## **Focus and Coherence from**

## **Instructional Design**

A single authorship team from Kindergarten through Algebra 2 results in a logical progression of focused topics with meaningful coherence from course to course.

The Learning Target and Success Criteria for each lesson focus the learning into manageable chunks, using clear teaching text and Key Ideas within the Student Edition.

### **FOCUS**

A focused program dedicates lessons, activities, and assessments to grade-level standards while simultaneously supporting and engaging students in the major work of the course.

Learning Target: Compare fractions that have the same denominator.

#### **Success Criteria:**

- · I can model fractions that have the same denominator.
- · I can use the numerators to compare fractions.
- · I can explain how to compare fractions that have the same denominator.

### Laurie's Notes

### **Preparing to Teach**

In the previous lesson, students learned how to use an Inch Ruler to measure lengths to the nearest inch. In this lesson, they add foot and yard to their length measurement units. Students will measure objects to the nearest foot and nearest yard. They will also choose among an inch ruler, yardstick, and measuring tape as the instrument for measuring a specific object.



### Think and Grow: Find Factor Pairs

You can write whole numbers as products of two factors. The two factors are called a factor pair for the number.

Find the side lengths of as many different rectangles

**Example** Find the factor pairs for 20.

with an area of 20 square units as possible.

The side lengths of each rectangle are a factor pair.

So, the factor pairs for 20 are \_\_\_\_ and \_\_ \_ and \_\_\_

factor pair factor factor

2 and 4 are a factor pair for 8.

 $A4 \times 5$  rectangle has the same area as a  $5 \times 4$ rectangle. Both give the factor pair 4 and 5.



Laurie's Notes prepare you for the math concepts in each chapter and lesson and make connections to the threads of major topics for the course.

# a Single Authorship Team

### **COHERENCE**

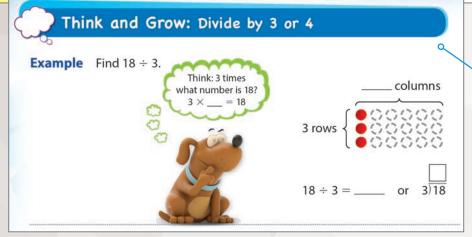
See pages xxx and xxxi for the

A single authorship team built a coherent program that has intentional progression of content within each grade and between grade levels. Your students will build new understanding on foundations from prior grades and connect concepts throughout the course.

The authors developed content that progresses from prior chapters and grades to future ones. In addition to charts like this one, Laurie's Notes provide point of use insights about where your students have come from and where they are going in their learning progression.

	Through the Grades					
	Grade 4	Grade 5	Grade 6			
	<ul> <li>Create a number or shape pattern that follows a given rule.</li> <li>Describe attributes of a pattern that are not part of the rule.</li> </ul>	<ul> <li>Describe a coordinate system using appropriate vocabulary.</li> <li>Graph points in a coordinate plane to represent real-world problems.</li> <li>Explain the value of points in a coordinate plane in relation to a real-world problem.</li> <li>Analyze patterns based on relationships and operations.</li> </ul>	<ul> <li>Graph ordered pairs in all four quadrants of the coordinate plane.</li> <li>Draw polygons in the coordinate plane.</li> <li>Graph ordered pairs in all four quadrants of the coordinate plane.</li> </ul>			
One author team though wrote each course, creaseamless progression of from Kindergarten to A	iting a f content	<ul> <li>Create numeric patterns using given rules.</li> <li>Graph ordered pairs in a coordinate plane.</li> </ul>	<ul> <li>Understand ratios and describe ratio relationships.</li> </ul>			

