Mc Graw Hill

Indiana Reviewer's Guide
Grades K–5

Indiana Reveal MATH®

Reveal the Full Potential in Every Student

Reveal the Mathematician in Every Student

Indiana Reveal Math®, a balanced elementary math program, develops the problem solvers of tomorrow by incorporating both inquiry-focused and teacher-guided instructional strategies within each lesson. In order to uncover the full potential in every student, *Indiana Reveal Math*:

Champions a positive classroom environment centered on curiosity, connection, and social-emotional development.

Explores mathematics through a flexible lesson design providing access to rigorous instruction with embedded teacher supports and sca olds.

Tailors classroom activities to student needs through insightful assessment and purposeful, multi-modal di erentiation.

Indiana Reveal Math Authorship

McGraw Hill's Learning Scientists teamed up with expert authors to create a program guided by validated academic research and classroom best practices.

Ralph Connelly, Ph.D.

- Professor and Professor Emeritus-Faculty of Education-Brock University, 1977–present
- NCTM Mathematics Education Trust Board, 2016–present
- NCSM Board of Directors, 1994–1996, and 2006–2008
- President, Ontario Association for Mathematics Education (OAME), 1987–1988, 1998–1999

Authority on the development of early mathematical understanding.

Annie Fetter

- **Contributing Author of *Indiana Reveal Math*'s Sense-Making Routines**
- Math Education Specialist at the 21st Century Partnership for STEM Education, present
- Founding Member, The Math Forum, 1992–2017
- Workshop Leader and Developer for Key Curriculum Press, 1995–2013
- Administrative Assistant for the Visual Geometry Project, the NSF-funded project that developed the first version of the Geometer's Sketchpad software, 1988–1992

Advocate for students' ideas and student thinking that fosters strong problem solvers.

Linda Gojak, M.Ed.

- **Contributing Author of *Indiana Reveal Math*'s Math is... Unit**
- Director, Center for Mathematics and Science Education, Teaching, and Technology at John Carroll University (OH), 1999–2016
- President, National Council of Teachers of Mathematics (NCTM), 2012–2014
- President, National Council of Supervisors of Mathematics (NCSM), 2005–2007
- NCTM Board of Directors, 1996–1999
- Elementary Mathematics Specialist, Hawken School, Cleveland, Ohio, 1978–1999

Expert in both theory and practice of strong mathematics instruction.

Sharon Griffin, Ph .

- Professor Emerita of Education and Psychology at Clark University, Worcester, MA.
- Author of *Number Worlds*: A PreK–8 prevention-intervention mathematics curriculum
- Principal Investigator on research grants to enhance mathematics learning and development for low-income students (1989-2011).
- Member of the Education Directorate of the Organization of Economic Collaboration and Development (2002-2007) and Advisory Board for Mind, Brain and Education Journal, Basil Blackwell (2006-2012).
- Content advisor to WGBH and PBS for several children's TV series designed to promote math learning (2004-2010).

Champion for number sense and the achievement of all students.

Susie Katt, Ph.D.

- K–2 Mathematics Coordinator, Lincoln Public Schools, Lincoln, Nebraska
- Special appointment lecturer, University of Nebraska–Lincoln
- Robert Noyce National Science Foundation Master Teaching Fellowship, University of Nebraska– Lincoln, 2012–2016
- R. L. Fredstrom Leadership Award, Lincoln Public Schools, 2008

Advocate for the unique needs of our youngest mathematicians.

Ruth Harbin Miles, Ed.S.

- Math Coach to rural, suburban, and inner-city school mathematics teachers
- Mary Baldwin University Adjunct Instructor, Staunton, Virginia, 2006–2018
- K–12 Mathematics Coordinator, Olathe District Schools, Olathe, Kansas, 1980–2006
- NCTM Board of Directors, 2013–2016
- NCSM Board of Directors, 2005–2008, Conference Chair, 2018–2020

Leader in developing teachers' math content and strategy knowledge.

Nicki Newton, Ed.D.

- **Contributing Author of *Indiana Reveal Math*'s Game Station.**
- Educational consultant and speaker in districts across the US and Canada
- Former bilingual elementary and middle school teacher
- Graduate instructor, Columbia, CUNY, MCNY, Mercy College, Cambridge College
- Founder and Developer of Math Online PD Academy

Expert in bringing student-focused strategies and workshops into the classroom.

John SanGiovanni, M.Ed.

- **Contributing Author of *Indiana Reveal Math*'s Number Routines and Math is... Unit**
- Coordinator of Elementary Mathematics, Howard County, Maryland
- President, Maryland Council of Supervisor of Mathematics
- Graduate Program Coordinator, Elementary Mathematics Instructional Leader program, McDaniel College (MD)
- NCTM Board of Directors, 2015–2018

Leader in understanding the mathematics needs of students and teachers.

Raj Shah, Ph.D.

- **Contributing Author of *Indiana Reveal Math*'s Ignite! activities.**
- Founder, Math Plus Academy, an after-school STEM enrichment program for students ages 5–14
- Founding member, The Global Math Project
- Affilia , Math Teacher Circles, the Julia Robinson Math Festival
- R&D Engineering and Management, Intel Corporation, 1999–2008

Champion of perseverant problem-solvers and student curiosity in mathematics.

Jeff Shih, Ph. .

- Instructor and Professor, University of Nevada, Las Vegas Mathematics Education, 1999–present
- Co-Director, Center for Mathematics, Science and Engineering Education, 2013–present
- NCTM Board of Directors, 2018–present
- Recipient, University of Nevada, Distinguished Teaching, Service, Math Education Awards, 2005, 2006, 2010, 2013, 2014, and 2016

Advocate for student understanding of mathematical ideas and processes.

Cheryl Tobey, M.Ed.

- **Contributing Author of *Indiana Reveal Math*'s Math Probes.**
- Mathematics Program Director, Mathematics and Science Alliance, Augusta, Maine 2001–2008, 2019–present
- State Elementary Mathematics Specialist, Department of Education, Augusta, Maine 2016–2019
- Professional Development Specialist, Education Development Center, Waltham, MA, 2008–2016
- Co-Principal Investigator and Projector Director on NSF, IES and State MSP grants 2001–2016
- Classroom educator, 10 years, 1991–2001

Facilitator of strategies that drive informed instructional decisions.

Dinah Zike, M.Ed.

- Founder of Dinah Zike Academy, an accredited professional development center for K–12 teachers
- Inventor of Foldables® and other multi-sensory graphic organizers
- Educational Publisher, Dinah.com and Dinah-Might Activities, L.P.
- Cross-curricular author for McGraw-Hill K–12

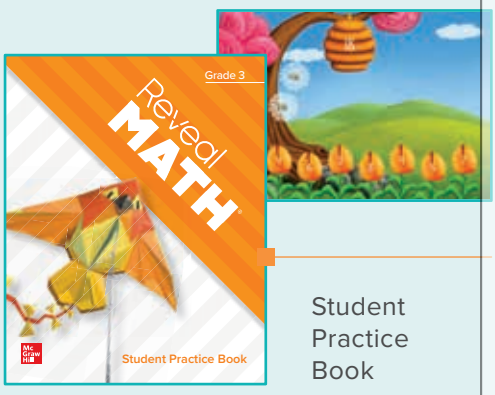
Creator of learning tools that make connections through visual-kinesthetic techniques.

Program Resources

Student Resources

Print Resources	Digital Resources
Two-Volume Student Edition Available in print and interactive formats, the Student Editions are consumable and perforated for ease of use. Helpful Math Is... prompts remind students of how to actively apply the mathematical practices.	■ Interactive Student Edition ■ Math Replay Videos ■ eToolkit ■ eGlossary ■ STEM Career Kid Video Library ■ Math In Action Video Library
Student Practice Book The Student Practice Book provides two additional pages of practice for each lesson.	■ Interactive Digital Practice ■ Interactive Spiral Review ■ Digital Game Library

Two-Volume Student Edition



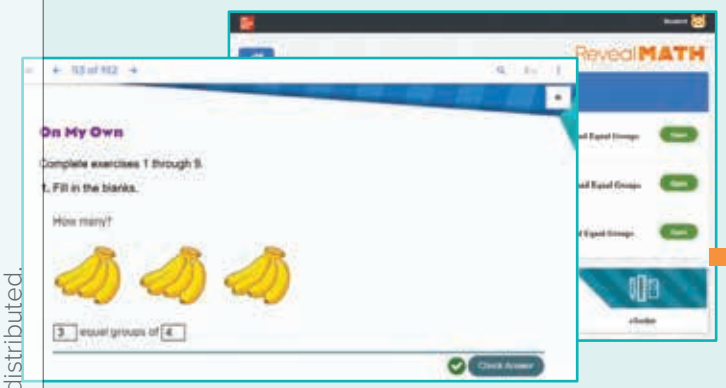
Student Practice Book

Student Spanish Resources

Print Resources	Digital Resources
Student Edition **Student Practice Book**	■ Student eBook ■ Math Replay Videos ■ eGlossary ■ Family Letter

Teacher Spanish Resources

Print Resources	Digital Resources
Assessment Resource Book **Application Station Cards** **Game Station Resource Book**	■ Differentiation esource Book ■ Assessment Resource Book ■ Application Station Cards ■ Game Station Resource Book ■ Autoscored Online Assessments



Student eBook and Dashboard

Teacher Resources

Print Resources	Digital Resources
Implementation Guide The Implementation Guide supports implementation with a user guide, professional development resources, and overarching program information, such as lesson components, correlations, and more.	■ Program Quick Start Course ■ Expert Insight Videos ■ Classroom Videos ■ Workshop Modules
Two-Volume Teacher Edition Available in print and eBook formats, the Teacher Editions provide comprehensive supports, such as the effective teachin practices embedded within the instruction.	■ Teacher Edition eBook ■ Lesson Presentations ■ Plan and Classroom Management Tools ■ Family Letters

Assessment Resource Book
The Assessment Resource Book contains the masters for the following assessments:
■ Course Diagnostic
■ Unit Readiness Diagnostics
■ Lesson Checks
■ Unit Assessments
■ Benchmark Assessments
■ Performance Tasks
■ Summative Assessment
	■ Assessment Blackline Masters
	■ Autoscored Online Assessment
	  ■ Course Diagnostic
	  ■ Unit Readiness Diagnostics
	  ■ Exit Tickets
	  ■ Unit Assessments
	  ■ Benchmark Assessments
	  ■ Summative Assessment
	■ Targeted Intervention
	  ■ Guided Support
	  ■ Skills Support Sheets

Print Resources

Di erentiation Resource Book

The Di erentiation Resource Book provides access to the Reinforce Understanding and Extend Thinking worksheets.

Workstation Kit

The Workstation Kit supports daily di erentiation and includes:

- Game Station Resource Book
- Workstation Teacher Guide
- Application Station Cards
- Manipulatives

Digital Resources

- Digital Games
- STEM Adventures
- WebSketch Explorations
- Take Another Look Lessons
- Interactive Digital Practice
- Interactive Spiral Review
- Student Practice Book PDFs
- Spiral Review PDFs
- Reteach and Extend PDFs
- Application Station Card PDFs
- Games Station PDFs

Manipulative Kits

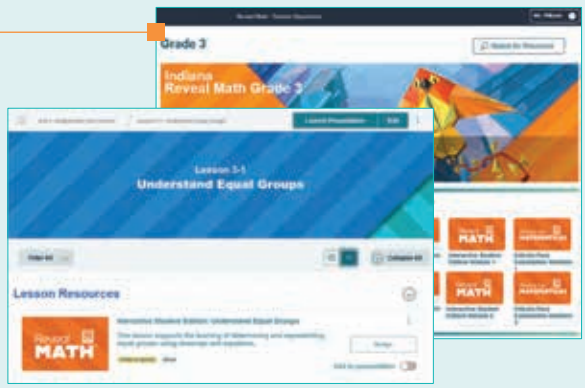
Manipulative Kits are available and contain the manipulatives mentioned in the lesson materials.

eToolkit

Includes Counters, Base-Ten Blocks, Array Builder, Fraction Model, Bucket Balance, Geometry Sketch, Money, Fact Triangles, Number Line, and more!

Two-Volume
Teacher Edition

Teacher
Dashboard and
Resources



Program Resources

NOTES:

Lesson Walkthrough

Table of Contents

Math Is... Unit

Define Classroom Norms for the Year

The first unit in every grade is the Math Is... Unit which aims to help students and teachers begin to understand math as a set of problem-solving strategies instead of an end result. The unit helps define a productive and positive classroom environment where all students can:

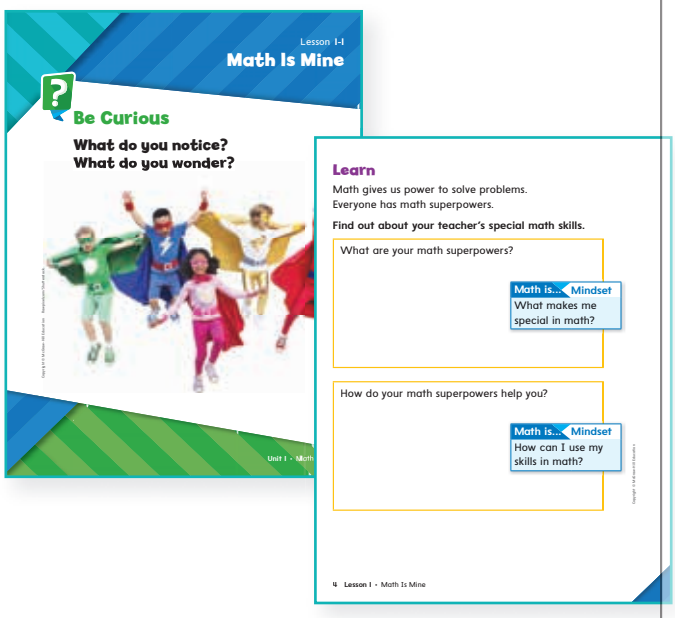
- Share ideas and collaborate freely.
- Find success in math and become doers of mathematics.
- Apply mathematical thinking and practices to problem-solving.
- Take ownership of their personal learning journey.
- Become the creative problem solvers of tomorrow.

Support Ownership of Learning

Lesson 1:
Math Is... Mine

The first lesson aims to help all students see themselves as doers of mathematics, develop a growth mindset, and take ownership of their learning within the math classroom. Students:

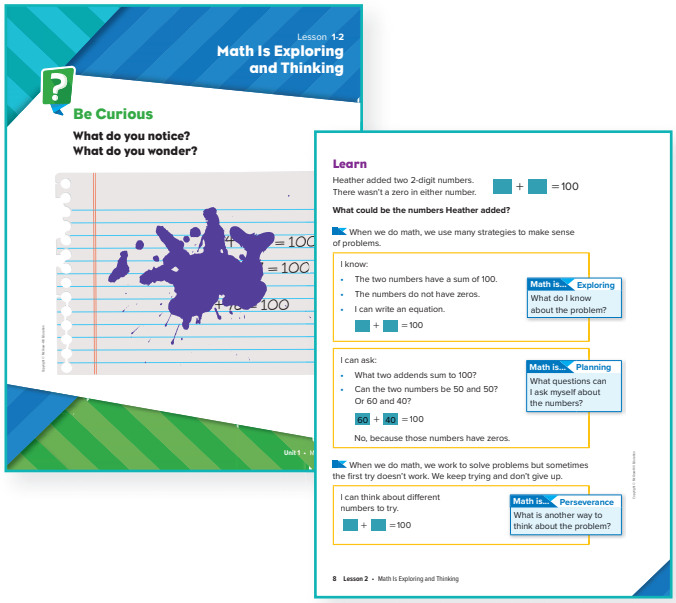
- Learn about the teacher's personal math story.
- Describe their math superpowers.
- Craft their personal math story.



Lessons 2–5:
Math Is… a Way of Thinking

The second through fifth lessons focus on thinking habits within the classroom. Each lesson seeks to unpack the thinking habits that are integral to problem-solving. Students:

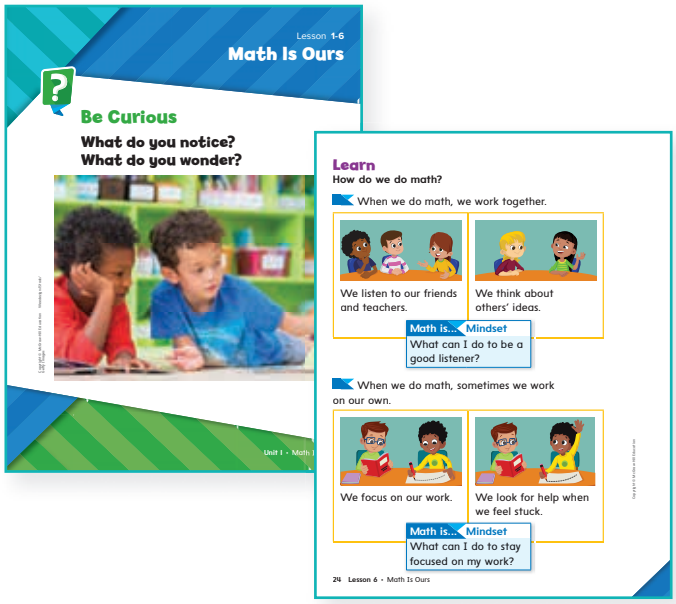
- Become mathematical thinkers.
- Apply the math practices in problem-solving.
- Communicate e£ectively about math.



Lessons 6:
Math Is… Ours

The sixth lesson recalls the objective of the previous lessons as students discuss what a positive and productive classroom environment looks like. Together, the class defines the classroom norms and expectations for the year. Students:

- Demonstrate a voice and choice in their classroom environment.
- Understand what skills and mindsets are expected within the math classroom.



Math Is… Prompts

Math Is…prompts are embedded throughout the Student Edition to remind students of classroom expectations throughout the year. These prompts help students to truly own their learning journey throughout the year.

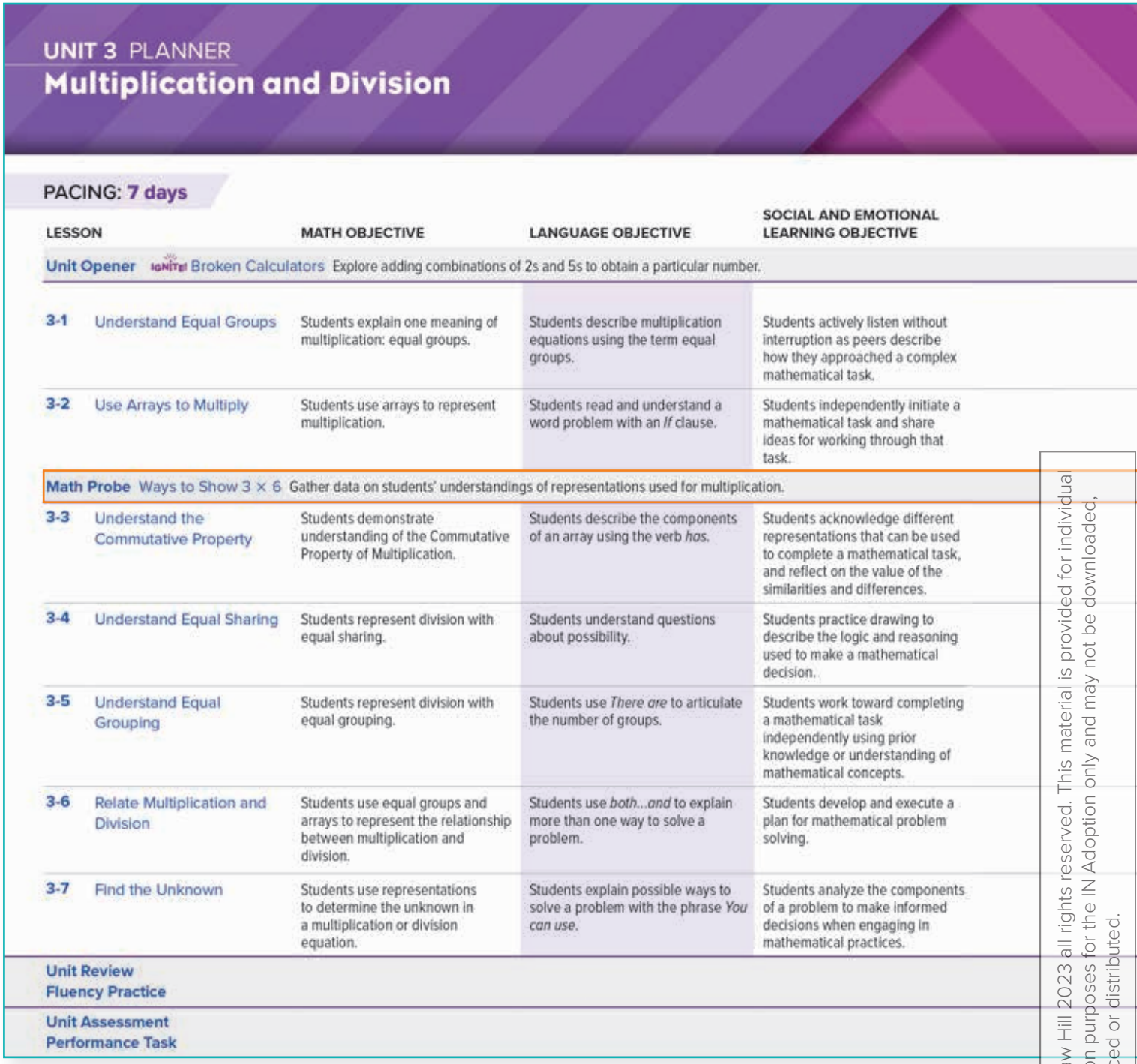
Math is… Mindset

What can you do to work together with your classmates?

