Step Equations $p(x + q) = r$	Students will write and solve two-step equations of the form $p(x + q) = r$ .	2	
Module 7: Write and Solve Inequalities			

Lesson 7-1: Solve One-Step Addition and Subtraction Inequalities	Students will solve and graph one-step addition and subtraction inequalities.	2	1 Week 4 Days
Lesson 7-2: Write and Solve One-Step Addition and Subtraction Inequalities	Students will write and solve one-step addition and subtraction inequalities.	1	
Lesson 7-3: Solve One-Step Multiplication and Division Inequalities with Positive Coefficients	Students will solve and graph one-step multiplication and division inequalities with positive coefficients.	2	
Lesson 7-4: Solve One-Step Multiplication and Division Inequalities with Negative Coefficients	Students will solve and graph one-step multiplication and division inequalities with negative coefficients.	2	
Lesson 7-5: Write and Solve One-Step Multiplication and Division Inequalities	Students will write and solve one-step multiplication and division inequalities.	1	
Lesson 7-6: Write and Solve Two-Step Inequalities	Students will write and solve two-step inequalities.	1	
Module 8: Geometric Figures			
Lesson 8-1: Vertical and Adjacent Angles	Students will identify vertical and adjacent angles and use what they know to find missing values.	2	1 Week 4 Days
Lesson 8-2: Complementary and Supplementary Angles	Students will identify complementary and supplementary angles and use what they know to find missing values.	2	
Lesson 8-3: Triangles	Students will draw triangles with and without tools.	2	
Lesson 8-4: Scale Drawings	Students will solve problems involving scale drawings.	2	
Lesson 8-5: Three-Dimensional Figures	Students will analyze three-dimensional figures.	1	
Module 9: Measure Figures			
Lesson 9-1: Circumference of Circles	Students will use radius and diameter to find circumferences.	2	2 Weeks

Lesson 9-2: Area of Circles	Students will find the area of circles.	2	
Lesson 9-3: Area of Composite Figures	Students will find the area of composite figures.	1	
Lesson 9-4: Volume	Students will find the volume of prisms and pyramids.	2	
Lesson 9-5: Surface Area	Students will find the surface area of prisms and pyramids.	2	
Lesson 9-6: Volume and Surface Area of Composite Figures	Students will find the volume and surface area of composite figures.	1	
<b>Module 10: Probability</b>			
Lesson 10-1: Find Likelihoods	Students will solve problems that classify the likelihood of simple events.	2	2 Weeks 2 Days
Lesson 10-2: Relative Frequency of Simple Events	Students will find the relative frequency of simple events and compare relative frequency to experimental probability.	2	
Lesson 10-3: Theoretical Probability of Simple Events	Students will solve problems involving theoretical probability of simple events and their complements.	2	
Lesson 10-4: Compare Probabilities of Simple Events	Students will solve problems that compare probabilities and relative frequencies of simple events.	1	
Lesson 10-5: Probability of Compound Events	Students will solve problems involving the probability of compound events.	2	
Lesson 10-6: Simulate Chance Events	Students will solve problems by simulating compound probability events.	2	
<b>Module 11: Sampling and Statistics</b>			
Lesson 11-1: Biased and Unbiased Samples	Students will identify samples as biased and unbiased and determine whether inferences from the samples are valid.	2	1 Week 3 Days

Lesson 11-2: Make Predictions	Students will make predictions based on data gathered using a valid sampling method.	1	
Lesson 11-3: Generate Multiple Samples	Students will understand that taking multiple samples can help them gauge the variation in their predictions.	2	
Lesson 11-4: Compare Two Populations	Students will make comparative inferences about two populations based on the data from random samples.	2	
Lesson 11-5: Assess Visual Overlap	Students will informally assess the degree of visual overlap between two distributions.	1	

## Supports of Diversity, Equity and Inclusion

*Please provide any information relative to supporting culturally responsive instruction, multi-language learners, and students with disabilities*

### Culturally Responsive Instruction | Reveal Math

Drawing from research, McGraw Hill understands there are a number of factors that support classroom equity and echo the tenets of culturally responsive practices: high academic expectations for all students; a socially and emotionally positive classroom; a safe school climate; authentic and rigorous tasks; inclusive, relevant, and meaningful content; open and accepting communication; drawing from students' strengths, knowledge, culture, and competence; critically and socially aware inquiry practices; and strong teaching and teacher professional support for equity and inclusion.