K–8 Progressions chart.			Grade 3	Grade 4	Grade 5	Grade 6	
				Operations and Algebraic Thinking		Expressions and Equations	
together and adding to, and understand subtraction as tak-	Solve problems involving addition and subtraction within 20. Apply properties of operations. Work with addition and subtraction equations. Chapters 1–5, 10, 11	Solve problems involving addition and subtraction within 20. Work with equal groups of objects. Chapters 1–6, 15	Solve problems involving multiplication and division within 100. Apply properties of multiplication. Solve problems involving the four operations, and identity and explain patterns in arithmetic. Chapters 1–5, 8, 9, and 14	Use the four operations with whole numbers to solve problems. Understand factors and multiples. Generate and analyze patterns. Chapters 2–6, 12	Write and interpret numerical expressions. Analyze patterns and relationships. Chapters 2, 72	Perform arithmetic with algebraic expressions. Chapter 5 Solve one-wariable equations and inequalities. Chapters 6, 8 Analyze relationships between dependent and independent variables. Chapter 6	Write Chap Use n expre inequ Chap
	together and adding to, and understand subtraction as tak- ing apart and taking from.	together and adding to, and understand subtraction as understand subtraction as understand subtraction as understand subtraction.  Chapters 5-7  Work with addition and subtraction and subtraction equations.	together and adding to, and understand subtraction at within 20. within 20. within 20. within 20. work with 20. within 20. work with 20. work	together and adding to, and understand subtraction within 20.  Chapters 5-7  Chapters 5-7  Chapters 1-5, 10, 11  addition and subtraction within 20.  Work with 20.  Work with qual groups of objects.  Objects.  Chapters 1-6, 15  Chapters 1-6, 15	Understand addition as putting together and adding to, and understand subtraction within 20.  Apply properties of operations. Work with addition and subtractions. Chapters 1–5, 10, 11  Solve problems involving addition and subtraction within 20.  Work with equal groups of operations. Work with addition and subtraction equations. Chapters 1–5, 10, 11  Solve problems involving multiplication and division within 100.  Apply properties of operations. Work with equal groups of operations. Chapters 1–6, 15  Chapters 1–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of operations. Understand factors and multiplication. Solve problems involving addition and subtraction within 20.  Work with equal groups of operations. Chapters 1–6, 15  Chapters 1–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of multiplication and division within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving addition and subtraction within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving addition and subtraction within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving addition and subtraction within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving addition and subtraction within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving multiplication and division within 100.  Solve problems involving addition and subtraction and division within 100.  Solve problems i	Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.  Chapters 5-7  Chapters 1-5, 10, 11  Solve problems involving addition and subtraction within 20. Work with equal groups of objects.  Chapters 1-6, 15  Solve problems involving multiplication and division within 20. Apply properties of multiplication. Solve problems involving multiplication and division within 20. Apply properties of multiplication. Solve problems involving the four operations, and identify addition and subtraction within 20. Apply properties of multiplication. Solve problems involving multiplication. Solve problems involving multiplication. Apply properties of multiplication. Solve problems involving the four operations with whole numbers to solve problems. Understand factors and relationships. Chapters 2, 12  Chapters 2-6, 12	Understand addition as putting together and adding to, and understand subtraction within 20.  Apply properties of operations. Chapters 1–5, 10, 11  Solve problems involving addition and subtraction within 20.  Apply properties of objects. Chapters 5–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of objects. Chapters 5–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of objects. Chapters 1–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of multiplication. Solve problems involving the four operations with whole numbers to solve problems. Understand factors and multiples. Chapters 2, 12  Chapters 2–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of objects. Chapters 2–6, 15  Solve problems involving multiplication and division within 100.  Apply properties of multiplication and division within 100.  Apply properties of four operations with whole numbers to solve problems involving addition and subtraction addition and subtraction within 100.  Apply properties of multiplication and division within 100.  Apply properties of four operations with whole numbers to solve problems. Understand factors and multiples.  Chapters 2–6, 12  Apply properties of four operations with whole numbers to solve problems. Understand factors and multiples.  Chapters 2–6, 12  Analyze patterns and relationships.  Chapters 2–6, 12  Analyze relationships between dependent and independent variables.  Chapters 2–6, 12



Throughout each course, lessons build on prior learning as new concepts are introduced. Here Newton reminds students of a multiplication fact that they already know.