The Unit Planner

Each Unit Planner provides at a glance information to the help teachers prep the unit, such as:

- Pacing
- Materials
- Objectives
- Standards and Rigor
- Vocabulary



UNIT 3 PLANNER

Multiplication and Division

PACING: 7 days

LESSON		MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE
Unit Opener	IGNITE! Broken Calculators	Explore adding combinations of 2s and 5s to obtain a particular number.		
3-1	Understand Equal Groups	Students explain one meaning of multiplication: equal groups.	Students describe multiplication equations using the term equal groups.	Students actively listen without interruption as peers describe how they approached a complex mathematical task.
3-2	Use Arrays to Multiply	Students use arrays to represent multiplication.	Students read and understand a word problem with an *If* clause.	Students independently initiate a mathematical task and share ideas for working through that task.
Math Probe	Ways to Show 3 × 6	Gather data on students' understandings of representations used for multiplication.		
3-3	Understand the Commutative Property	Students demonstrate understanding of the Commutative Property of Multiplication.	Students describe the components of an array using the verb *has*.	Students acknowledge different representations that can be used to complete a mathematical task, and reflect on the value of the similarities and differences.
3-4	Understand Equal Sharing	Students represent division with equal sharing.	Students understand questions about possibility.	Students practice drawing to describe the logic and reasoning used to make a mathematical decision.
3-5	Understand Equal Grouping	Students represent division with equal grouping.	Students use *There are* to articulate the number of groups.	Students work toward completing a mathematical task independently using prior knowledge or understanding of mathematical concepts.
3-6	Relate Multiplication and Division	Students use equal groups and arrays to represent the relationship between multiplication and division.	Students use *both...and* to explain more than one way to solve a problem.	Students develop and execute a plan for mathematical problem solving.
3-7	Find the Unknown	Students use representations to determine the unknown in a multiplication or division equation.	Students explain possible ways to solve a problem with the phrase *You can use*.	Students analyze the components of a problem to make informed decisions when engaging in mathematical practices.
Unit Review				
Fluency Practice				
Unit Assessment				
Performance Task				

Highlighted words denote which key vocabulary words are introduced in the lesson.

A **Math Probe** within the unit helps teachers identify and correct misconceptions before they develop into significant gaps.

FOCUS QUESTION:
What does it mean to multiply and divide?

LESSON	KEY VOCABULARY		MATERIALS TO GATHER		RIGOR FOCUS	STANDARD
	Math Terms	Academic Terms				
3-1	equal groups multiplication	create determine	• blank number cubes • counters		Conceptual Understanding	3.AT.4
3-2	array factor product	information strategy	• blank number cubes • counters		Conceptual Understanding	3.AT.4
3-3	array factor product	conclude structure	• counters • geoboards	• rubber bands	Conceptual Understanding	3.AT.5
3-4	division	context contrast	• counters • cup	• dot cube	Conceptual Understanding	3.C.4
3-5	dividend divisor quotient	compare context	• counters • index cards		Conceptual Understanding	3.C.4
3-6	array division equal groups multiplication	characterize compare	• counters		Conceptual Understanding	3.AT.4 3.C.4
3-7	unknown	identify determine	• blank number cubes • counters	• index cards	Conceptual Understanding	3.AT.5

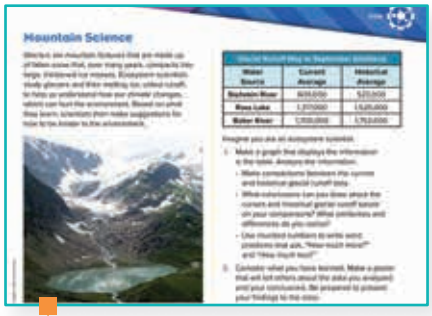
Start the Unit

STEM-Focused Units

Math is everywhere, and students should relate to math as something everyone does. STEM-Focused Units highlight careers and real-world application of math to help students see the application of math as a tool to explore the world around them.

The **STEM Career Kid video** introduces a STEM career and provides an overview of the job responsibilities.

The **Math in Action** videos apply the unit math content with the STEM career focus to bring the content to the real world.



STEM Project Cards allow students to dig deeper creatively and apply their skills to learn more about the STEM focus within the unit.

STEM Adventures allows students to extend their thinking during di erentiation time by applying skills to solve real-world problems through digital simulations.

Spark Student Curiosity Through Ignite! Activities

"Let's bring curiosity, wonder, and joy back into the classroom and make math irresistible for kids."

- Raj Shah, Contributing Author

Each unit opens with an Ignite! activity, an interesting problem or puzzle that:

- Sparks students' interest and curiosity.
- Provides only enough information to open up students' thinking.
- Motivates them to persevere through challenges involved in problem-solving.

Ignite! activities engage students in productive struggle as they provide only the information necessary to motivate and challenge the student.

IGNITE!

Name _____

Broken Calculators

Part A: Your calculator can only add 2s and 5s.

How can you make numbers less than 100 with this calculator?

Part B: Your calculator can only add 3s and 7s.

What whole numbers less than 12 *cannot* be made with this calculator?

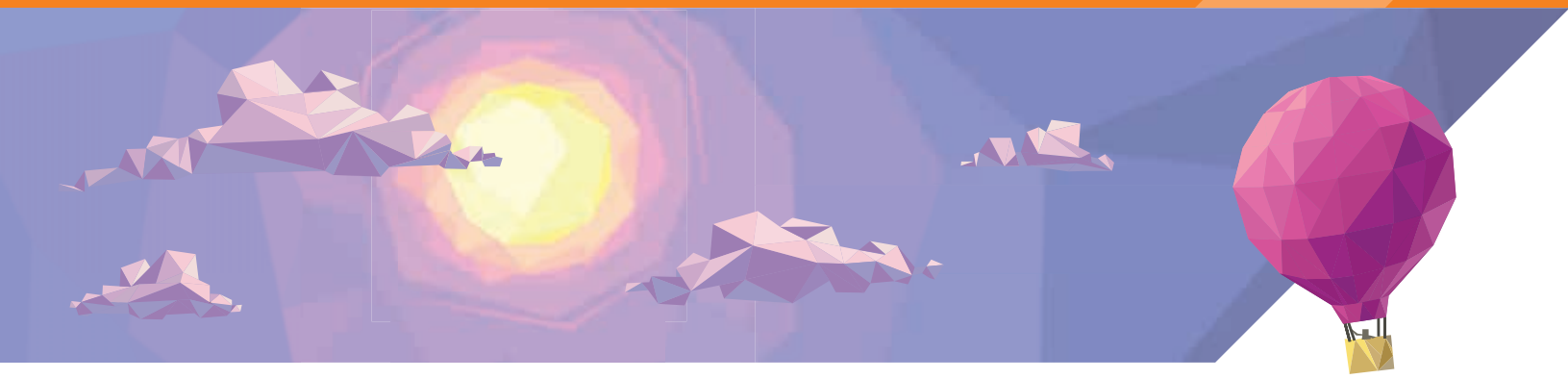
How can you make each of the whole numbers 12 through 16 with this calculator?

What is the quickest way to make 30 with this calculator? Explain.

Is there a number greater than 11 that *cannot* be made with this calculator? Explain.

90 **Ignite!** • Broken Calculators

Flexible Lesson Design



The Lesson Model

Indiana Reveal Math's lesson model keeps sense-making and exploration at the heart of learning. Every lesson provides two instructional strategies to develop the math content and tailor the lesson to the needs and structure of the classroom.

Launch

Be Curious starts every lesson with the opportunity to be curious about math.

- Students focus on exploration and sense-making.
- Teachers foster students' ideas through meaningful discussion.

Explore and Develop

Explore and Develop unpacks the lesson content through either an activity-based or guided exploration.

- Students explore the lesson concepts and engage in meaningful discourse.
- Teachers utilize e ective teaching practices to make meaningful connections.

Two ways to Teach Every Lesson!

Practice and Reflect

On My Own o ers students opportunities to engage with the math and re ect on their learning.

- Students practice lesson concepts, completing the On My Own exercise.
- Teachers monitor progress and have students re ect on the lesson's learning targets.

Routines

Instructional routines are embedded within every *Indiana Reveal Math* lesson to support a productive classroom.

Build Fluency

Number Routines
Support the development of flexibility with numbers and fluency with operations at the start of every lesson.

To learn more about Number Routines, see page 58.

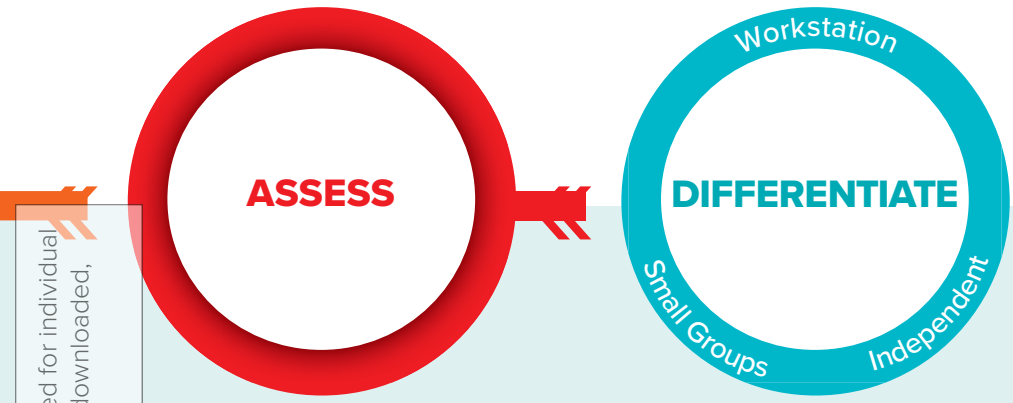
MLR

Math Language Routines
Promote mathematical language use and development as part of math instruction.

To learn more about Math Language Routines, see page 57.

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

To learn more about Sense-Making Routines, see page 55.



Assess

The **Exit Ticket** includes a daily formative assessment to check for understanding.

- Students complete a short exit ticket and reflect on their learning.
- Teachers use data to inform their daily di£erentiation.

Di*f* erentiate

Daily di*f* erentiation helps support every student in their path to understanding.

- Students work on di£erentiated tasks to reinforce their understanding, build their proficiency, and/or extend their thinking.
- Teachers pull small groups as needed.

Lesson Model: Launch

Comprehensive Objectives

Learning Targets
Every lesson has two learning targets: One based on a skill and one on a math practice.

Objectives
Lessons have three objectives to support the whole child, including:

- Social and emotional learning objective.
- Content objective.
- Language objective.

Rigor
Every lesson identi es the main rigor focus of each lesson based on the goals and expectations of the standards.

LESSON 3-1
Understand Equal Groups

Learning Targets
- I can represent multiplication using equal groups.
- I can explain the meaning of multiplication using equal groups.

Vocabulary
Math Terms: equal groups, multiplication
Academic Terms: create, determine

Standards • Major • Supporting • Additional

Content
◇ 3.AT.4 Interpret a multiplication equation as equal groups (e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each). Represent verbal statements of equal groups as multiplication equations.
△ 3.C.2 Represent the concept of multiplication of whole numbers with the following models: equal-sized groups, arrays, area models, and equal "jumps" on a number line. Understand the properties of 0 and 1 in multiplication.
△ 3.AT.2 Solve real-world problems involving whole number multiplication and division within 100 in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

Materials
The materials may be for any part of the lesson.
- blank number cubes
- counters
- yarn or string

Indiana Process Standards for Mathematics
PS Model with mathematics.
PS Attend to precision.

Focus

Content Objective	Language Objectives	SEL Objective
• Students explain one meaning of multiplication: equal groups.	• Students describe multiplication equations using the term *equal groups*. • To maximize linguistic and cognitive meta-awareness and optimize output, use MLR2: Collect and Display and MLR3: Critique, Correct, and Clarify.	• Students actively listen without interruption as peers describe how they approached a complex mathematical task.

Coherence

Previous	Now	Next
• Students used repeated addition to find the total number of objects in rectangular arrays (Grade 2).	• Students explain that multiplication represents the total number of objects in equal groups.	• Students use arrays to represent multiplication (Unit 3). • Students interpret multiplication as a comparison (Grade 4).

Rigor

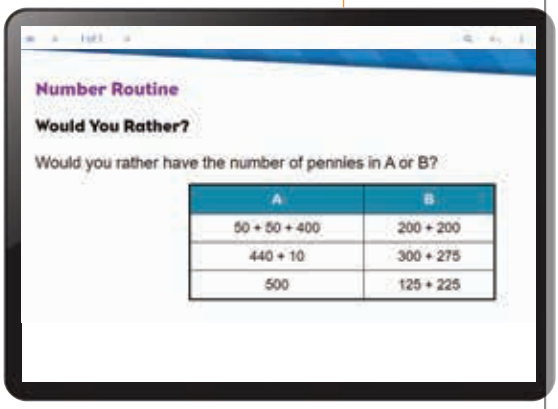
Conceptual Understanding	Procedural Skill & Fluency	Application
• Students develop understanding of one meaning of multiplication as the total number of objects in equal groups.	• Students begin to build a foundation for fluency with multiplication facts. *Procedural skill and fluency is not a targeted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

Number Routine
Would You Rather?
5–7 min
Build Fluency Students build skills with addition and estimation as they compare amounts.
These prompts encourage students to talk about their reasoning:
- What strategies did you use to find your answer?
- How can you use estimation to compare the number of pennies?

95A Unit 3 • Multiplication and Division

Daily Focus on Number Sense and Fluency

The Number Routine provides a daily focus on developing uency and e ciency of strategy. The Number Routine can be completed at any point in the day to build number sense.



Number Routine

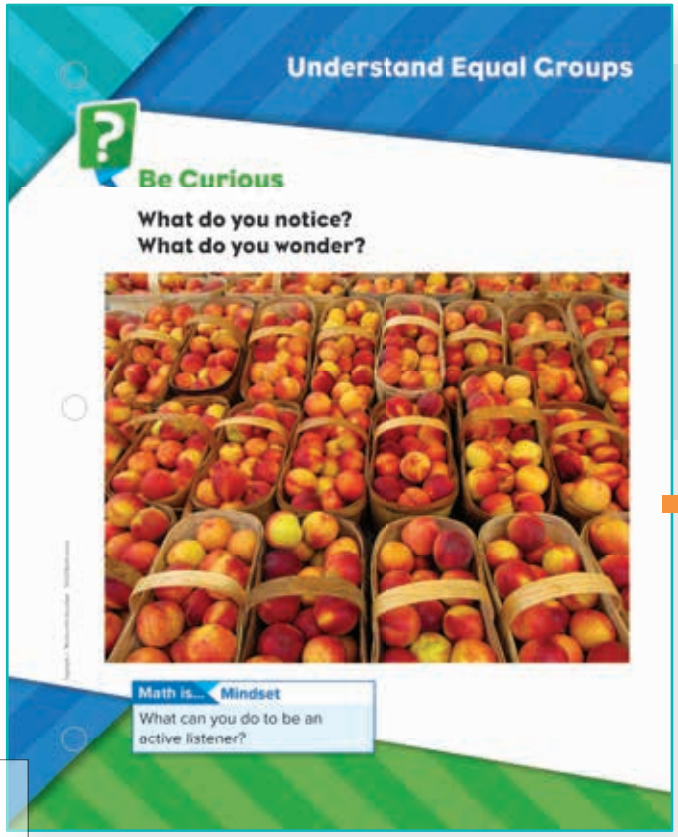
Would You Rather?

Would you rather have the number of pennies in A or B?

A	B
50 + 50 + 400	200 + 200
440 + 10	300 + 275
500	125 + 225

Derive Understanding by Sparking Curiosity

Sense-making routines launch every lesson, creating an equitable classroom culture where all ideas are welcome and respected. Student curiosity and ideas shared in **Be Curious** become the base for the day's lesson.



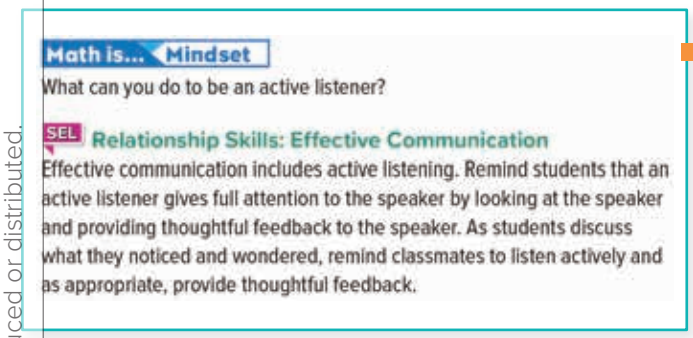
"All students have ideas about math that are valid and worth talking about."

-Annie Fetter
Contributing Author

"Be Curious" o ers a high-ceiling/low- oor that allows every student to explore and discuss their ideas with multiple entry points and approaches to problem-solving.

Support the Whole Child With Social and Emotional Learning Integration

Every lesson integrates a social and emotional learning objective along with the math and language objectives of the lesson, addressing the CASEL Social and Emotional Learning competencies throughout each grade level.



Math Is...Mindset prompts with teacher supports keep social and emotional learning at the top of students' minds as they interact and discuss throughout the lesson.

To see more about social and emotional learning, see page 52.

Lesson Model: Explore and Develop

Two Approaches to Develop Understanding

For the lesson's main instruction, the teacher can choose between two equivalent methods of instruction, which provide the same level of access to rigorous content. Integrated E£ective Teaching Practices guide instruction and discourse, keeping the student at the center of the learning.

Comprehensive Supports for the Language of Math

EL

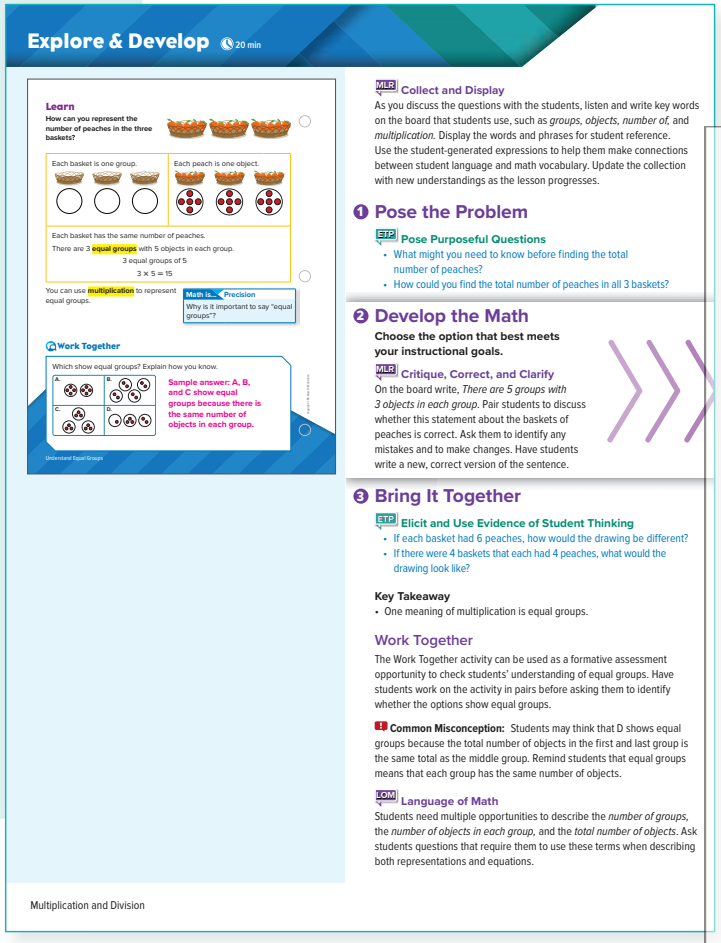
Built-in sca*f* olds that support English Learners as they interact with math language by speaking, listening, reading, and writing.

LOM

Language of Math supports how to talk about and think about math in context of the lesson content.

MLR

Math Language Routine promotes mathematical language use and development as part of math instruction.


Explore & Develop 20 min

Learn
How can you represent the number of peaches in the three baskets?

Each basket is one group. Each peach is one object.

Each basket has the same number of peaches.
There are 3 equal groups with 5 objects in each group.
3 equal groups of 5
3 × 5 = 15

You can use multiplication to represent equal groups.

Math is... Precision
Why is it important to say "equal groups"?

Work Together
Which show equal groups? Explain how you know.
Sample answer: A, B, and C show equal groups because there is the same number of objects in each group.

MLR Collect and Display
As you discuss the questions with the students, listen and write key words on the board that students use, such as *groups, objects, number of,* and *multiplication.* Display the words and phrases for student reference. Use the student-generated expressions to help them make connections between student language and math vocabulary. Update the collection with new understandings as the lesson progresses.

1 Pose the Problem

ETP Pose Purposeful Questions
- What might you need to know before finding the total number of peaches?
- How could you find the total number of peaches in all 3 baskets?

2 Develop the Math
Choose the option that best meets your instructional goals.

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

3 Bring It Together

ETP Elicit and Use Evidence of Student Thinking
- If each basket had 6 peaches, how would the drawing be different?
- If there were 4 baskets that each had 4 peaches, what would the drawing look like?

Key Takeaway
- One meaning of multiplication is equal groups.

Work Together
The Work Together activity can be used as a formative assessment opportunity to check students' understanding of equal groups. Have students work on the activity in pairs before asking them to identify whether the options show equal groups.

Common Misconception: Students may think that D shows equal groups because the total number of objects in the first and last group is the same total as the middle group. Remind students that equal groups means that each group has the same number of objects.

LOM Language of Math
Students need multiple opportunities to describe the *number of groups,* the *number of objects in each group,* and the *total number of objects.* Ask students questions that require them to use these terms when describing both representations and equations.

Multiplication and Division

To see learn about language supports, see page 56.

CHOOSE YOUR OPTION

Activity-Based Exploration

Students explore and use equal groups to find the total number of objects.

Materials: counters or other countable manipulatives, yarn or string

Directions: Students will explore ways to find the total number of peaches in 5 baskets.

- Let's imagine there are five baskets and the baskets have peaches in them. How can you determine the total number of peaches in the baskets?

Students will use yarn or string to represent the baskets and counters to represent the peaches. Students may choose to place the same number of counters in each group or a different number. Have them find the total number of peaches and record their work.

ETP Support Productive Struggle

- How many counters are in each group?

Guided Exploration

Students build a understanding of one meaning of multiplication as equal groups.