McGraw Hill is committed to publishing pedagogically sound, high-quality, instructional materials that are fair, unbiased, and that recognize the unique contributions of people of all races and cultures. *Reveal Math* prides itself on exceeding the requirements for equal opportunity and representation in its program. We believe that all children should be able to see themselves as doers of mathematics and that means showing students from a range of genders, ethnicities, cultural backgrounds, and with different disabilities. McGraw Hill is also committed to producing materials that are free from cultural, ethnic or gender bias. Utmost care was taken to ensure an antiracist, anti-biased, nonsexist, and nonstereotyping presentation in the production of this resource.

The program displays males and females from various ethnic backgrounds in all types of environments, avoiding stereotypes. It provides every student with access and opportunities to learn. Throughout *Reveal Math*, all types of students are portrayed in all types of environments, so students of all backgrounds will be able to relate to the text.

The focus on Social Emotional Learning also provides multiple opportunities for students and teachers to recognize and value differences between home cultures of students and the classroom. Each lesson has an SEL focus in the Math in Mindset that is seen as part of the Be Curious Moment and reflection at the end of the lesson. These were designed using the CASEL Core Competencies in SEL.

*Reveal Math* grades 6-12 displays males and females from various ethnic backgrounds in all types of environments, avoiding stereotypes. It provides every student with access and opportunities to learn. Throughout *Reveal Math*, all types of students are portrayed in all types of environments, so students of all backgrounds will be able to relate to the text.

Each module open with an **Ignite! Activity** designed to spark all students' interest and curiosity. The Ignite activity is one example of an activity that provides students with opportunities to discuss individual interests and experiences. Lesson images and word problems portray a variety of demographics and cultural background. Mindset Matters tips provide students with opportunities to understand beliefs and how those beliefs impact student behavior and learning. The Multilingual eGlossary provides mathematics vocabulary translated into 13 common world languages.

## Cultural Connections

Module activities highlight various cultural contributions to mathematics and require students to use a source to do additional research on the culture or topic.

### Cultural Connections


#### Prime Numbers

Prime numbers are counting numbers greater than 1 that have no divisors other than 1 and themselves. It is thought that the ancient Egyptians had some knowledge of the prime numbers. However, the earliest surviving records of the study of prime numbers come from the ancient Greeks in about 300 BCE. Mathematics have found that you may be able to use functions like  $f(k) = k^2 - 79k + 1601$ , where  $k = 1, 2, 3, \dots$ , to find prime numbers.

**Use a Source** Research to find out more about the history of prime numbers.

Prime	Composite
2	
3	
4	■ ■
5	
6	■ ■
7	
8	■ ■ ■ ■
9	■ ■
10	■ ■ ■ ■
11	
12	■ ■ ■ ■

To provide students with diverse perspectives, **Math History Minutes** highlight multicultural, global mathematics influencers, past and present, and describe how they impacted the world with their work and how different cultures provided a variety of contributions to the work.



**Math History Minute**  
**Graciano Ricalde Gamboa (1873–1942)** was a Mexican mathematician who in 1910, achieved recognition for calculating the orbit of Halley's Comet. His precise calculations proved that the comet would not hit Earth, which was of great concern at the time. Halley's Comet follows a highly elliptical path and can be seen from Earth every 74–79 years.

**Math History Minute**

One of the oldest known forms of division is used by the Egyptians. For example, to divide 22 by 8, write multiplication sentences in which 8 is a factor. Find the numbers that create a sum of 22, the dividend. Because  $16 + 4 + 2 = 22$ , find the sum of the corresponding factors,  $2 + \frac{1}{2} + \frac{1}{4}$ , or  $2\frac{3}{4}$ . So,  $22 \div 8 = 2\frac{3}{4}$ .