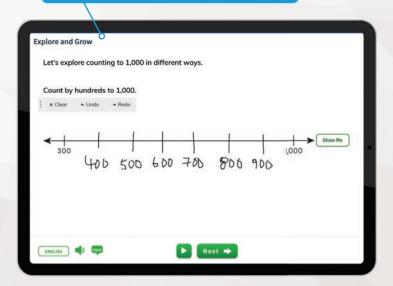
# Rigor in Math: A Balanced Approach

## **Instructional Design**

The authors wrote each chapter and every lesson to provide a meaningful balance of rigorous instruction.

### **Conceptual Understanding**

Students have the opportunity to develop foundational concepts central to the *Learning Target* in each *Explore and Grow* by experimenting with new concepts, talking with peers, and asking questions.



### **RIGOR**

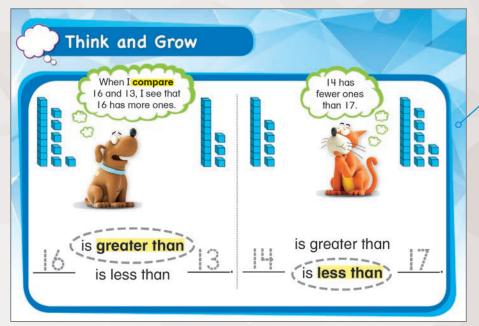
A rigorous program provides a balance of three important building blocks.

- Conceptual Understanding Discovering why
- Procedural Fluency Learning how
- Application
   Knowing when to apply

### **Conceptual Thinking**

Ask students to think deeply with conceptual questions.

14. Number Sense A sum has 5 addends. Each addend is a unit fraction. The sum is 1. What are the addends?



### **Procedural Fluency**

Solidify learning with clear, stepped-out teaching in *Key Ideas* and *Think and Grow* examples.

Then shift conceptual understanding into procedural fluency with Show and Grow, Apply and Grow, Homework & Practice, and Review & Refresh.



Students begin every chapter thinking about the world around them. Students apply what they learn in the chapter with a related *Performance Task*.



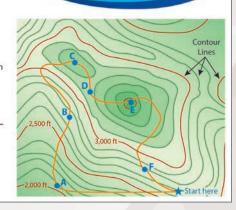
- What kinds of numbers would you find on a map?
- Why is place value important when you read a map?

Chapter Learning Target:
Understand place value.
Chapter Success Criteria:
I can define the value of a number.
I can explain how to use symbols to compare two numbers.
I can compare the value of two identical digits in a number.

Performance Task

You hike from Point A through Point F along the orange path shown on the map.

- 1. What is the distance in elevation between each contour line?
- As you walk from A to C, are you walking uphill or downhill? Explain.





Modeling Real Life, Dig Deeper, and other non-routine problems help students apply surface-level skills to gain a deeper understanding. These problems lead students to independent problem-solving.

Modeling Real Life You download 2 music videos, a TV series, and a movie for \$42.95 total. The TV series costs 2 times as much as the movie. How much does each music video cost?



**6. DIG DEEPER!** Which item costs more per ounce? How much more?



### THE PROBLEM-SOLVING PLAN

1. Understand the Problem

Think about what the problem is asking, what information you know, and how you might begin to solve.

2. Make a Plan

Plan your solution pathway before jumping in to solve. Identify any relationships and decide on a problem-solving strategy.

3. Solve and Check

As you solve the problem, be sure to evaluate your progress and check your answers. Throughout the problem-solving process, you must continually ask, "Does this make sense?" and be willing to change course if necessary.

### **Problem-Solving Plan**

Walk students through the Problem-Solving Plan, featured in many *Think and Grow* examples, to help students make sense of problems with confidence.