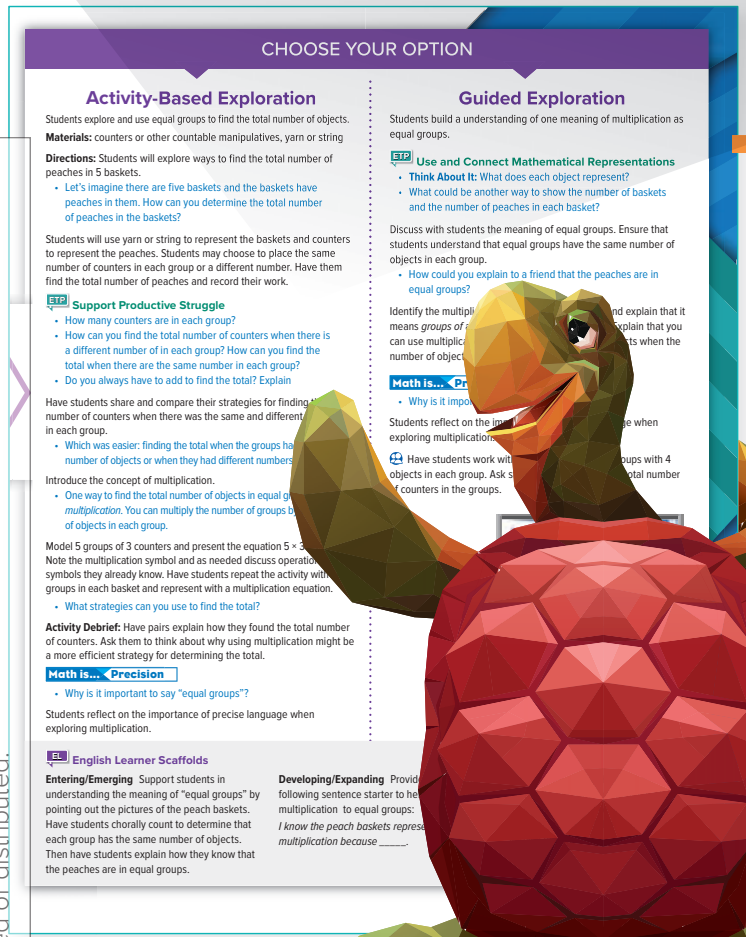
ETP Use and Connect Mathematical Representations

- **Think About It:** What does each object represent?
- What could be another way to show the number of baskets and the number of peaches in each basket?

Discuss with students the meaning of equal groups. Ensure that students understand that equal groups have the same number of objects in each group.

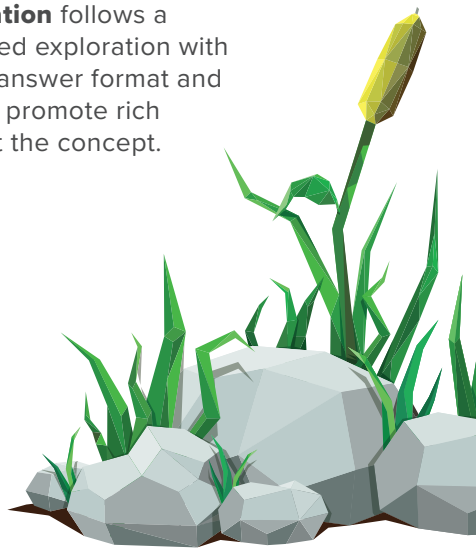
- How could you explain to a friend that the peaches are in equal groups?

Identify the multiplication symbol in the equation and explain that it means *groups of* and can be read as *multiplied by.* Explain that you



Activity-Based Exploration allows students to explore concepts, develop and test hypotheses, and—most importantly—engage in productive struggle as they problem solve and generalize learning.

Guided Exploration follows a teacher-facilitated exploration with a question and answer format and collaboration to promote rich discourse about the concept.

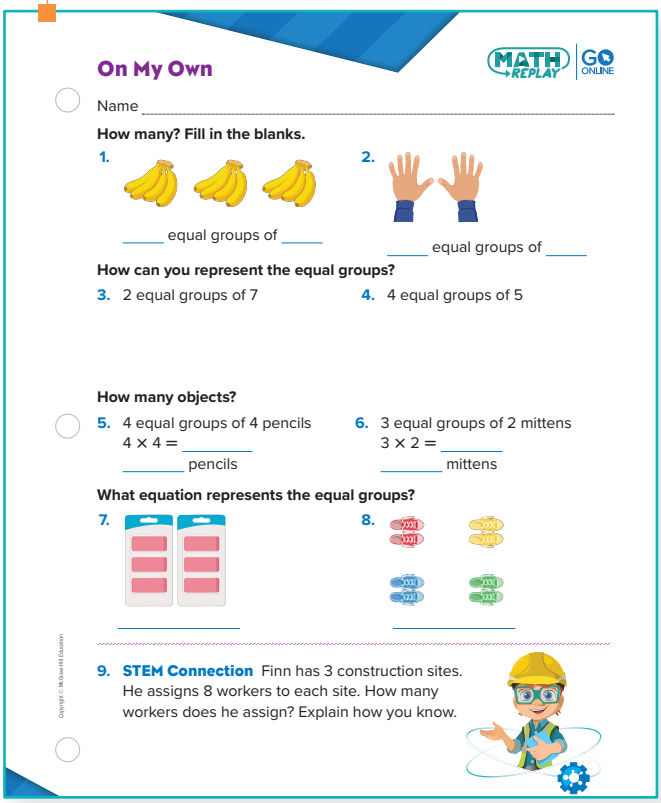


Lesson Model: Practice and Reflect

Engage in Concepts Independently and Further Understanding.

Practice and Reflect provides students with practice with exercises that address all elements of rigor.

Math Replay videos contain a one- to two-minute explanation of the lesson concept.



On My Own

MATH REPLAY GO ONLINE

Name _____

How many? Fill in the blanks.

1.

_____ equal groups of _____

2.

_____ equal groups of _____

How can you represent the equal groups?

3. 2 equal groups of 7

4. 4 equal groups of 5

How many objects?

5. 4 equal groups of 4 pencils
$4 \times 4 =$ _____
_____ pencils

6. 3 equal groups of 2 mittens
$3 \times 2 =$ _____
_____ mittens

What equation represents the equal groups?

7.

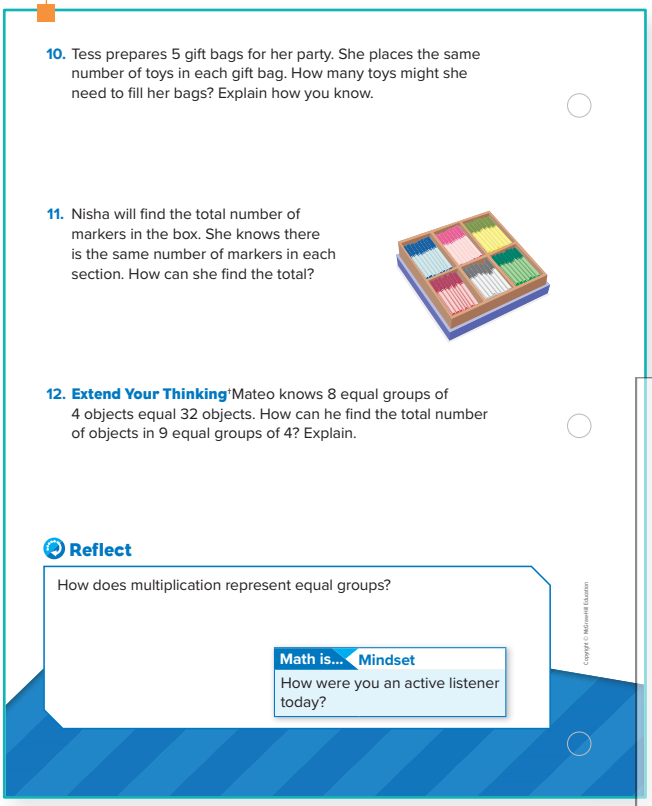
_____

8.

_____

9. **STEM Connection** Finn has 3 construction sites. He assigns 8 workers to each site. How many workers does he assign? Explain how you know.

On My Own can be completed in the print Student Edition or eBook and is available in Spanish.



10. Tess prepares 5 gift bags for her party. She places the same number of toys in each gift bag. How many toys might she need to fill her bags? Explain how you know.

11. Nisha will find the total number of markers in the box. She knows there is the same number of markers in each section. How can she find the total?

12. **Extend Your Thinking** Mateo knows 8 equal groups of 4 objects equal 32 objects. How can he find the total number of objects in 9 equal groups of 4? Explain.

Reflect

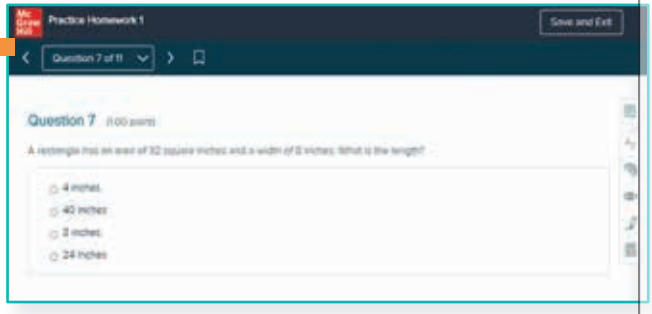
How does multiplication represent equal groups?

Math is... Mindset

How were you an active listener today?

Additional Practice

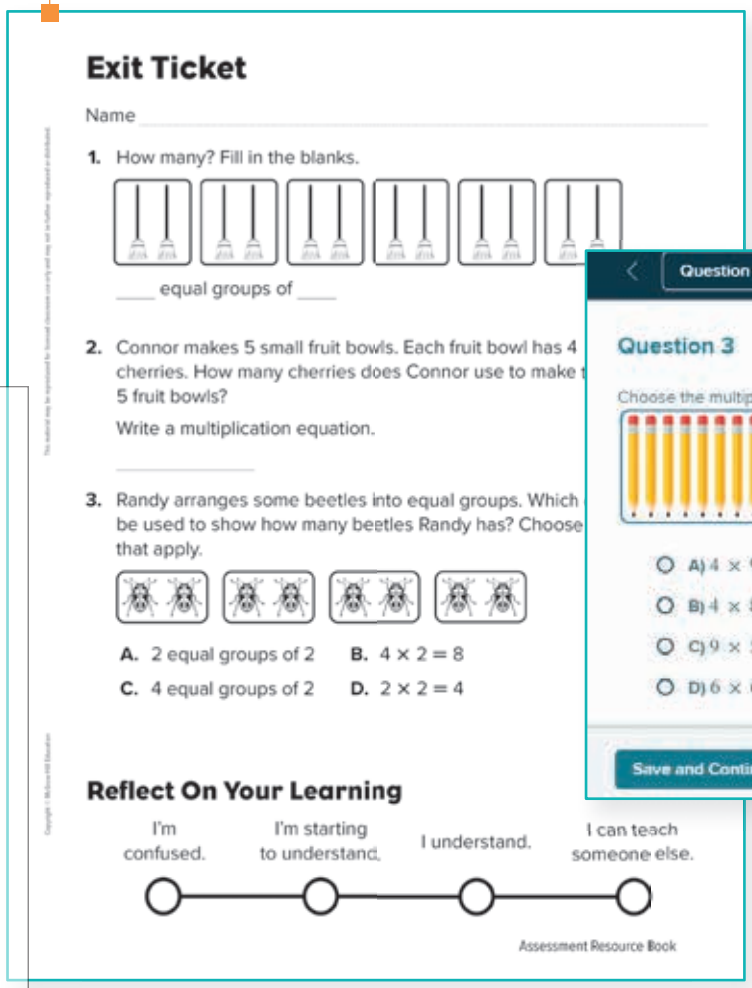
Two additional practice pages are available for every lesson to be completed in either the Student Practice Book or using the Interactive Digital Practice, which embeds learning aids, such as videos, examples, and more.



Exit Ticket:
Use Data to Inform Differentiation

Every lesson closes with an Exit Ticket to check for student understanding and provide recommendations to the teacher for further di erentiation.

Reflect On Your Learning allows students to re ect on their learning daily and communicate their con dence level with the teacher.



Exit Ticket

Name _____

1. How many? Fill in the blanks.

____ equal groups of ____

2. Connor makes 5 small fruit bowls. Each fruit bowl has 4 cherries. How many cherries does Connor use to make t 5 fruit bowls?

Write a multiplication equation.

_____

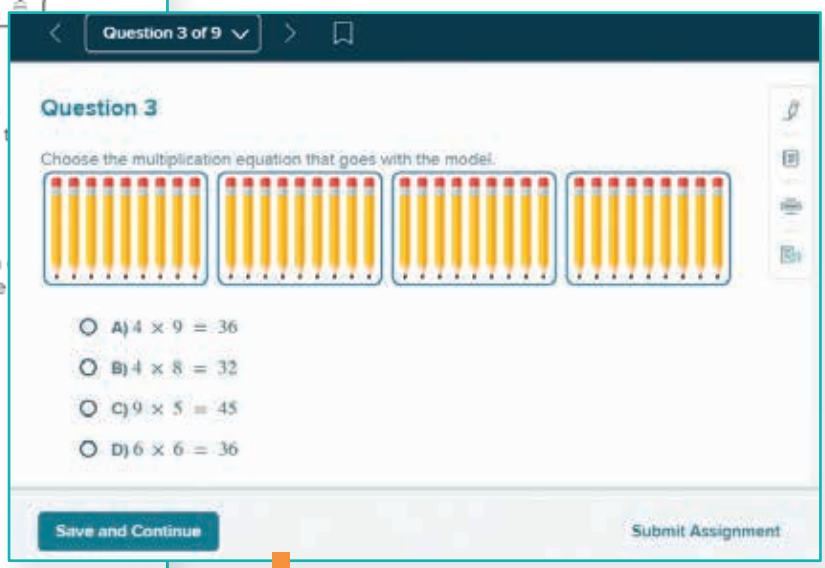
3. Randy arranges some beetles into equal groups. Which be used to show how many beetles Randy has? Choose that apply.

A. 2 equal groups of 2
B. 4 × 2 = 8
C. 4 equal groups of 2
D. 2 × 2 = 4

Reflect On Your Learning

I'm confused. | I'm starting to understand. | I understand. | I can teach someone else.

Assessment Resource Book



Exit Tickets can be taken digitally, which provides immediate data reporting options.

Lesson Model: Di*f* erentiate

Purposeful Learning Driven by Data

Di£erentiation within *Indiana Reveal Math* provides a variety of engaging, multi-modal activities with di£erent delivery options that students can focus on for that lesson.

Workstations

Online Practice

Reinforce Understanding

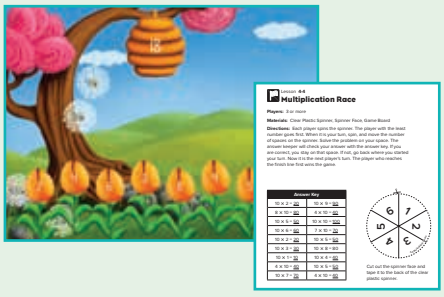
SMALL GROUP

How Many Xs?

Work with students in pairs. Have one student roll a number cube and then draw that number of circles. Then have the other student roll a number cube to determine the number of Xs to draw in each circle. Students should record a multiplication equation to find the total number of Xs. Help students recognize that they can skip count instead of counting all of the circles. Repeat the process. Have the students compare their totals over several rounds to determine the greatest number.

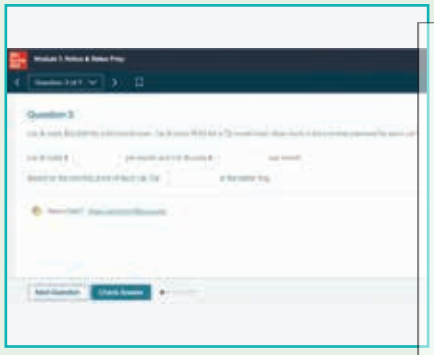
Small Group Instruction
Teacher-facilitated small group mini-lessons use concrete modeling and discussion to reteach and build conceptual understanding.

Build Proficiency

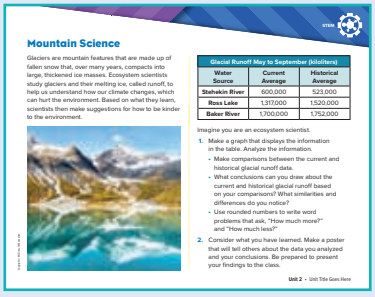


Game Station
A fun way to engage with the lesson content and collaborate with classmates.

Digital Station
Digital Games encourage proficiency through a fun and engaging practice environment.



Extend Thinking

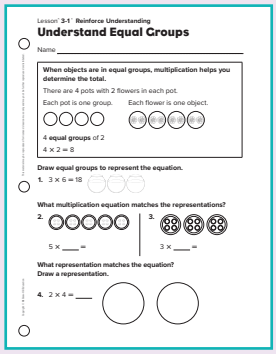


Application Station
Opportunity to apply unit content to real-world problems and projects through one of three categories of application cards: STEM Projects, Cross-Curricular Connections, or Real-World Problem-Solving Cards.

Independent Practice

Take Another Look
Assignable mini-lessons that provide actionable data to help inform instruction while supporting each student with a three-part, gradual-release activity, including:

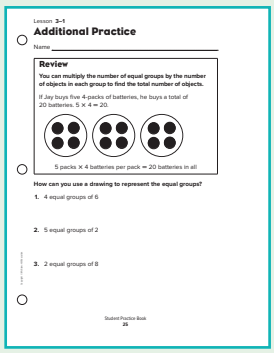
- Model of the Concept
- Interactive Practice
- Quick Check


Lesson 3-1 · Reinforce Understanding
Understand Equal Groups
Name _____
When objects are in equal groups, multiplication helps you determine the total.
There are 4 pots with 2 flowers in each pot.
Each pot is one group. Each flower is one object.
4 equal groups of 2
4 × 2 = 8
Draw equal groups to represent the equation.
1. 3 × 6 = 18
What multiplication equation matches the representations?
2. 5 × ___ = ___
3. 3 × ___ = ___
What representation matches the equation? Draw a representation.
4. 2 × 4 = ___

Reinforce Understanding Practice Sheet
Practice sheet focused on practicing and understanding the concepts within the lesson.

Spiral Review
Digital practice with mixed standard coverage for major clusters within the grade level prepares students for end-of-year testing.

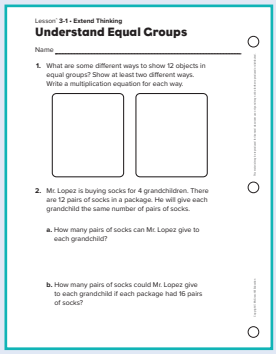
Interactive Additional Practice
Digital practice, complete with learning aids integrated into problems at point-of-use.


Lesson 3-1
Additional Practice
Name _____
Review
You can multiply the number of equal groups by the number of objects in each group to find the total number of objects.
If Jay buys five 4-packs of batteries, he buys a total of 20 batteries. 5 × 4 = 20.
5 packs × 4 batteries per pack = 20 batteries in all
How can you use a drawing to represent the equal groups?
1. 4 equal groups of 6
2. 5 equal groups of 2
3. 2 equal groups of 8
Student Practice Book
25

Student Practice Book
Two additional practice pages for practice and/or homework.

WebSketch Exploration
Highly visual and interactive digital activities that engage students as they explore a concept within an open-ended environment.

STEM Adventure
STEM Adventures are rich digital simulations that allow students to apply skills and concepts to solve real-world problems. Simulations deliver multiple outcomes as a result of the student's choices throughout the experience.


Lesson 3-1 · Extend Thinking
Understand Equal Groups
Name _____
1. What are some different ways to show 12 objects in equal groups? Show at least two different ways. Write a multiplication equation for each way.
2. Mr. Lopez is buying socks for 4 grandchildren. There are 12 pairs of socks in a package. He will give each grandchild the same number of pairs of socks.
a. How many pairs of socks can Mr. Lopez give to each grandchild?
b. How many pairs of socks could Mr. Lopez give to each grandchild if each package had 16 pairs of socks?

Extend Thinking Practice Sheet
Practice sheet focused on application.

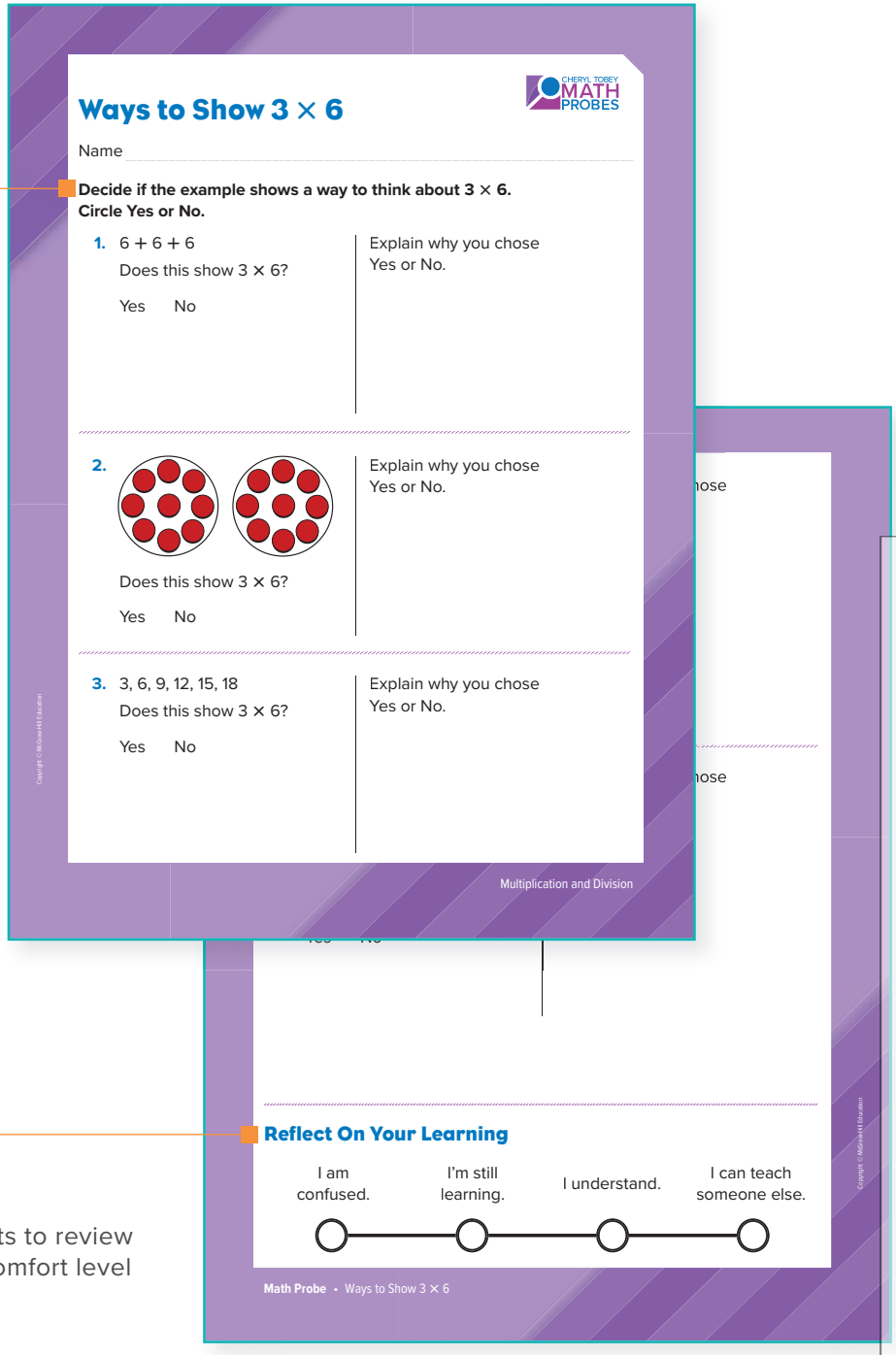
Math Probe Assessments

Target Common Misconceptions

Math Probes are designed to support teachers in identifying student misconceptions within each unit. These probes allow teachers to make sound instructional choices that are targeted at speci c mathematics concepts while being responsive to the needs of students.