1	8	$1 \times 8 = 8$
2	16	$2 \times 8 = 16$
$\frac{1}{2}$	4	$\frac{1}{2} \times 8 = 4$
$\frac{1}{4}$	2	$\frac{1}{4} \times 8 = 2$
$\frac{1}{8}$	1	$\frac{1}{8} \times 8 = 1$

**Math History Minute**

Early notations for negative numbers were used by the Chinese and Hindu mathematicians. The Chinese drew a diagonal stroke through the right-most non-zero digit to indicate a negative number and used red and black computing rods to indicate positive and negative values, respectively. The Hindu mathematicians placed a small circle above each negative value. Thus,  $\overline{4}$  indicated  $-4$ .



**Math History Minute**  
 Mathematician and astronomer **Muhammad al-Khwarizmi (around 780–850)** wrote the first known text in elementary algebra. The word *algebra* is derived from the word *al-jabr*, part of the title of this text. It means *reunion of broken parts* in Arabic. His texts were influential in bringing algebraic knowledge to Europe and were the first Arabic mathematics texts translated into Latin.

Additionally, the **Language Development Handbook**, Teacher Edition, includes Multicultural Teacher Tips throughout the handbook.

Please refer to the following link for further information on Equity and Cultural Responsiveness in *Reveal Math* 6-12:

[NA Reveal Math 6-12 Equity and Cultural Responsiveness](#)

Password: RevealCulturalResponsiveness



## Multi-language learners and students with disabilities

*Reveal Math* addresses the needs for all students and a variety of tiered instructional resources are provided for remediation or enrichment. Each lesson includes a list of suggested **Differentiated** resources that is based on assessment data from the **Checks** after each **Example**. Remediation resources (**Review** resources) target prerequisite skill knowledge. Leveled **Questions for Mathematical Discourse** are also included for every Example in the Teacher Edition. The supplemental materials differ in K-5 and 6-12 based on the different nature of these classrooms and age appropriateness for students.

### Reveal Math 6-12

Resources range from Remediation (**Review** resources) that target prerequisite skill knowledge to Enrichment (**Extension** resources) that extend student knowledge on the lesson topic. Each module has a readiness diagnostic and based on that, the teacher can use the embedded resources to support students in their classroom.

- The **Review Learn** and the **Review Example** are available to support students in acquiring pre-requisite skills.
- The **Take Another Look** Mini Lessons support students in remediation for the current topics under review.
- The **Personal Tutors** are available to support student understanding
- Online **Extension** activities are included for many lessons. In these activities, students extend their understanding of mathematical topics related to the lesson.
- The Teacher Edition includes **Enrichment Activity** suggestions at point-of-use for students who would benefit from a challenge or opportunity to extend their learning based on the checks in the lesson.
- In the Teacher Edition, **Questions for Mathematical Discourse** are included for each example to promote high expectations, critical thinking skills, and class discussion. On-level (OL) questions and beyond-level (BL) questions are appropriate for all students to answer, while approaching-level (AL) questions are included if students need more scaffolded support.
- The differentiated practice and assessment gives the teacher opportunities to support individual student needs.
- The Quick Review Handbook is included and targeted at point of use.
- A digital **Multilingual eGlossary** is provided that contains mathematics terms translated into 13 languages.

The Teacher Edition and the online resources support teacher guidance on which supports to use at the module and lesson levels.

1

CONCEPTUAL UNDERSTANDING

2

FLUENCY

3

APPLICATION

7.NS.A.3, 7.EE.B.4.A

## Learn Write One-Step Equations

**Objective**  
Students will learn how to model a real-world problem with a one-step equation.

**Teaching Notes**  
3.OA.4  
Students will learn that they can model many real-world situations with equations. Have them select each flashcard to view the steps for writing an equation to represent a real-world problem. An important part of modeling a real-world problem with an equation is to define the variable. Remind students that the letter  $x$  is used often as a variable in algebra, but any letter can be used. In real-world situations, the first letter of the unknown quantity that the variable is representing is often used. For example,  $t$  is often used to represent temperature. Ask students if there are any other equations that can be used to model the real-world problem presented in the Learn. Sample responses can include  $118 - t = 158$  and  $t = 118 + 158$ .