Short Assessment

Two-part questions allow students to demonstrate their understanding with answers that convey their reasoning.



Metacognitive Check

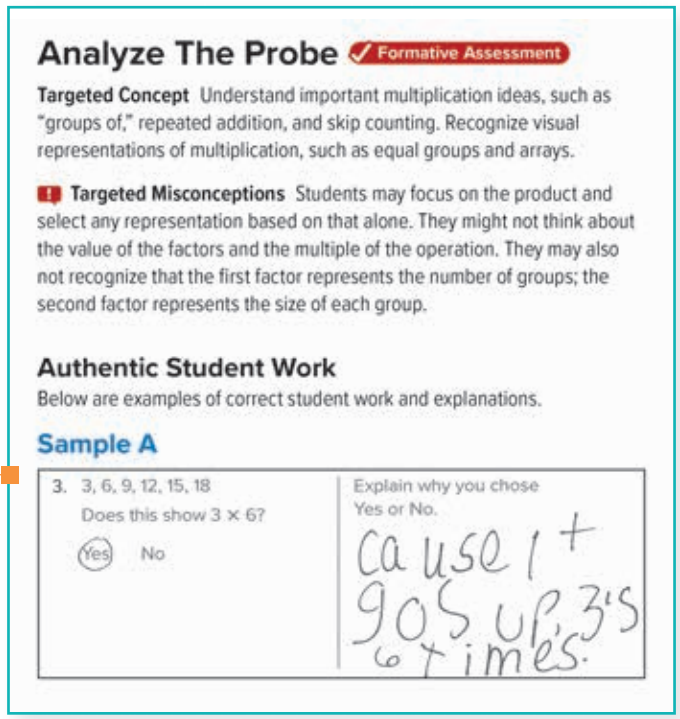
Re ect on Your Learning allows students to review and present their understanding and comfort level with the concept.

Designed to ACT

The teacher support materials that accompany the Math Probes are designed around an ACT cycle. The ACT cycle was originally developed during the creation of a set of math probes and teacher resources for a Mathematics and Science Partnership Project. It consists of three teacher actions around using math probes:

A

Analyze the Probe
Prior to administering the math probe, the teacher completes the math probe items and anticipates student di culties.



Analyze The Probe Formative Assessment

Targeted Concept Understand important multiplication ideas, such as "groups of," repeated addition, and skip counting. Recognize visual representations of multiplication, such as equal groups and arrays.

Targeted Misconceptions Students may focus on the product and select any representation based on that alone. They might not think about the value of the factors and the multiple of the operation. They may also not recognize that the first factor represents the number of groups; the second factor represents the size of each group.

Authentic Student Work

Below are examples of correct student work and explanations.

Sample A

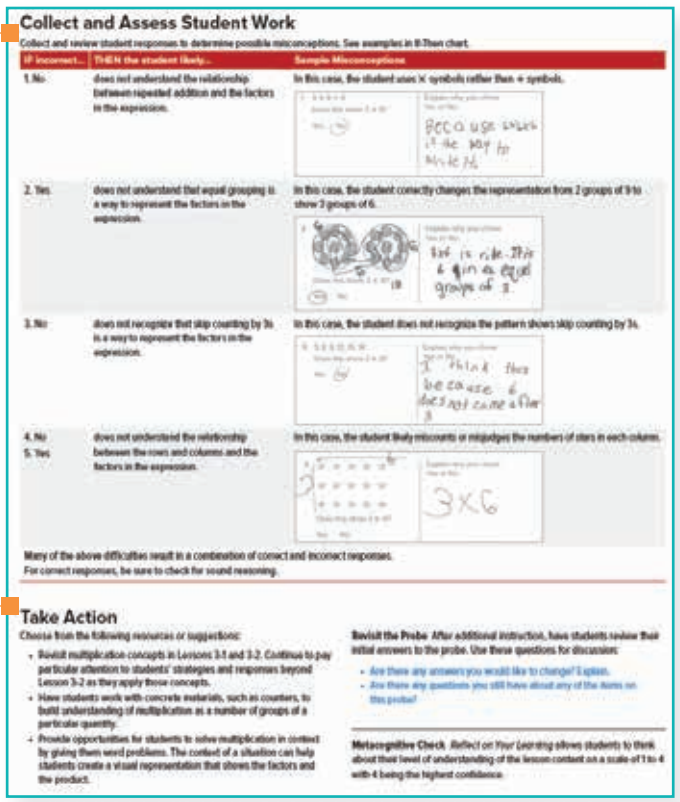
3. 3, 6, 9, 12, 15, 18
Does this show 3 × 6?
(Yes) No

Explain why you chose Yes or No.

Because I + 90s up 3's 6 times.

C

Collect and Assess Student Work
After administering the math probe, the teacher reviews students' selected responses and explanations to look for patterns of understandings and misunderstandings.



Collect and Assess Student Work

Collect and review student responses to determine possible misconceptions. See examples in If-Then chart.

If incorrect...	THEN the student likely...	Sample Misconceptions
1. No	does not understand the relationship between repeated addition and the factors in the expression.	In this case, the student uses × symbols rather than + symbols.
2. Yes	does not understand that equal grouping is a way to represent the factors in the expression.	In this case, the student correctly changes the representation from 2 groups of 9 to show 3 groups of 6.
3. No	does not recognize that skip counting by 3s is a way to represent the factors in the expression.	In this case, the student does not recognize the pattern shown skip counting by 3s.
4. No 5. Yes	does not understand the relationship between the rows and columns and the factors in the expression.	In this case, the student likely miscounts or misjudges the numbers of stars in each column.

Many of the above difficulties result in a combination of correct and incorrect responses. For correct responses, be sure to check for sound reasoning.

Take Action

Choose from the following resources or suggestions:

- Revisit multiplication concepts in Lessons 3-1 and 3-2. Continue to pay particular attention to students' strategies and responses beyond Lesson 3-2 as they apply these concepts.
- Have students work with concrete materials, such as counters, to build understanding of multiplication as a number of groups of a particular quantity.
- Provide opportunities for students to solve multiplication in context by giving them word problems. The context of a situation can help students create a visual representation that shows the factors and the product.

Revisit the Probe After additional instruction, have students review their initial answers to the probe. Use these questions for discussion:

- Are there any answers you would like to change? Explain.
- Are there any questions you still have about any of the items on this probe?

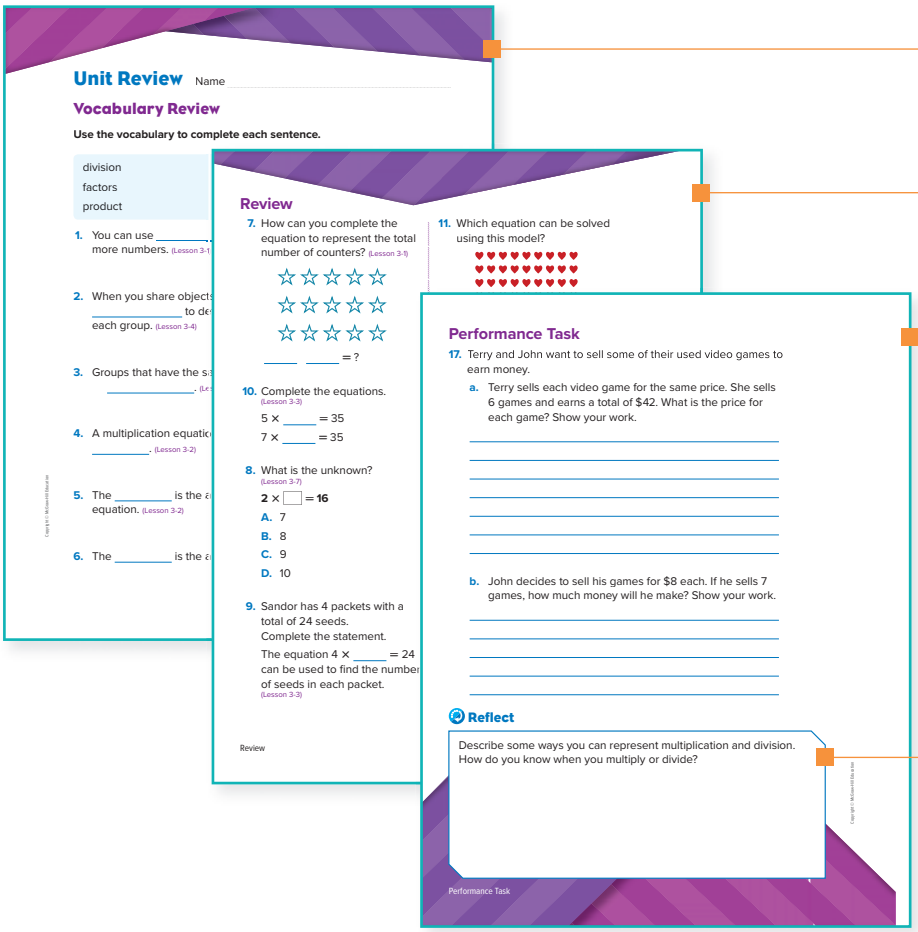
Metacognitive Check *Reflect on Your Learning* allows students to think about their level of understanding of the lesson content on a scale of 1 to 4 with 4 being the highest confidence.

T

Take Action
Remedies are provided that tie to speci c misconceptions, allowing students to identify and correct them e ciently.

Unit Review

Additional Practice to Prepare for Assessment

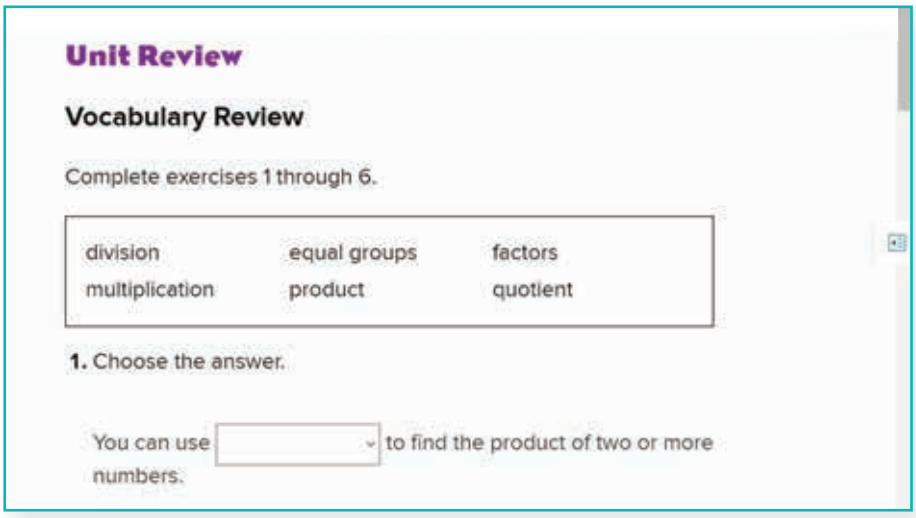


Vocabulary Review

Content Review

Practice Performance Task

Reflect

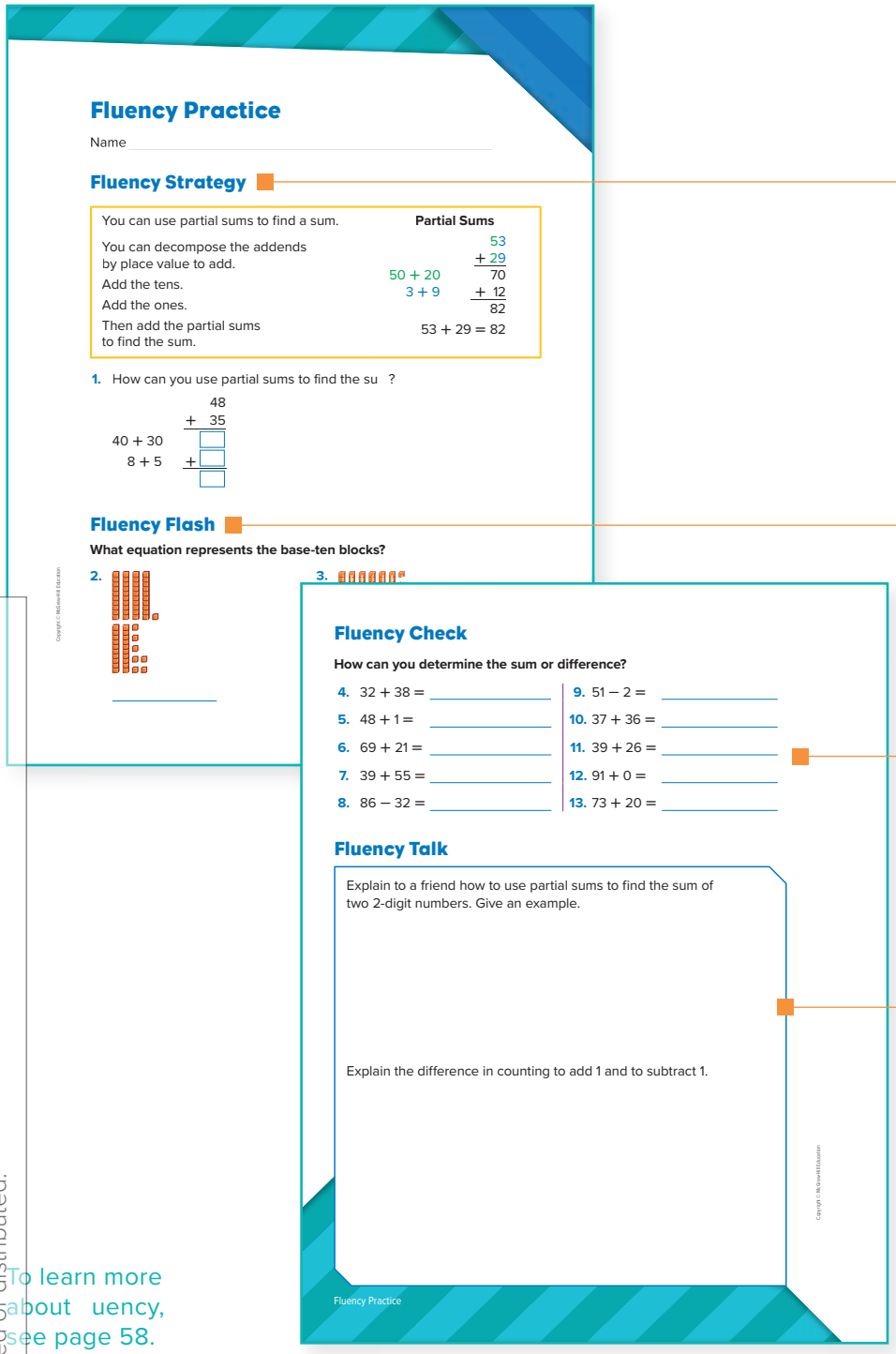


Complete Print or Digital

The Unit Review and Fluency Practice are both available in the Interactive Student Edition to be assigned and completed digitally.

Fluency Practice

Fluency Practice pages occur at the end of every unit. Fluency practice is broken into four parts:



Fluency Practice

Name

Fluency Strategy

You can use partial sums to find a sum.	Partial Sums
You can decompose the addends by place value to add.	53 + 29
Add the tens.	50 + 20 = 70
Add the ones.	3 + 9 = 12
Then add the partial sums to find the sum.	70 + 12 = 82
	53 + 29 = 82

1. How can you use partial sums to find the su ?

48 + 35

40 + 30 = ☐

8 + 5 = ☐ + ☐

Fluency Flash

What equation represents the base-ten blocks?

2.

3.

Fluency Check

How can you determine the sum or difference?

4. 32 + 38 = _____
5. 48 + 1 = _____
6. 69 + 21 = _____
7. 39 + 55 = _____
8. 86 − 32 = _____
9. 51 − 2 = _____
10. 37 + 36 = _____
11. 39 + 26 = _____
12. 91 + 0 = _____
13. 73 + 20 = _____

Fluency Talk

Explain to a friend how to use partial sums to find the sum of two 2-digit numbers. Give an example.

Explain the difference in counting to add 1 and to subtract 1.

Fluency Practice

Fluency Strategy

Focus on practice with the strategy.

Fluency Flash
A check for understanding.

Fluency Check
Students choose the strategies.

Fluency Talk
Students communicate their understanding.

To learn more about uency, see page 58.

Course Assessments

Monitor Student Understanding Throughout the Year

COURSE ASSESSMENT

Course Diagnostic assesses student's readiness for grade-level content as they enter a new school year.

UNIT ASSESSMENT

Unit Readiness Diagnostics assess each student's pro ciency with pre-requisite skills to determine readiness for the unit content.

LESSON ASSESSMENT

Exit Tickets assess students' understanding of the lesson content and drive di erentiation.

UNIT ASSESSMENT

Math Probes help identify and target common misconceptions associated with the unit content.

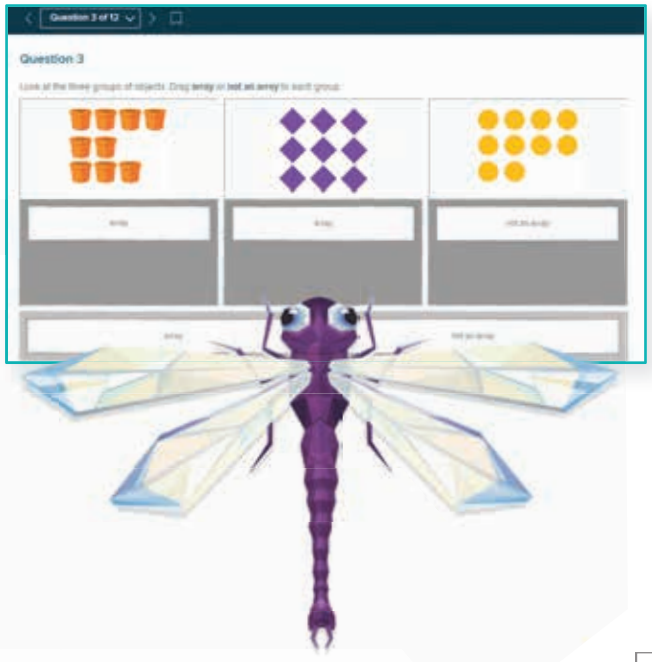
Unit Assessments measure multiple depths of knowledge to assess for various stages of understanding.

Performance Tasks assess students' understanding of big ideas and their ability to apply unit content to solve real-world problems. In addition, practice performance tasks are available as part of the unit review materials.

COURSE ASSESSMENT

Benchmark Assessments help monitor student progress towards grade-level expectations.

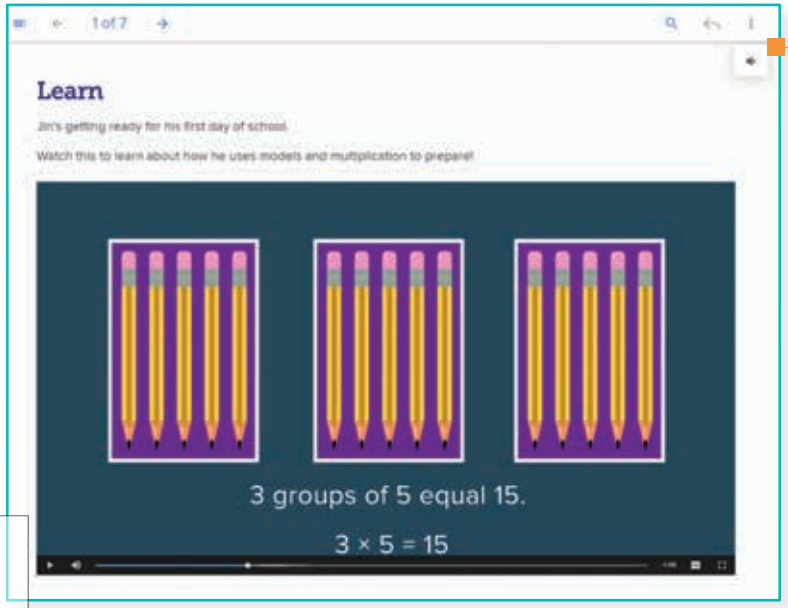
Summative Assessment evaluates student learning at the end of each grade level.



Targeted Intervention

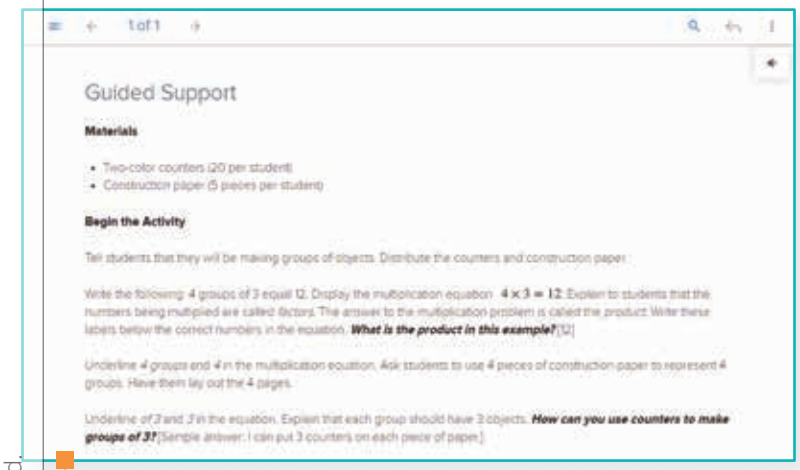
Respond to Data with Targeted Resources

Intervention resources align with the unit, making item analysis easily actionable to correct misunderstanding and target gaps in learning.

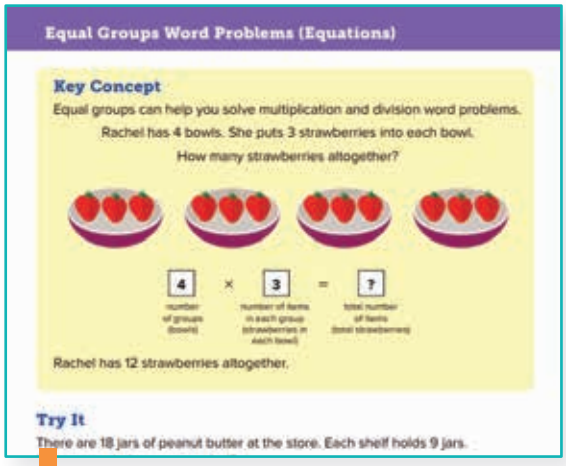


Take Another Look digital mini-lessons provide quick, actionable data to help inform instruction while supporting each student with a three-part, gradual-release activity:

- Modeling
- Interactive Practice
- Lesson Check



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



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

Lesson Walkthrough

NOTES:

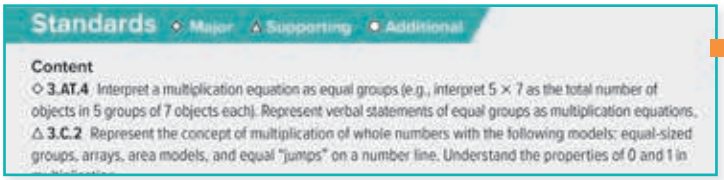
Program Design

Table of Contents

Built on Standards

Standards Focus

Indiana 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.

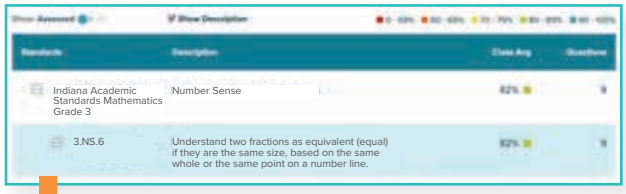


Each lesson list out the standards addressed as major, supporting, and additional.

Item Analysis

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

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.



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

Spiral Review

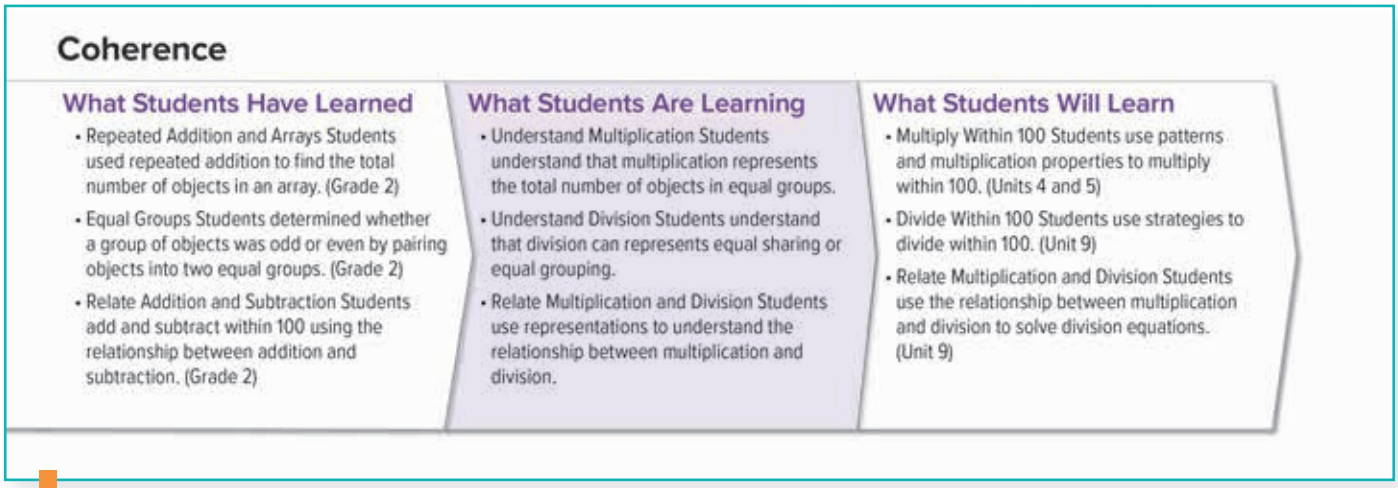
Students can complete the Spiral Review at any point during the unit as either a paper-and-pencil or digital activity.

Lesson	Standard
3-1	3.NS.1
3-2	3.NS.9
3-3	3.C.1
3-4	3.AT.1
3-5	3.AT.1
3-6	3.C.1
3-7	3.C.1

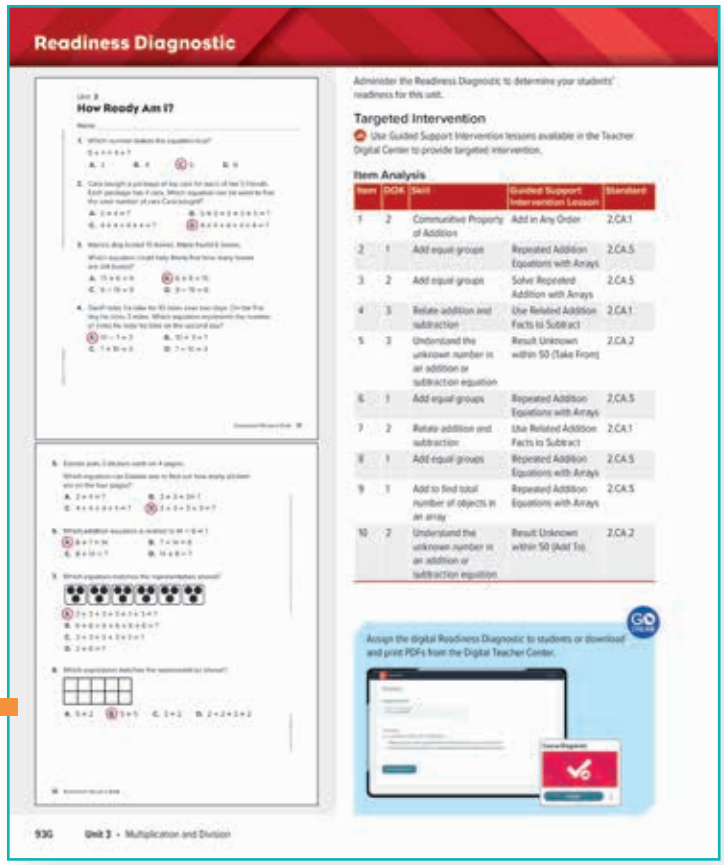
Spiral Review promotes mastery and preparation for end-of-year assessment through distributed and mixed practice of the major clusters throughout the year.

Coherent Across Grade Levels

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



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



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

Rigorous Instruction

Rigor Focus Derived from Standards

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

Rigor

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

Conceptual Understanding

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

Procedural Skill and Fluency

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

Daily Practice Opportunities:

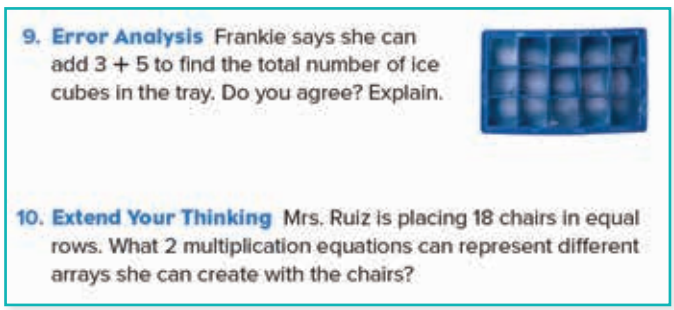
- On My Own
- Additional Practice
- Game Station
- Spiral Review

Unit Practice Opportunities:

- Unit Review
- Fluency Practice
- Digital Game Station

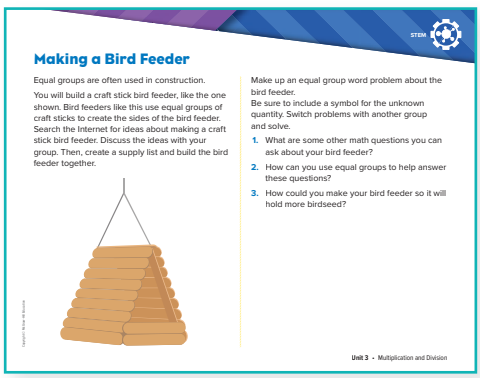
Application

Real-world problems are provided throughout each lesson with rich, application-based question types, such as "Find the Error" and "Extend Thinking," which are embedded in daily practice.


9. **Error Analysis** Frankie says she can add 3 + 5 to find the total number of ice cubes in the tray. Do you agree? Explain.

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

Daily di erentiation provides opportunities for application through the Application Station Cards, STEM Adventures, and WebSketch Explorations.


Making a Bird Feeder

Equal groups are often used in construction.

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

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

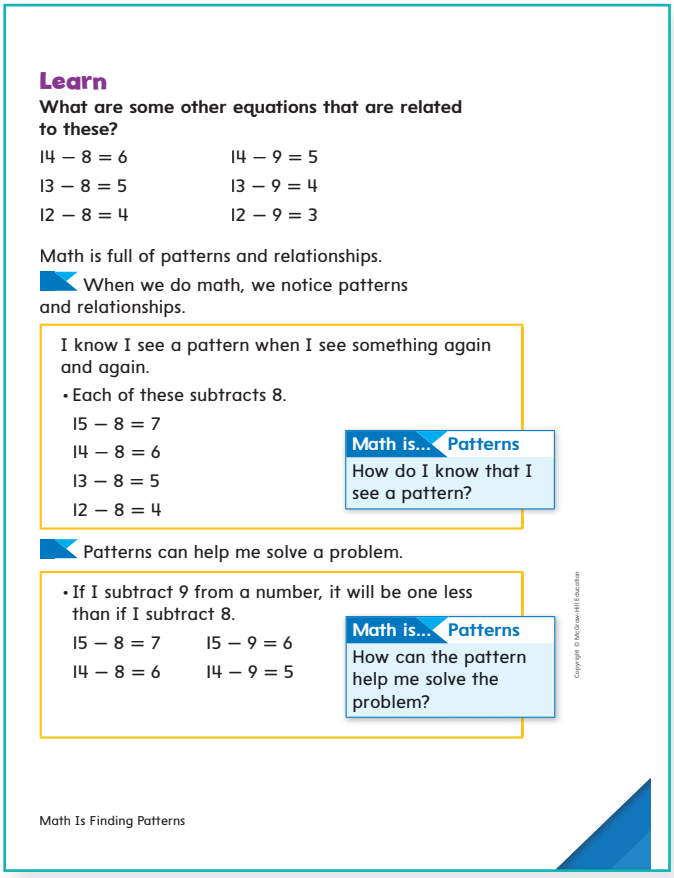
1. What are some other math questions you can ask about your bird feeder?
2. How can you use equal groups to help answer these questions?
3. How could you make your bird feeder so it will hold more birdseed?

Math Practices

To think like mathematicians, students must build habits of mind that help them develop a problem-solving frame of mind. They need to make sense of problem situations, frame potential solution pathways from di ering perspectives, determine strategies and tools that could be useful in solving a problem, articulate whether a solution is reasonable, and be able to defend their position with mathematical arguments. *Indiana Reveal Math* integrates the math practices and processes within the instructional design to help students build mathematical thinking habits and problem-solving skills.

Math Is...Unit:

Within the rst unit of every grade level, students learn how to use mathematical practices while problem-solving. Integrating the mathematical practices into the math classroom becomes a daily expectation.



Learn

What are some other equations that are related to these?

$14 - 8 = 6$ $14 - 9 = 5$
$13 - 8 = 5$ $13 - 9 = 4$
$12 - 8 = 4$ $12 - 9 = 3$

Math is full of patterns and relationships.

When we do math, we notice patterns and relationships.

I know I see a pattern when I see something again and again.

- Each of these subtracts 8.

$15 - 8 = 7$
$14 - 8 = 6$
$13 - 8 = 5$
$12 - 8 = 4$

Math is... Patterns
How do I know that I see a pattern?

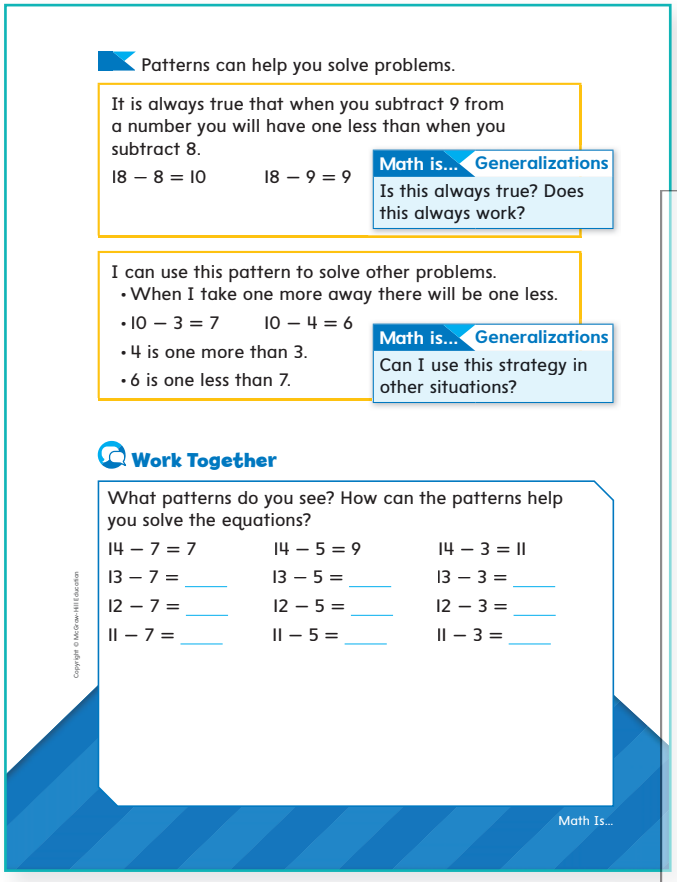
Patterns can help me solve a problem.

- If I subtract 9 from a number, it will be one less than if I subtract 8.

$15 - 8 = 7$ $15 - 9 = 6$
$14 - 8 = 6$ $14 - 9 = 5$

Math is... Patterns
How can the pattern help me solve the problem?

Math Is Finding Patterns



Patterns can help you solve problems.

It is always true that when you subtract 9 from a number you will have one less than when you subtract 8.

$18 - 8 = 10$ $18 - 9 = 9$

Math is... Generalizations
Is this always true? Does this always work?

I can use this pattern to solve other problems.

- When I take one more away there will be one less.
- $10 - 3 = 7$ $10 - 4 = 6$
- 4 is one more than 3.
- 6 is one less than 7.

Math is... Generalizations
Can I use this strategy in other situations?

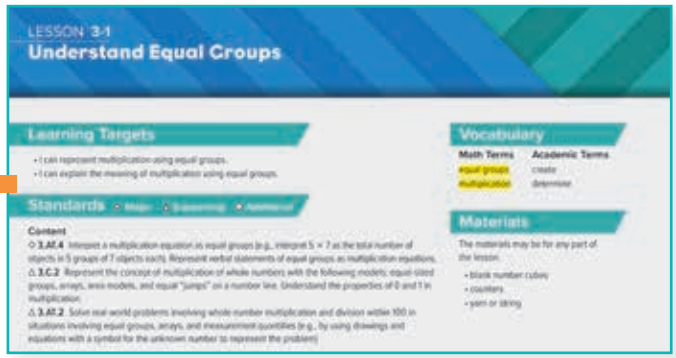
Work Together

What patterns do you see? How can the patterns help you solve the equations?

$14 - 7 = 7$ $14 - 5 = 9$ $14 - 3 = 11$
$13 - 7 =$ ____ $13 - 5 =$ ____ $13 - 3 =$ ____
$12 - 7 =$ ____ $12 - 5 =$ ____ $12 - 3 =$ ____
$11 - 7 =$ ____ $11 - 5 =$ ____ $11 - 3 =$ ____

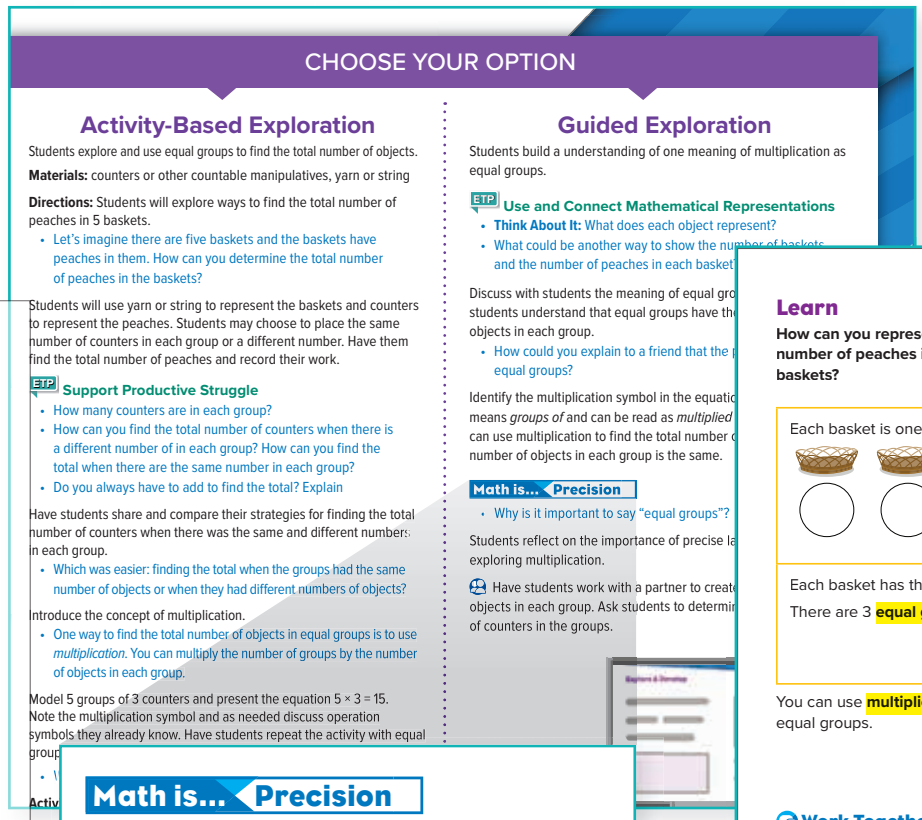
Math Is...

Integrated into Each Lesson



Every lesson overview states the mathematical practices and processes, along with the standard focus. Learning targets reflect both skill and process.

Mathematical practices are embedded throughout every lesson and integrated into the problem-solving process.



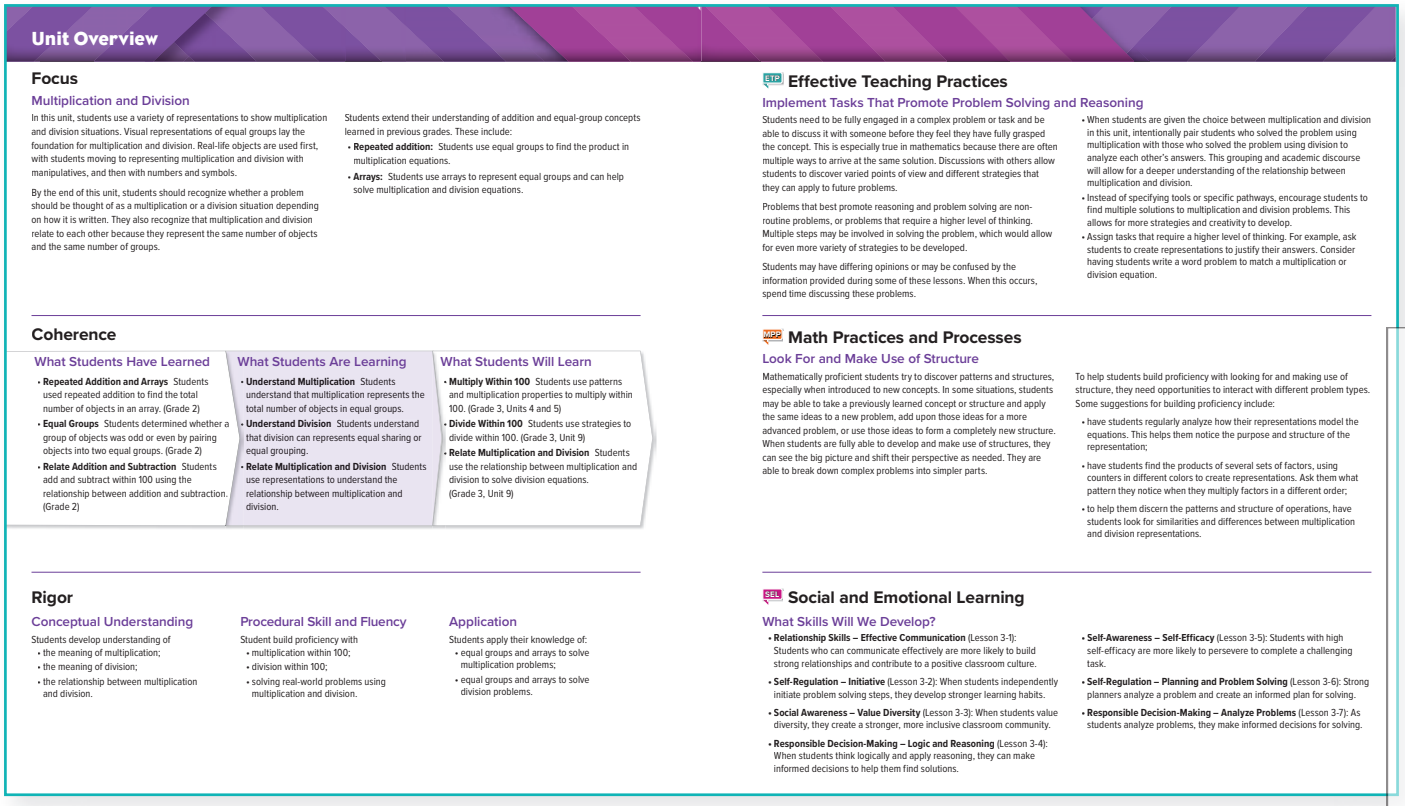
Math Is...prompts embedded throughout the Student Edition and Teacher Edition clearly label the math practices and remind students of classroom expectations throughout the year.