### DIFFERENTIATE

**Enrichment Activity** BL  
To further students' understanding of the importance of defining a variable, remind them that the equation describes the relationship between the quantities in the problem. If it is not clearly stated what the variable represents, then it can be difficult to interpret the solution in the context of the problem. Have students work in pairs to complete the following activity:  
1. Write a real-world problem that involves one operation in order to solve it.  
2. Model the problem with an equation, but do not clearly state what the variable represents.  
3. Trade problems and equations with another pair. Have them solve the equation. Then have each pair interpret the solution. If they struggle to do so, this may be because the variable was not clearly defined.

### Learn Write One-Step Equations

Many real-world situations can be represented with equations. Consider the following problem: The highest recorded temperature in Warsaw, Missouri, is  $118^\circ\text{F}$  Fahrenheit. This is  $158^\circ$  greater than the city's lowest recorded temperature. What is the lowest recorded temperature?

The steps below will model the problem with an equation to represent the real-world situation.

**Write:**  
Describe the unknown(s) of the problem:  
The highest recorded temperature is  $118^\circ$  greater than the lowest recorded temperature.  
**Define:**  
Define the variable to represent the unknown quantity:  
Let  $t$  represent the lowest recorded temperature.  
**Equation:**  
Translate the word problem into algebraic equation:  
 $118 = 158 + t$

Choosing a variable and equation for the variable to represent in an equation is called defining a variable.

**Pause and Reflect**  
Did you struggle with any of the concepts in the Learn? How do you feel when you struggle with math concepts? What steps can you take to understand the concept?  
**See students' observations.**

### Interactive Presentation

On Slide 1, students use Flashcards to learn about the steps for modeling a real-world problem with a one-step equation.

Lesson 6-4 • Write and Solve One-Step Equations 285

Course 2 Teacher Edition, pg. 285: The **Differentiate** feature includes a **Beyond-Level (BL) Enrichment Activity**.

The **Extension** activities can be assigned to students who finish early or who need an extra challenge. These activities can be assigned to individual students, pairs of students, or a small group.

1. CONCEPTUAL UNDERSTANDING

2. FLUENCY

3. APPLICATION

Example 1 Find Unit Rates

Objective

Students will find a unit rate in which one of the given quantities is a fraction.

Teaching the Mathematical Practices

2 Reason Abstractly and Quantitatively As students discuss the *Talk About It!* question, encourage them to use reasoning to determine that Tia can paint more than 36 square feet per hour, because she can paint 36 square feet in less than an hour.

7 Look For and Make Use of Structure In Method 4, encourage students to understand that the structure of a complex fraction means that the numerator, the denominator, or both must be fractions.

Questions for Mathematical Discourse

SLIDE 2

**AL** Which number represents the number of square feet painted? the time, in hours?  $36; \frac{3}{4}$

**OL** How does the bar diagram represent the ratio? The bar diagram uses two bars to represent the two quantities 36 square feet and  $\frac{3}{4}$  hour. The bars are the same length, with the same number of sections, to show that the two quantities are in a ratio.

**BL** What would the ratio  $\frac{3}{36}$  represent as a unit rate? the time, in hours, to paint one square foot

SLIDE 3

**AL** Where on the double number line is the ratio  $36 : \frac{3}{4}$  represented?

Both number lines begin at 0. The quantities 36 and  $\frac{3}{4}$  are located the same distance from their respective 0s.

**OL** How does this double number line compare to the double bar diagram from Method 1? Both models show the ratio  $36 : \frac{3}{4}$  by showing the quantities 36 and  $\frac{3}{4}$  as the same location on each bar diagram.

**BL** How many square feet can Tia paint in three hours?

144 square feet

Example 1 Find Unit Rates

Tia is painting one side of her shed. She paints 36 square feet in  $\frac{3}{4}$  of an hour.

At this rate, how many square feet can she paint each hour?

You know that  $\frac{3}{4}$  of an hour is  $\frac{3}{4}$  of an hour. So, Tia's rate is 36 square feet per  $\frac{3}{4}$  hour. You need to find the unit rate, the number of square feet she can paint per 1 hour.

Method 1 Use a bar diagram.