Embedded Teaching Support

Unit Overview

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

- Focus, Coherence, and Rigor
- Routines
- Mathematical Practices
- E ective Teaching Practices
- Social and Emotional Learning
- Language Supports
- Routines



Unit Overview

Focus

Multiplication and Division

In this unit, students use a variety of representations to show multiplication and division situations. Visual representations of equal groups lay the foundation for multiplication and division. Real-life objects are used first, with students moving to representing multiplication and division with manipulatives, and then with numbers and symbols.

By the end of this unit, students should recognize whether a problem should be thought of as a multiplication or a division situation depending on how it is written. They also recognize that multiplication and division relate to each other because they represent the same number of objects and the same number of groups.

Students extend their understanding of addition and equal-group concepts learned in previous grades. These include:

- **Repeated addition:** Students use equal groups to find the product in multiplication equations.
- **Arrays:** Students use arrays to represent equal groups and can help solve multiplication and division equations.

Coherence

What Students Have Learned	What Students Are Learning	What Students Will Learn
• **Repeated Addition and Arrays** Students used repeated addition to find the total number of objects in an array. (Grade 2) • **Equal Groups** Students determined whether a group of objects was odd or even by pairing objects into two equal groups. (Grade 2) • **Relate Addition and Subtraction** Students add and subtract within 100 using the relationship between addition and subtraction. (Grade 2)	• **Understand Multiplication** Students understand that multiplication represents the total number of objects in equal groups. • **Understand Division** Students understand that division can represents equal sharing or equal grouping. • **Relate Multiplication and Division** Students use representations to understand the relationship between multiplication and division.	• **Multiply Within 100** Students use patterns and multiplication properties to multiply within 100. (Grade 3, Units 4 and 5) • **Divide Within 100** Students use strategies to divide within 100. (Grade 3, Unit 9) • **Relate Multiplication and Division** Students use the relationship between multiplication and division to solve division equations. (Grade 3, Unit 9)

Rigor

Conceptual Understanding	Procedural Skill and Fluency	Application
Students develop understanding of • the meaning of multiplication; • the meaning of division; • the relationship between multiplication and division.	Student build proficiency with • multiplication within 100; • division within 100; • solving real-world problems using multiplication and division.	Students apply their knowledge of: • equal groups and arrays to solve multiplication problems; • equal groups and arrays to solve division problems.

Effective Teaching Practices

Implement Tasks That Promote Problem Solving and Reasoning

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

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

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

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

Math Practices and Processes

Look For and Make Use of Structure

Mathematically proficient students try to discover patterns and structures, especially when introduced to new concepts. In some situations, students may be able to take a previously learned concept or structure and apply the same ideas to a new problem, add upon those ideas for a more advanced problem, or use those ideas to form a completely new structure. When students are fully able to develop and make use of structures, they can see the big picture and shift their perspective as needed. They are able to break down complex problems into simpler parts.

To help students build proficiency with looking for and making use of structure, they need opportunities to interact with different problem types. Some suggestions for building proficiency include:

- have students regularly analyze how their representations model the equations. This helps them notice the purpose and structure of the representation;
- have students find the products of several sets of factors, using counters in different colors to create representations. Ask them what pattern they notice when they multiply factors in a different order;
- to help them discern the patterns and structure of operations, have students look for similarities and differences between multiplication and division representations.

Social and Emotional Learning

What Skills Will We Develop?

- **Relationship Skills – Effective Communication** (Lesson 3-1): Students who can communicate effectively are more likely to build strong relationships and contribute to a positive classroom culture.
- **Self-Regulation – Initiative** (Lesson 3-2): When students independently initiate problem solving steps, they develop stronger learning habits.
- **Social Awareness – Value Diversity** (Lesson 3-3): When students value diversity, they create a stronger, more inclusive classroom community.
- **Responsible Decision-Making – Logic and Reasoning** (Lesson 3-4): When students think logically and apply reasoning, they can make informed decisions to help them find solutions.
- **Self-Awareness – Self-Efficacy** (Lesson 3-5): Students with high self-efficacy are more likely to persevere to complete a challenging task.
- **Self-Regulation – Planning and Problem Solving** (Lesson 3-6): Strong planners analyze a problem and create an informed plan for solving.
- **Responsible Decision-Making – Analyze Problems** (Lesson 3-7): As students analyze problems, they make informed decisions for solving.

Expert Insight Videos present industry experts who unpack each unit's content and identify what to look for as the unit progresses.

Effective Teaching Practices

Indiana Reveal Math's instructional design integrates NCTM's E ective Teaching Practices to ensure an environment that promotes rich learning, deep understanding, and mathematical success for all.

- 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 uency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.

Activity-Based Exploration

Students explore different arrangements of arrays to determine whether the orientation of the array changes the total number of objects in the array.

Materials: counters, geoboards, rubber bands

Directions: Students should be grouped in pairs. Provide 24 counters, a geoboard and rubberbands to each pair.

- Does changing the order of the factors change the product?

Encourage students to use a variety of tools and equations to explore this question. Students should provide several examples and models to justify their reasoning.

ETP Implement Tasks That Promote Reasoning and Problem Solving

- How can you change the order of the factors in the equation?
- How can you use an array to represent the multiplication equation?
- How can you use a geoboard or counters to represent the multiplication equation?
- How does changing the order change the representation?
- What do you notice about the factors and products for both equations?

Math is... Structure

- How are 3 groups of 4 and 4 groups of 3 similar?

Students should conclude 3 groups of 4 and 4 groups 3 represent the same total amount.

Major Themes

Indiana Reveal Math is crafted with the input of hundreds of educators across the country. Educator voices and needs were aligned with an instructional model that is based on validated research brought forth by McGraw Hill learning scientists and the *Indiana Reveal Math* expert authorship team.

Equitable Classrooms:

Learner-focused practices develop a classroom designed for all students.

Student Agency:

Student ownership and accountability in learning.

- **Growth Mindset:** Resilience in problem-solving and the learning process.
- **Productive Struggle:** Productive engagement with mathematical ideas and relationships.
- **Metacognition:** Promotion of student re ection on their learning.

Social and Emotional Learning:

Competencies support academically and socially engaged classroom members.

Instructional Routines:

Structures and expectations that create productive classroom interactions with students.

Sense-Making:

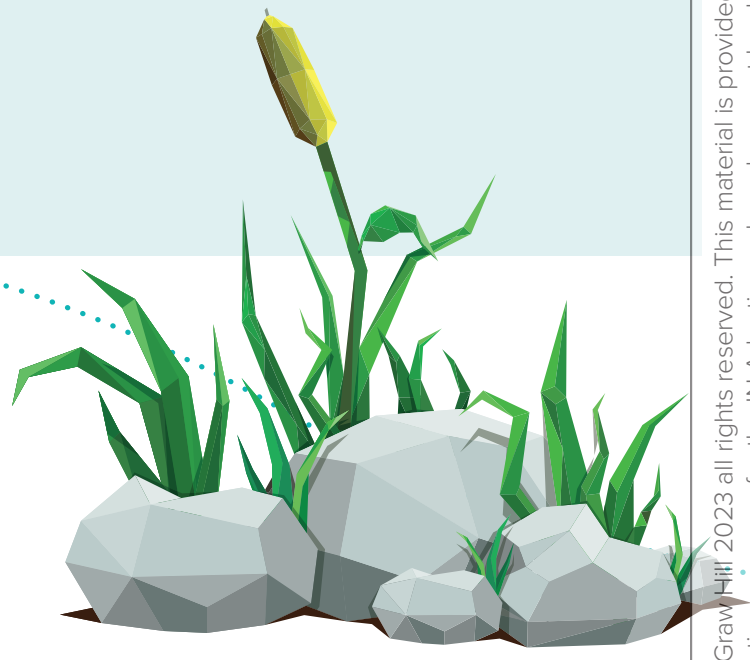
Supports the development of problem-solving skills.

Classroom Discourse:

Use of the appropriate math vocabulary and constructive critique of classmates' math thinking.

Fluency:

Use of exible strategies to practice math content and achieve automaticity.



Instructional Materials to Support Equity and Access

Every student is a doer of mathematics and has a right to access math content that helps them develop understanding at a deep level. *Indiana Reveal Math* emphasizes a positive and productive classroom culture where all students have common access to rigorous instruction, and all students' ideas are welcomed and respected. *Indiana Reveal Math* supports equity and access through:

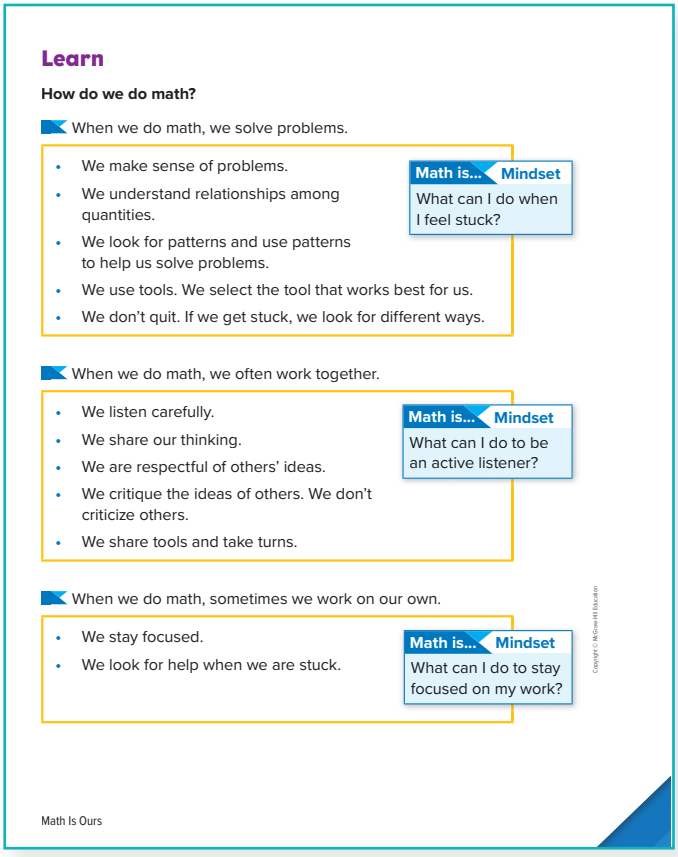
- Mathematical content founded in focus, coherence, and rigor to set achievable academic goals.
- Instructional design that focused on exploration, discourse, and sense-making.
- Multiple lesson entry points that allow all students to actively participate in rich discussion.
- Daily instruction that uses multiple representations of mathematical content to promote understanding.
- Comprehensive language supports to help all students access the language of mathematics and communicate e ectively.
- Embedded sca olds and supports to promote common access to rigor for all students.
- Culturally relevant and diverse examples of real-world applications.
- Daily opportunities to collect data to drive purposeful instructional choices.
- Multi-modal di erentiation to support each student's learning journey.

Student Agency

Math Is...Unit:

Students should see themselves as skilled doers of math and feel empowered to use math as a tool to problem-solve. The Math is... Unit demonstrates math is not just carrying out operations or calculations. Rather, math is making sense of and solving problems.

The Math Attitude Survey takes inventory of students' attitudes toward math and their perceptions of their math strengths and weaknesses at the beginning of the year. Students can review their responses periodically throughout the school year to track any changes in their attitudes or self-perceptions.



Learn

How do we do math?

When we do math, we solve problems.

- We make sense of problems.
- We understand relationships among quantities.
- We look for patterns and use patterns to help us solve problems.
- We use tools. We select the tool that works best for us.
- We don't quit. If we get stuck, we look for different ways.

Math is... Mindset
What can I do when I feel stuck?

When we do math, we often work together.

- We listen carefully.
- We share our thinking.
- We are respectful of others' ideas.
- We critique the ideas of others. We don't criticize others.
- We share tools and take turns.

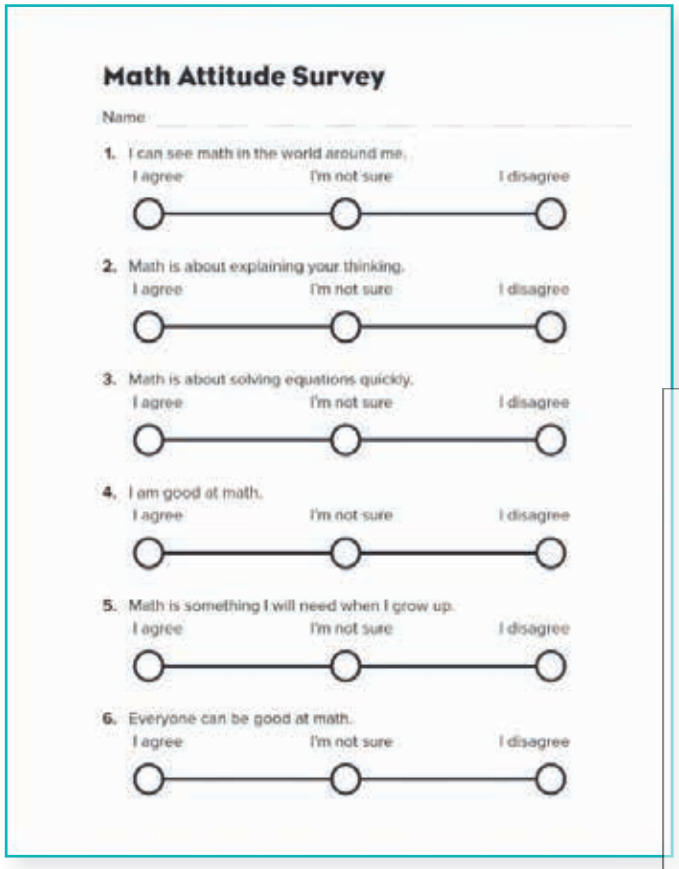
Math is... Mindset
What can I do to be an active listener?

When we do math, sometimes we work on our own.

- We stay focused.
- We look for help when we are stuck.

Math is... Mindset
What can I do to stay focused on my work?

Math Is Ours



Math Attitude Survey

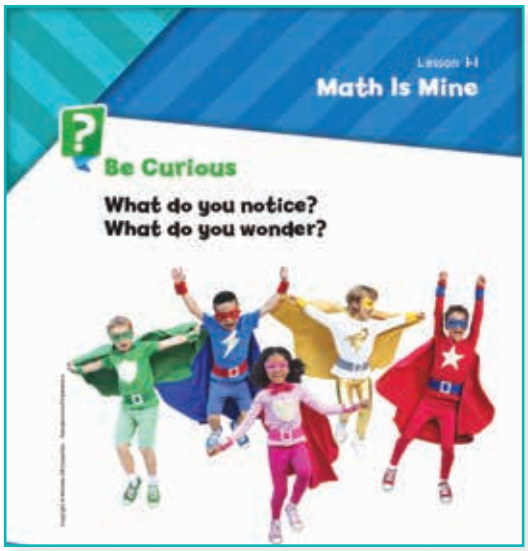
Name _____

1. I can see math in the world around me.
   I agree — I'm not sure — I disagree
2. Math is about explaining your thinking.
   I agree — I'm not sure — I disagree
3. Math is about solving equations quickly.
   I agree — I'm not sure — I disagree
4. I am good at math.
   I agree — I'm not sure — I disagree
5. Math is something I will need when I grow up.
   I agree — I'm not sure — I disagree
6. Everyone can be good at math.
   I agree — I'm not sure — I disagree

Growth Mindset

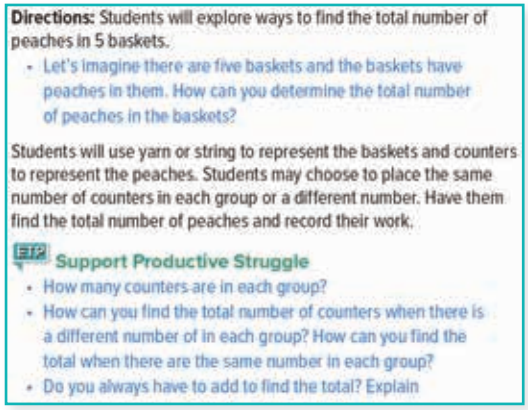
The rst unit of every grade level focuses on establishing a growth mindset by:

- Asking students to think about their math story, their math “superpowers,” and their self-perception as “doers of mathematics.”
- Establishing what it means to be a “doer of mathematics.”



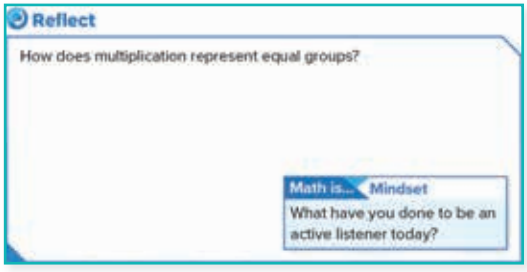
Productive Struggle

Teachers take on the role of facilitator in the lesson, providing opportunities for students to engage in productive struggle—drawing on their intuitions and existing knowledge, and taking opportunities to engage in reasoning about the nature of the problem—with the Activity-Based Exploration. Sca olded questions to support the thinking of students who may be struggling. These purposeful questions can be found at point-of-use, and help teachers nd ways to alleviate frustration, while still allowing students to explore and nd their own paths through the problem.



Metacognition: Daily Re ection

Re ection helps to drive accountability and the opportunity to think about thinking. Students re ect on both their understanding and behavior daily through Re ect on Your Learning prompts in both independent practice and Exit Tickets. Students also have the opportunity to re ect in the Unit Review and Math Probe.



Social and Emotional Learning

Integrated Supports for Behavior and Mindset

CASEL's Social and Emotional Learning competencies are integrated throughout each grade level. A focus on social and emotional learning helps drive a positive math classroom where students are encouraged and motivated to engage in mathematics.

A Focus in Every Lesson
Every lesson integrates a social and emotional learning objective along with the math and language objectives.

Focus

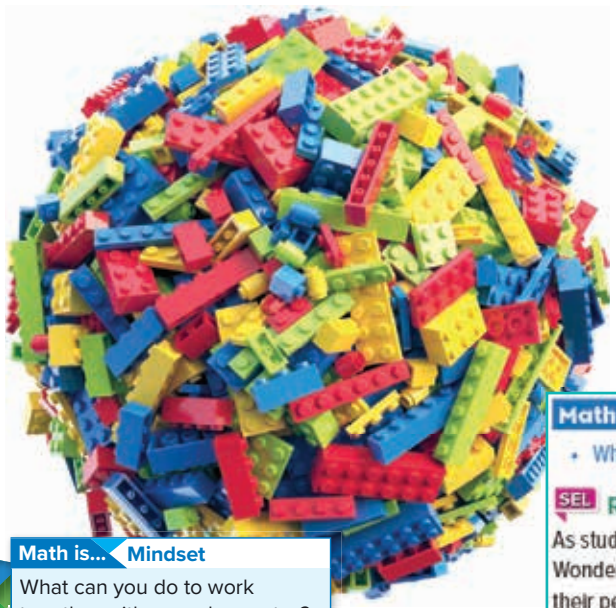
Content Objective	Language Objectives	SEL Objective
• Students round numbers to the nearest 10 or nearest 100.	• Students use the superlative *nearest* to explain rounding numbers. • To optimize output, use MLR7: Compare and Connect.	• Students collaborate with peers to complete a mathematical task.

Lesson 2-2

Round Multi-Digit Numbers

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What can you do to work together with your classmates?

Math is... Mindset

- What can you do to work together with your classmates?

SEL Relationship Skills: Engage with Others

As students engage in collaborative discourse around the Notice and Wonder™ routine, invite them to give constructive or helpful feedback to their peers. As students engage and discuss what they noticed and wondered, they are strengthening their relationship skills. Remind students that active listening and building on the ideas of others can help them connect with one another and work toward achieving shared goals.

Lesson Launch
The Social and Emotional Learning objective is introduced in the Be Curious moment with the Math Is... Mindset prompt. Teachers have instructional support to connect the Social and Emotional focus to the content objective for the day.

Reflect

When might you want to round to the nearest 10 instead of the nearest 100?

Math is... Mindset

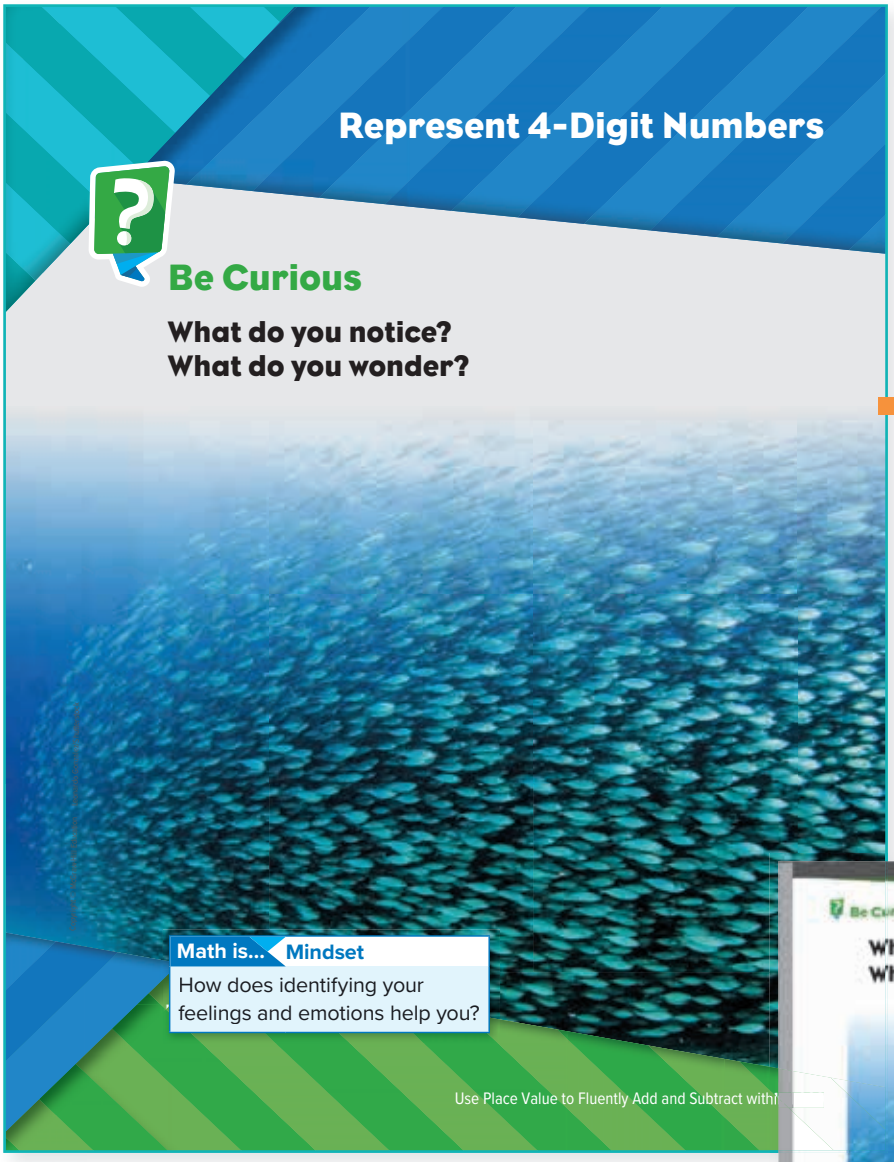
How did you work together with your classmates?

Daily Reflection
Students are asked to re ect on the Social and Emotional Learning objective during the Practice and Re ect part of the lesson.

Sense-Making

Be Curious

Be Curious launches every lesson and is designed to encourage student curiosity and ideas while observing a situation, problem, or phenomena. Students apply previously learned problem-solving strategies or knowledge to make sense of the problem or to wonder how they may approach the situation. All ideas are respected and welcomed as students discuss what they notice in the problem and what they are wondering about things they don't know or understand.



The focus of **Be Curious** is to

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

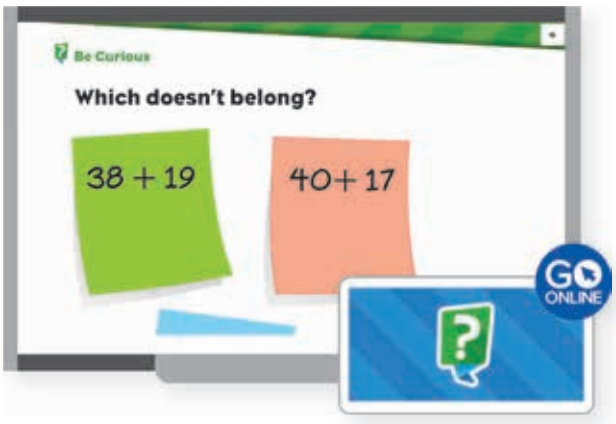
Sense-Making Routines

Every lesson launches with one of four sense-making routines to build conceptual understanding. These routines provide an opportunity for all students to share ideas in a high ceiling/low oor activity of content exploration.

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

Notice and Wonder is a tool to help students understand the story, the quantities, and the real-world relationships of the mathematical concept.

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



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.

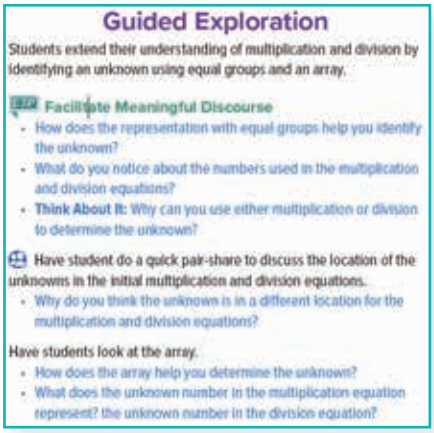
Numberless Word Problems provide sca olding that allows students the opportunity to develop a better understanding of the underlying structure of the problem itself.

Supporting the Language of Math

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

Understanding Through Thoughtful Discourse

With *Indiana Reveal Math*, teachers lead group Explore and Develop discussions to develop shared math knowledge. These discussions allow students to connect concepts to strategies and procedures. Students learn by discussing and relating multiple representations, strategies, and procedures when they solve problems as a class community.



Guided Exploration

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

Facilitate Meaningful Discourse

- How does the representation with equal groups help you identify the unknown?
- What do you notice about the numbers used in the multiplication and division equations?
- **Think About It:** Why can you use either multiplication or division to determine the unknown?

Have student do a quick pair-share to discuss the location of the unknowns in the initial multiplication and division equations.

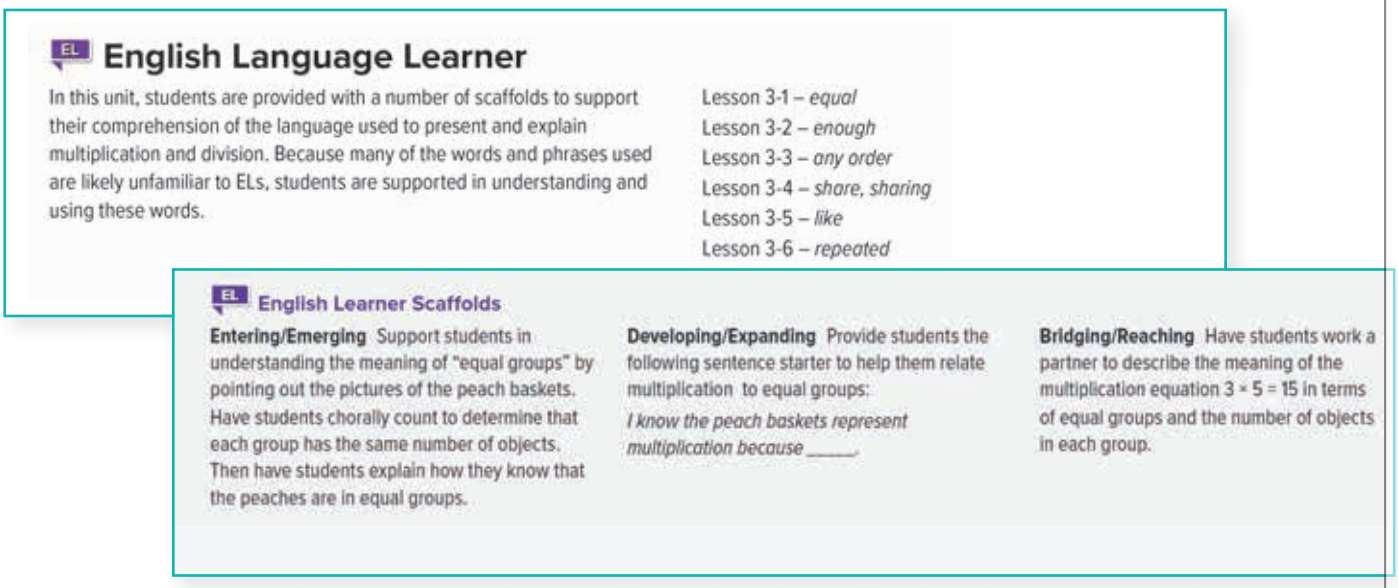
- Why do you think the unknown is in a different location for the multiplication and division equations?

Have students look at the array.

- How does the array help you determine the unknown?
- What does the unknown number in the multiplication equation represent? the unknown number in the division equation?

English Learner Scaffolds

English Learner Sca olds provide teachers with sca olded instruction to help students make meaning of math vocabulary, ideas, and concepts in context. The three levels of sca olding practices within each lesson are based on WIDA – Entering/Emerging, Developing/Expanding, and Bridging/Reaching - so teachers can provide the right level of support for each student.



English Language Learner

In this unit, students are provided with a number of scaffolds to support their comprehension of the language used to present and explain multiplication and division. Because many of the words and phrases used are likely unfamiliar to ELs, students are supported in understanding and using these words.

Lesson 3-1 – *equal*
Lesson 3-2 – *enough*
Lesson 3-3 – *any order*
Lesson 3-4 – *share, sharing*
Lesson 3-5 – *like*
Lesson 3-6 – *repeated*

English Learner Scaffolds

Entering/Emerging Support students in understanding the meaning of "equal groups" by pointing out the pictures of the peach baskets. Have students chorally count to determine that each group has the same number of objects. Then have students explain how they know that the peaches are in equal groups.

Developing/Expanding Provide students the following sentence starter to help them relate multiplication to equal groups:

I know the peach baskets represent multiplication because _____.

Bridging/Reaching Have students work a partner to describe the meaning of the multiplication equation $3 \times 5 = 15$ in terms of equal groups and the number of objects in each group.

Math Language Routines

Indiana Reveal Math integrates math language routines in every lesson during Explore and Develop to support sense-making and cultivate conversation. They are based on design principles from Stanford Center for Assessment, Learning, and Equity and provide numerous bene ts:

MLR1: Stronger and Clearer Each Time

MLR2: Collect and Display

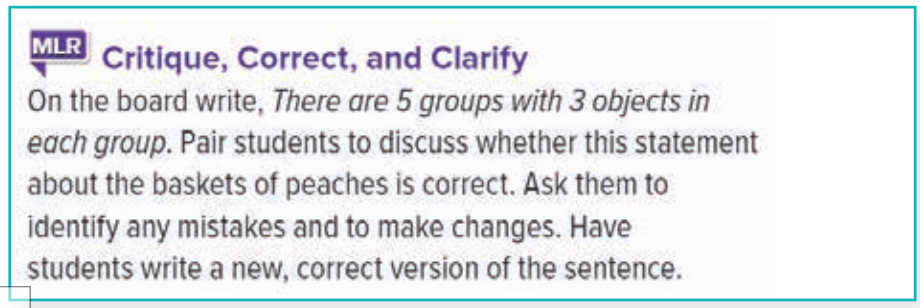
MLR3: Critique, Correct, and Clarify

MLR4: Information Gap

MLR5: Co-Craft Questions and Problems

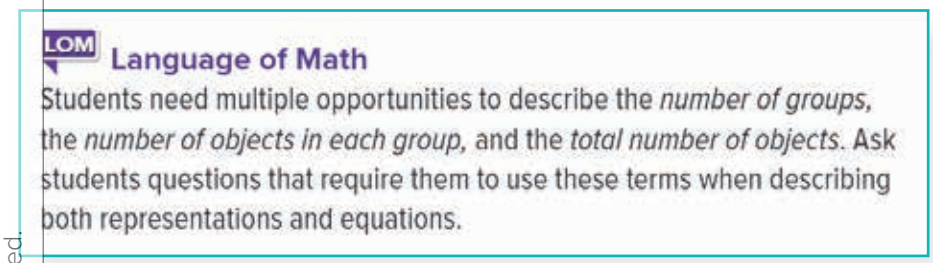
MLR6: Three Reads

MLR7: Compare and Connect



Language of Math

Math is not just operations and calculations but its own language from which to communicate and collaborate with others. Language of Math promotes the development of key vocabulary terms that support how we talk about and think about math in the context of the lesson content.



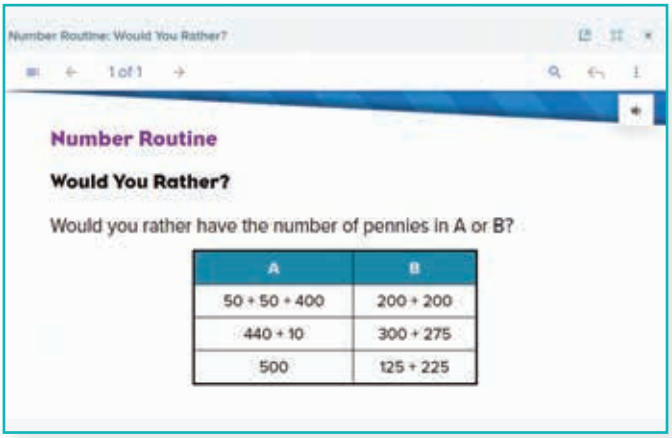
Fluency

Fluency is not just about memorization; it is about having a working understanding and mastery of operations, relationships, and concepts. *Indiana Reveal Math* speaks to all the elements of uency throughout each unit.

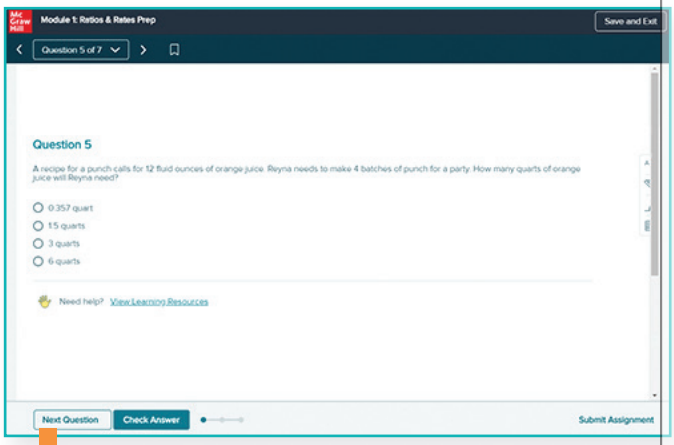
Daily Fluency Activities

Number Routines develop a strong number sense and promote an e cient and exible application of strategy to solve unknown problems. Students use discussion and reasoning to help make the most of the previously learned strategy.

Number Routines are a daily opportunity to focus on the development and strengthening of number sense and can be used throughout the day when time permits.



Digital Games provide ample practice of previously learned content to develop pro ciency and uency throughout the year.

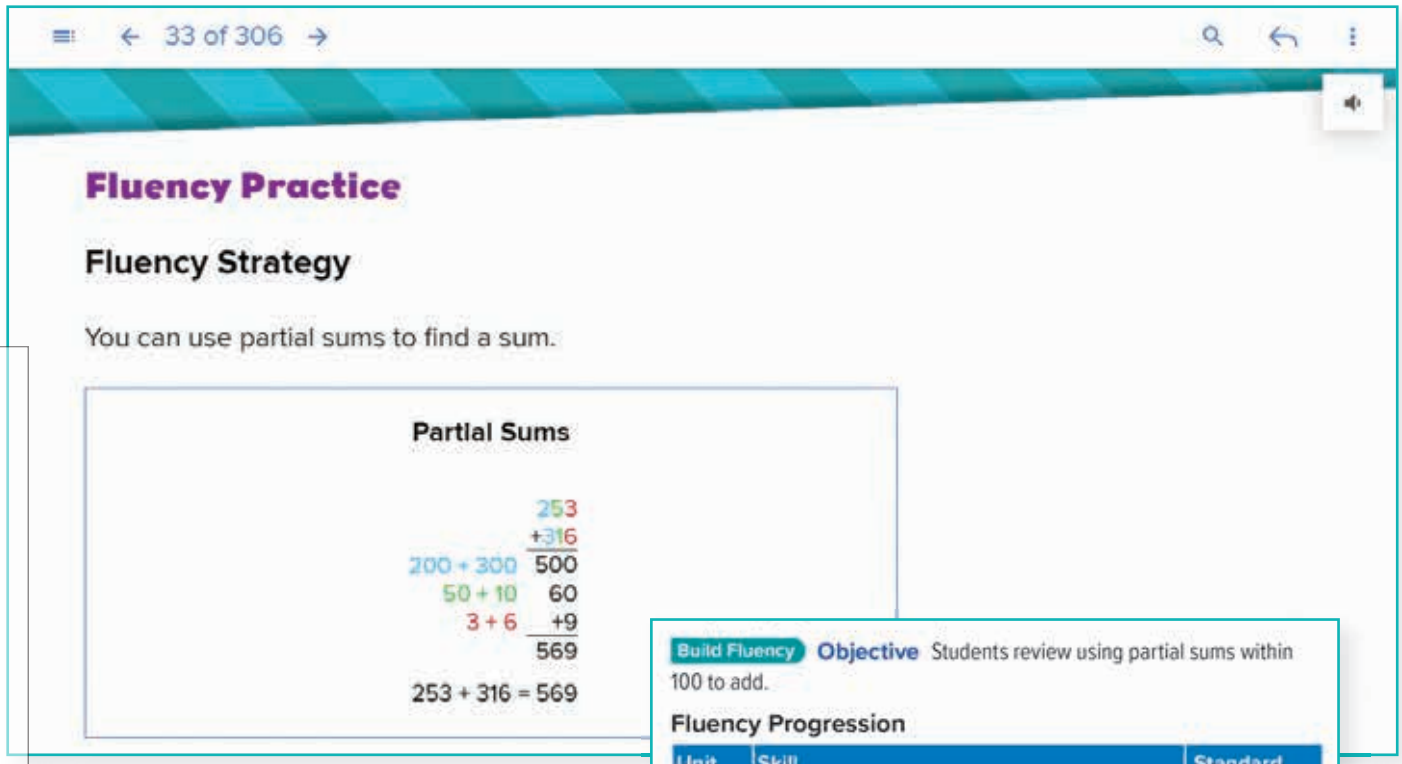


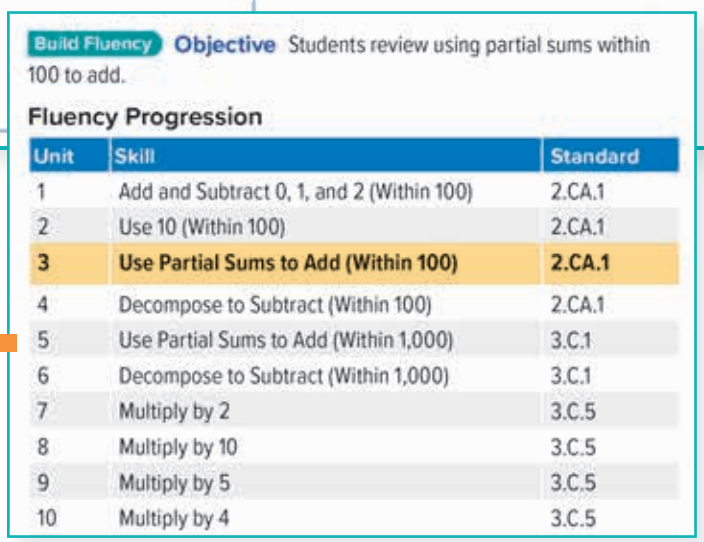
Spiral Review provides practice with mixed standard coverage for major clusters within the grade level to prepare students for end-of-year testing.

Unit Fluency Practice

Available in the print and interactive Student Edition, **Fluency Practice** is built into every unit review and includes:

- Fluency Strategy – focus on practice with the strategy
- Fluency Flash – a check for understanding
- Fluency Check – students utilize whichever strategies they are most comfortable using
- Fluency Talk – students share their responses and communicate their understanding





Unit	Skill	Standard
1	Add and Subtract 0, 1, and 2 (Within 100)	2.CA.1
2	Use 10 (Within 100)	2.CA.1
3	**Use Partial Sums to Add (Within 100)**	**2.CA.1**
4	Decompose to Subtract (Within 100)	2.CA.1
5	Use Partial Sums to Add (Within 1,000)	3.C.1
6	Decompose to Subtract (Within 1,000)	3.C.1
7	Multiply by 2	3.C.5
8	Multiply by 10	3.C.5
9	Multiply by 5	3.C.5
10	Multiply by 4	3.C.5

Fluency Progressions are built into the program design to help teachers easily identify the objective and sequence of uency activities.

NOTES:

Scope and Sequence

Indiana Standard Code	Indiana Standard Text	Units
INDIANA ACADEMIC STANDARDS: GRADE K		
Number Sense		
K.NS.1	Count to at least 100 by ones and tens and count on by one from any number.	12
K.NS.2	Write whole numbers from zero to 20 and recognize number words from zero to 10. Represent a number of objects with a written numeral zero to 20 (with zero representing a count of no objects).	2, 3, 9, 10
K.NS.3	Find the number that is one more than or one less than any whole number up to 20.	2, 3, 12
K.NS.4	Say the number names in standard order when counting objects, pairing each object with one and only one number name and each number name with one and only one object. Understand that the last number describes the number of objects counted and that the number of objects is the same regardless of their arrangement or the order in which they were counted.	2, 3
K.NS.5	Count up to 20 objects arranged in a line, a rectangular array, or a circle. Count up to 10 objects in a scattered configuration. Count out the number of objects, given a number from one to 20.	12
K.NS.6	Recognize sets of one to 10 objects in patterned arrangements and tell how many without counting.	3, 4
K.NS.7	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group (e.g. by using matching and counting strategies).	2, 3
K.NS.8	Compare the values of two numbers from 1 to 20 presented as written numerals.	2, 3
K.NS.9	Correctly use the words for comparison, including: one and many; none, some and all; more and less; most and least; and equal to, more than and less than.	2, 3, 4
K.NS.10	Separate sets of 10 or fewer objects into equal groups.	8
K.NS.11	Develop initial understandings of place value and the base 10 number system by showing equivalent forms of whole numbers from 10 to 20 as groups of tens and ones using objects and drawings.	8, 9, 10
Computation and Algebraic Thinking		
K.CA.1	Use objects, drawings, mental images, sounds, etc., to represent addition and subtraction within 10.	6, 7, 8
K.CA.2	Solve real-world problems that involve addition and subtraction within 10 (e.g., by using objects or drawings to represent the problem).	6. 7
K.CA.3	Use objects, drawings, etc., to decompose numbers less than or equal to 10 into pairs in more than one way, and record each decomposition with a drawing or an equation (e.g., 5 = 2 + 3 and 5 = 4 + 1). [In Kindergarten, students should see equations and be encouraged to trace them, however, writing equations is not required.]	8
K.CA.4	Find the number that makes 10 when added to the given number for any number from one to nine (e.g., by using objects or drawings), and record the answer with a drawing or an equation.	8
K.CA.5	Create, extend, and give an appropriate rule for simple repeating and growing patterns with numbers and shapes.	1, 4, IN

Indiana Standard Code	Indiana Standard Text	Units
Geometry		
K.G.1	Describe the positions of objects and geometric shapes in space using the terms inside, outside, between, above, below, near, far, under, over, up, down, behind, in front of, next to, to the left of and to the right of.	5, 11
K.G.2	Compare two- and three-dimensional shapes in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	13
K.G.3	Model shapes in the world by composing shapes from objects (e.g., sticks and clay balls) and drawing shapes.	13
K.G.4	Compose simple geometric shapes to form larger shapes (e.g., create a rectangle composed of two triangles).	13
Measurement		
K.M.1	Make direct comparisons of the length, capacity, weight, and temperature of objects, and recognize which object is shorter, longer, taller, lighter, heavier, warmer, cooler, or holds more.	14, IN
K.M.2	Understand concepts of time, including: morning, afternoon, evening, today, yesterday, tomorrow, day, week, month, and year. Understand that clocks and calendars are tools that measure time.	IN
Data Analysis		
K.DA.1	Identify, sort, and classify objects by size, number, and other attributes. Identify objects that do not belong to a particular group and explain the reasoning used.	4