Draw two bars to model the ratio  $36 : \frac{3}{4}$ . Divide each bar into four sections, because  $\frac{3}{4}$  is a multiple of  $\frac{1}{4}$ , and there are 4 sections of  $\frac{1}{4}$  hour in 1 hour.

To find the unit rate, first find the value of each section in the bar representing square feet. Because three sections have a value of 36 square feet, each section has a value of  $36 \div 3 = 12$  square feet. Because  $4(12) = 48$ , the unit rate is 48 square feet per hour.

Method 2 Use a double number line.

The top number line represents the number of hours. The bottom number line represents the number of square feet. Mark and label the ratio  $36 : \frac{3}{4}$ .

Mark and label four equal increments of  $\frac{1}{4}$  on the top number line. Mark the same number of equal increments on the bottom number line.

Each increment on the bottom number line represents 12 square feet. Because  $4(12) = 48$ , the unit rate is 48 square feet per hour.

Think About It!

Why is the unit rate equal to  $\frac{4}{3}$  of an hour?

Sample answer: 48 minutes is a multiple of 15 minutes. 48 minutes is equal to three 15-minute periods. There are four 15-minute periods in this hour.

Talk About It!

Use mathematical reasoning to explain why the unit rate is 48 square feet per hour.

Sample answer: Because Tia can paint 36 square feet in less than one hour, she will be able to paint more than 36 square feet in one full hour.

Interactive Presentation

Method 1 Use a bar diagram.

Draw two bars to model the ratio  $36 : \frac{3}{4}$ . Divide each bar into four sections, because  $\frac{3}{4}$  is a multiple of  $\frac{1}{4}$ , and there are 4 sections of  $\frac{1}{4}$  hour in 1 hour.

To find the unit rate, first find the value of each section in the bar representing square feet. Because three sections have a value of 36 square feet, each section has a value of  $36 \div 3 = 12$  square feet. Because  $4(12) = 48$ , the unit rate is 48 square feet per hour.

Example 1 Find Unit Rates, Slide 2 of 5

DRAG & DROP

On Slide 2, students drag the quantities to label the bar diagram.

CLICK

On Slide 3, students move through the steps to see how a double number line can be used to solve the problem.

CHECK

Students complete the Check exercise online to determine if they are ready to move on.

Lesson 1-1 • Unit Rates Involving Ratios of Fractions 5

Course 2 Teacher Edition, pg. 5

A core instructional belief of McGraw Hill's *Reveal Math* K-12 is that the learning of mathematics requires a focus on language and the language of mathematics. To support students' development of the language of mathematics, the program includes rich support for language development, for both native and non-native speakers of English.

Each lesson features a language objective in addition to a content and SEL (social and emotional learning) objective to highlight the importance of language development in the program. In addition, these features provide support and scaffolds for building students' mathematical language proficiency:

- **Language of Math (LOM)** strategies and features focus on mathematical and academic terms that students need to understand to be successful.
- **Math Language Development** support at the unit level offer support and strategies that teachers can use to help students build proficiency with language skills.
- **Math Language Routines (MLR)** found in each lesson are specifically designed to help English language learners build fluency with math language. These routines were developed by a team of educators and researchers at Stanford Graduate School of Education.
- **English Language Learner Supports** also found in each lesson provide scaffolded support at three levels of proficiency: Entering/Emerging, Developing/Expanding, and Bridging/Reaching. These three levels align to the WIDA levels: Entering, Beginning, Developing, Expanding, Bridging, and Reaching.

The Teacher Edition also has specific pedagogical suggestions for teachers based on the WIDA levels. These are included both at the Unit/Module and Lesson Levels.

There are robust Spanish resources for *Reveal Math*. There is a Spanish translation of the Student Edition and other resources. The Student Edition includes support for all students in vocabulary development, notetaking, and writing skills using word cards, vocabulary squares, three-column charts, definition maps, concept webs, and other graphic organizers, along with English/Spanish cognates in Dinah Zike's Visual Kinesthetic Vocabulary®.

As mentioned above, a course-level digital and print **Glossary** is provided with words translated into English and Spanish. For grades 6-12, a digital **Multilingual eGlossary** is provided that contains mathematics terms translated into 13 languages. Also, online are Math Replay Videos that provide additional support and review opportunities for concepts presented in the text.