INDIANA ACADEMIC STANDARDS: **GRADE 1**

Number Sense		
1.NS.1	Count to at least 120 by ones, fives, and tens from any given number. In this range, read and write numerals and represent a number of objects with a written numeral.	2
1.NS.2	Understand that 10 can be thought of as a group of ten ones — called a "ten." Understand that the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. Understand that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	3
1.NS.3	Match the ordinal numbers first, second, third, etc., with an ordered set up to 10 items.	2
1.NS.4	Use place value understanding to compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	3
1.NS.5	Find mentally ten more or ten less than a given two-digit number without having to count, and explain the thinking process used to get the answer.	9, 11
1.NS.6	Show equivalent forms of whole numbers as groups of tens and ones, and understand that the individual digits of a two-digit number represent amounts of tens and ones.	2, 3
Computation and Algebraic Thinking		
1.CA.1	Demonstrate fluency with addition facts and the corresponding subtraction facts within 20. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a 10 (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). Understand the role of 0 in addition and subtraction.	4, 5

Indiana Standard Code	Indiana Standard Text	Units
1.CA.2	Solve real-world problems involving addition and subtraction within 20 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).	4, 5
1.CA.3	Create a real-world problem to represent a given equation involving addition and subtraction within 20.	4, 5
1.CA.4	Solve real-world problems that call for addition of three whole numbers whose sum is within 20 (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem).	4, 7
1.CA.5	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; describe the strategy and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and that sometimes it is necessary to compose a ten.	9
1.CA.6	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false (e.g., Which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2).	4, 5
1.CA.7	Create, extend, and give an appropriate rule for number patterns using addition within 100.	2, 4, 9
Geometry		
1.G.1	Identify objects as two-dimensional or three-dimensional. Classify and sort two-dimensional and three-dimensional objects by shape, size, roundness and other attributes. Describe how two-dimensional shapes make up the faces of three-dimensional objects.	6
1.G.2	Distinguish between defining attributes of two- and three-dimensional shapes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size). Create and draw two-dimensional shapes with defining attributes.	6
1.G.3	Use two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. [In grade 1, students do not need to learn formal names such as “right rectangular prism.”]	6
1.G.4	Partition circles and rectangles into two and four equal parts; describe the parts using the words halves, fourths, and quarters; and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of, the parts. Understand for partitioning circles and rectangles into two and four equal parts that decomposing into equal parts creates smaller parts.	13
Measurement		
1.M.1	Use direct comparison or a nonstandard unit to compare and order objects according to length, area, capacity, weight, and temperature.	12
1.M.2	Tell and write time to the nearest half-hour and relate time to events (before/after, shorter/longer) using analog clocks. Understand how to read hours and minutes using digital clocks.	12
1.M.3	Identify the value of a penny, nickel, dime, and a collection of pennies, nickels, and dimes.	12
Data Analysis		
1.DA.1	Organize and interpret data with up to three choices (What is your favorite fruit? apples, bananas, oranges); ask and answer questions about the total number of data points, how many in each choice, and how many more or less in one choice compared to another.	12

Indiana Standard Code	Indiana Standard Text	Units

INDIANA ACADEMIC STANDARDS: **GRADE 2**

Number Sense		
2.NS.1	Count by ones, twos, fives, tens, and hundreds up to at least 1,000 from any given number.	3
2.NS.2	Read and write whole numbers up to 1,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000.	2
2.NS.3	Plot and compare whole numbers up to 1,000 on a number line.	2, 3, 5, 7
2.NS.4	Match the ordinal numbers first, second, third, etc., with an ordered set up to 30 items.	2
2.NS.5	Determine whether a group of objects (up to 20) has an odd or even number of members (e.g., by placing that number of objects in two groups of the same size and recognizing that for even numbers no object will be left over and for odd numbers one object will be left over, or by pairing objects or counting them by 2s).	3
2.NS.6	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones (e.g., 706 equals 7 hundreds, 0 tens, and 6 ones). Understand that 100 can be thought of as a group of ten tens - called a "hundred." Understand that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	2
2.NS.7	Use place value understanding to compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	2
Computation and Algebraic Thinking		
2.CA.1	Add and subtract fluently within 100.	5, 6, 9, 10
2.CA.2	Solve real-world problems involving addition and subtraction within 100 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). Use estimation to decide whether answers are reasonable in addition problems.	4, 5, 6
2.CA.3	Solve real-world problems involving addition and subtraction within 100 in situations involving lengths that are given in the same units (e.g., by using drawings, such as drawings of rulers, and equations with a symbol for the unknown number to represent the problem).	5, 6, 7
2.CA.4	Add and subtract within 1000, using models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; describe the strategy and explain the reasoning used. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones, and that sometimes it is necessary to compose or decompose tens or hundreds.	9, 10
2.CA.5	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal groups.	3
2.CA.6	Show that the order in which two numbers are added (commutative property) and how the numbers are grouped in addition (associative property) will not change the sum. These properties can be used to show that numbers can be added in any order.	5, 9
2.CA.7	Create, extend, and give an appropriate rule for number patterns using addition and subtraction within 1000.	3, 5, 12

Indiana Standard Code	Indiana Standard Text	Units
Geometry		
2.G.1	Identify, describe, and classify two- and three-dimensional shapes (triangle, square, rectangle, cube, right rectangular prism) according to the number and shape of faces and the number of sides and/or vertices. Draw two-dimensional shapes.	12
2.G.2	Create squares, rectangles, triangles, cubes, and right rectangular prisms using appropriate materials.	12
2.G.3	Investigate and predict the result of composing and decomposing two- and three-dimensional shapes.	12
2.G.4	Partition a rectangle into rows and columns of same-size (unit) squares and count to find the total number of same-size squares.	12
2.G.5	Partition circles and rectangles into two, three, or four equal parts; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal parts of identical wholes need not have the same shape.	12
Measurement		
2.M.1	Describe the relationships among inch, foot, and yard. Describe the relationship between centimeter and meter.	7
2.M.2	Estimate and measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter and meter.	7
2.M.3	Understand that the length of an object does not change regardless of the units used. Measure the length of an object twice using length units of different lengths for the two measurements. Describe how the two measurements relate to the size of the unit chosen.	7
2.M.4	Estimate and measure volume (capacity) using cups and pints.	7
2.M.5	Tell and write time to the nearest five minutes from analog clocks, using a.m. and p.m. Solve real-world problems involving addition and subtraction of time intervals on the hour or half hour.	3, 8
2.M.6	Describe relationships of time, including: seconds in a minute; minutes in an hour; hours in a day; days in a week; and days, weeks, and months in a year.	8
2.M.7	Find the value of a collection of pennies, nickels, dimes, quarters and dollars.	8
Data Analysis		
2.DA.1	Draw a picture graph (with single-unit scale) and a bar graph (with single-unit scale) to represent a data set with up to four choices (What is your favorite color? red, blue, yellow, green). Solve simple put-together, take-apart, and compare problems using information presented in the graphs.	11

INDIANA ACADEMIC STANDARDS: **GRADE 3**

Number Sense		
3.NS.1	Read and write whole numbers up to 10,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 10,000.	2
3.NS.2	Compare two whole numbers up to 10,000 using >, =, and < symbols.	2

Indiana Standard Code	Indiana Standard Text	Units
3.NS.3	Understand a fraction, 1/b, as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction, a/b, as the quantity formed by a parts of size 1/b. [In grade 3, limit denominators of fractions to 2, 3, 4, 6, 8.]	7
3.NS.4	Represent a fraction, 1/b, on a number line by defining the interval from 0 to 1 as the whole, and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.	7
3.NS.5	Represent a fraction, a/b, on a number line by marking off lengths 1/b from 0. Recognize that the resulting interval has size a/b, and that its endpoint locates the number a/b on the number line.	7
3.NS.6	Understand two fractions as equivalent (equal) if they are the same size, based on the same whole or the same point on a number line.	8
3.NS.7	Recognize and generate simple equivalent fractions (e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent (e.g., by using a visual fraction model).	8
3.NS.8	Compare two fractions with the same numerator or the same denominator by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	8
3.NS.9	Use place value understanding to round 2- and 3-digit whole numbers to the nearest 10 or 100.	2
Computation		
3.C.1	Fluently add and subtract whole numbers within 1000 using strategies and algorithms based on place value, properties of operations, and relationships between addition and subtraction.	2
3.C.2	Represent the concept of multiplication of whole numbers with the following models: equal-sized groups, arrays, area models, and equal "jumps" on a number line. Understand the properties of 0 and 1 in multiplication.	3, 4
3.C.3	Represent the concept of division of whole numbers with the following models: partitioning, sharing, and an inverse of multiplication. Understand the properties of 0 and 1 in division.	3, 9
3.C.4	Interpret whole-number quotients of whole numbers (e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each).	3
3.C.5	Multiply and divide within 100 using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8), or properties of operations.	4, 5, 9, 10
3.C.6	Demonstrate fluency with mastery of multiplication facts and corresponding division facts of 0 to 10.	5, 9
Algebraic Thinking		
3.AT.1	Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	2
3.AT.2	Solve real-world problems involving whole number multiplication and division within 100 in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	3, 4, 5, 9
3.AT.3	Solve two-step real-world problems using the four operations of addition, subtraction, multiplication and division (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	2, 3, 4, 5, 10
3.AT.4	Interpret a multiplication equation as equal groups (e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each). Represent verbal statements of equal groups as multiplication equations.	3

Indiana Standard Code	Indiana Standard Text	Units
3.AT.5	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	3, 4, 5, 11
3.AT.6	Create, extend, and give an appropriate rule for number patterns within 100 (including patterns in the addition table or multiplication table).	4, 5, 10
Geometry		
3.G.1	Identify and describe the following: cube, sphere, prism, pyramid, cone, and cylinder.	13
3.G.2	Understand that shapes (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize and draw rhombuses, rectangles, and squares as examples of quadrilaterals. Recognize and draw examples of quadrilaterals that do not belong to any of these subcategories.	13
3.G.3	Identify, describe and draw points, lines and line segments using appropriate tools (e.g., ruler, straightedge, and technology), and use these terms when describing two-dimensional shapes.	13
3.G.4	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole (1/2, 1/3, 1/4, 1/6, 1/8).	7
Measurement		
3.M.1	Estimate and measure the mass of objects in grams (g) and kilograms (kg) and the volume of objects in quarts (qt), gallons (gal), and liters (l). Add, subtract, multiply, or divide to solve one-step real-world problems involving masses or volumes that are given in the same units (e.g., by using drawings, such as a beaker with a measurement scale, to represent the problem).	12
3.M.2	Choose and use appropriate units and tools to estimate and measure length, weight, and temperature. Estimate and measure length to a quarter-inch, weight in pounds, and temperature in degrees Celsius and Fahrenheit.	12
3.M.3	Tell and write time to the nearest minute from analog clocks, using a.m. and p.m., and measure time intervals in minutes. Solve real-world problems involving addition and subtraction of time intervals in minutes.	12
3.M.4	Find the value of any collection of coins and bills. Write amounts less than a dollar using the ¢ symbol and write larger amounts using the $ symbol in the form of dollars and cents (e.g., $4.59). Solve real-world problems to determine whether there is enough money to make a purchase.	12
3.M.5	Find the area of a rectangle with whole-number side lengths by modeling with unit squares, and show that the area is the same as would be found by multiplying the side lengths. Identify and draw rectangles with the same perimeter and different areas or with the same area and different perimeters.	6, 11
3.M.6	Multiply side lengths to find areas of rectangles with whole-number side lengths to solve real-world problems and other mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	6, 11
3.M.7	Find perimeters of polygons given the side lengths or given an unknown side length.	11
Data Analysis		
3.DA.1	Create scaled picture graphs, scaled bar graphs, and frequency tables to represent a data set—including data collected through observations, surveys, and experiments—with several categories. Solve one- and two-step "how many more" and "how many less" problems regarding the data and make predictions based on the data.	12
3.DA.2	Generate measurement data by measuring lengths with rulers to the nearest quarter of an inch. Display the data by making a line plot, where the horizontal scale is marked off in appropriate units, such as whole numbers, halves, or quarters.	12

Indiana Standard Code	Indiana Standard Text	Units

INDIANA ACADEMIC STANDARDS: **GRADE 4**

Number Sense		
4.NS.1	Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.	2
4.NS.2	Compare two whole numbers up to 1,000,000 using >, =, and < symbols.	2, 6
4.NS.3	Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers as improper fractions using objects or pictures.	8
4.NS.4	Explain why a fraction, a/b, is equivalent to a fraction, (n × a)/(n × b), by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.]	8
4.NS.5	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, 1/2, and 1). Recognize comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	8
4.NS.6	Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., 1/2 = 0.5 = 0.50, 7/4 = 1 3/4 = 1.75).	12
4.NS.7	Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model).	12
4.NS.8	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.	5
4.NS.9	Use place value understanding to round multi-digit whole numbers to any given place value.	2, 6, 7
Computation		
4.C.1	Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach.	3, 7
4.C.2	Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Describe the strategy and explain the reasoning.	6
4.C.3	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning.	7
4.C.4	Multiply fluently within 100.	6
4.C.5	Add and subtract fractions with common denominators. Decompose a fraction into a sum of fractions with common denominators. Understand addition and subtraction of fractions as combining and separating parts referring to the same whole.	9
4.C.6	Add and subtract mixed numbers with common denominators (e.g. by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction).	10

Indiana Standard Code	Indiana Standard Text	Units
4.C.7	Show how the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can be multiplied in any order. Understand and use the distributive property.	5, 6
Algebraic Thinking		
4.AT.1	Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	3
4.AT.2	Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems.	4, 6, 7
4.AT.3	Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7, and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.	4
4.AT.4	Solve real-world problems with whole numbers involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem), distinguishing multiplicative comparison from additive comparison. [In grade 4, division problems should not include a remainder.]	4
4.AT.5	Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).	9
4.AT.6	Describe a relationship between two variables and use to find a second number when a first number is given. Generate a number pattern that follows a given rule.	5, 13
Geometry		
4.G.1	Identify, describe, and draw parallelograms, rhombuses, and trapezoids using appropriate tools (e.g., ruler, straightedge and technology).	14
4.G.2	Recognize and draw lines of symmetry in two-dimensional figures. Identify figures that have lines of symmetry.	14
4.G.3	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint.	14
4.G.4	Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.	14
4.G.5	Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse).	14
Measurement		
4.M.1	Measure length to the nearest quarter-inch, eighth-inch, and millimeter.	13
4.M.2	Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two-column table.	13
4.M.3	Use the four operations to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.	12, 13
4.M.4	Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems involving shapes.	13

Indiana Standard Code	Indiana Standard Text	Units
4.M.5	Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. Understand an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure other angles. Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees.	14
4.M.6	Measure angles in whole-number degrees using appropriate tools. Sketch angles of specified measure.	14
Data Analysis		
4.DA.1	Formulate questions that can be addressed with data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs.	13
4.DA.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using data displayed in line plots.	13
4.DA.3	Interpret data displayed in a circle graph.	13

INDIANA ACADEMIC STANDARDS: **GRADE 5**

Number Sense		
5.NS.1	Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.	3, 9
5.NS.2	Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.	9
5.NS.3	Recognize the relationship that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right, and inversely, a digit in one place represents 1/10 of what it represents in the place to its left.	3
5.NS.4	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	5, 6, 8
5.NS.5	Use place value understanding to round decimal numbers up to thousandths to any given place value.	3
5.NS.6	Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).	3
Computation		
5.C.1	Multiply multi-digit whole numbers fluently using a standard algorithmic approach.	5
5.C.2	Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used.	7
5.C.3	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	5
5.C.4	Add and subtract fractions with unlike denominators, including mixed numbers.	9

Indiana Standard Code	Indiana Standard Text	Units
5.C.5	Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.	10
5.C.6	Explain why multiplying a positive number by a fraction greater than one results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, a/b = (n x a)/(n x b), to the effect of multiplying a/b by one.	10
5.C.7	Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.	11
5.C.8	Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.	4, 6, 8
5.C.9	Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.	14
Algebraic Thinking		
5.AT.1	Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.	5, 7
5.AT.2	Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.	9
5.AT.3	Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).	10
5.AT.4	Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).	11
5.AT.5	Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem).	4, 6, 8
5.AT.6	Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	13
5.AT.7	Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	13
5.AT.8	Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.	14
Geometry		
5.G.1	Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter.	13, IN
5.G.2	Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.	13

Indiana Standard Code	Indiana Standard Text	Units
Measurement		
5.M.1	Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.	12
5.M.2	Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	10
5.M.3	Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.	IN
5.M.4	Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths or multiplying the height by the area of the base.	2
5.M.5	Apply the formulas V = l × w × h and V = B × h for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.	2
5.M.6	Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.	2
Data Analysis		
5.DS.1	Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.	IN
5.DS.2	Understand and use measures of center (mean and median) and frequency (mode), to describe a data set.	12

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(continued)

Unit 10: Numbers 16 to 19

- Represent 16 and 17
- How Many Counters?
- Make 16 and 17
- Decompose 16 and 17
- Represent 18 and 19
- Make 18 and 19
- Decompose 18 and 19
- Represent, Make, and Decompose 20

Unit 11: 3-Dimensional Shapes

- 2-Dimensional and 3-Dimensional Shapes
- Flat Shape or Solid Shape?
- Cubes
- Spheres
- Cylinders
- Cones
- Describe Solids

Unit 12: Count to 100

- Count by 1s to 50
- Count by 1s to 100
- What Number Comes After?
- Count by 10s to 100
- Count From Any Number to 100
- Count to Find Out How Many

Unit 13: Analyze, Compare, and Compose Shapes

- Compare and Contrast 2-Dimensional Shapes
- Which Shape Does Not Belong?
- Build and Draw 2-Dimensional Shapes
- Compose 2-Dimensional Shapes
- Compare and Contrast 3-Dimensional Shapes
- Build 3-Dimensional Shapes
- Describe 3-Dimensional Shapes in the World

Unit 14: Compare Measurable Attributes

- Describe Attributes of Objects
- Compare Lengths
- Compare Heights
- Comparing Objects
- Compare Weights
- Compare Capacity

Indiana Unit: Patterns

- Shapes and Patterns
- Size Patterns
- Object Patterns
- Number Patterns

Indiana Unit: Time and Temperature

- Morning, Afternoon, and Evening
- Telling Time
- Calendar Time
- Days of the Week
- Months of the Year
- Today, Yesterday, and Tomorrow
- Warmer and Cooler

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Unit 8: Meanings of Subtraction

- Represent and Solve Take From Problems
- Represent and Solve More Take From Problems
- Represent and Solve Take Apart Problems
- Problems and Equations 2
- Represent and Solve More Take Apart Problems
- Solve Problems Involving Subtraction
- Solve More Problems Involving Subtraction
- Solve Problems Involving Addition and Subtraction

Unit 9: Addition within 100

- Use Mental Math to Find 10 More
- Number Chart Parts
- Represent Adding Tens
- Represent Adding Tens and Ones
- Decompose Addends to Add
- Use an Open Number Line to Add within 100
- Decompose to Add on an Open Number Line
- Regroup to Add
- Add 2-Digit Numbers

Unit 10: Compare Using Addition and Subtraction

- Represent and Solve Compare Problems
- Represent and Solve Compare Problems Using Addition
- Showing Addition and Subtraction
- Represent and Solve More Compare Problems
- Solve Compare Problems Using Addition and Subtraction

Unit 11: Subtraction within 100

- Use Mental Math to Find 10 Less
- Represent Subtracting Tens
- Subtract Tens
- Use Addition to Subtract Tens
- Showing Problems with Tens
- Explain Subtraction Strategies

Unit 12: Measurement and Data

- Compare and Order Lengths
- More Ways to Compare Lengths
- Strategies to Measure Lengths
- How Long is the Rope?
- More Strategies to Measure Lengths
- Tell Time to the Hour
- Tell Time to the Half Hour
- Organize Data
- Represent Data
- Interpret Data
- Solve Problems Involving Data
- Identify Values of Coins
- Determine the Value of a Set of Coins
- Compare Weight
- Compare Capacity
- Compare Temperature

Unit 13: Equal Shares

- Understand Equal Shares
- Partition Shapes into Halves
- Partition Shapes Into Fourths
- Partitioning into Fourths
- Describe the Whole
- Describe Halves and Fourths of Shapes

Program Table of Contents | Grade 2

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(continued)

Unit 7: Measure and Compare Lengths

- Measure Length with Inches
- Measure Length with Feet and Yards
- Compare Lengths Using Customary Units
- Relate Inches, Feet, and Yards
- Estimate Length Using Customary Units
- Measure Length with Centimeters and Meters
- Compare Lengths Using Metric Units
- Relate Centimeters and Meters
- Relating Measurement
- Estimate Length Using Metric Units
- Solve Problems Involving Length
- Solve More Problems Involving Length
- Liquid Volume

Unit 8: Measurement: Money and Time

- Understand the Values of Coins
- Solve Money Problems Involving Coins
- Counting Coins
- Tell Time to the Nearest Five Minutes
- Be Precise When Telling Time
- Time Relationships

Unit 9: Strategies to Add 3-Digit Numbers

- Use Mental Math to Add 10 or 100
- Represent Addition with 3-Digit Numbers
- Represent Addition with 3-Digit Numbers with Regrouping
- Decompose Addends to Add 3-Digit Numbers
- Decompose One Addend to Add 3-Digit Numbers
- Adjust Addends to Add 3-Digit Numbers
- Explain Addition Strategies
- Addition Word Problems

Unit 10: Strategies to Subtract 3-Digit Numbers

- Use Mental Math to Subtract 10 and 100
- Represent Subtraction with 3-Digit Numbers
- Decompose One 3-Digit Number to Count Back
- Count On to Subtract 3-Digit Numbers
- Regroup Tens
- Regroup Tens and Hundreds
- Adjust Numbers to Subtract 3-Digit Numbers
- Explain Subtraction Strategies
- Solve Problems Involving Addition and Subtraction
- Addition and Subtraction Problems

Unit 11: Data Analysis

- Understand Picture Graphs
- Understand Bar Graphs
- Solve Problems Using Bar Graphs
- Collect Measurement Data
- Understand Line Plots
- Reading Line Plots
- Show Data On a Line Plot

Unit 12: Geometric Shapes and Equal Shares

- Recognize 2-Dimensional Shapes by Their Attributes
- Draw 2-Dimensional Shapes from Their Attributes
- Recognize 3-Dimensional Shapes from Their Attributes
- Understand Equal Shares
- Partitioning Shapes
- Relate Equal Shares
- Partition a Rectangle into Rows and Columns

Program Table of Contents | Grade 3

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(continued)

Unit 8: Fraction Equivalence and Comparison

- Understand Equivalent Fractions
- Represent Equivalent Fractions
- Represent Equivalent Fractions on a Number Line
- Compare Fraction Wholes
- Compare Fractions with the Same Denominator
- Compare Fractions with the Same Numerator
- Compare Fractions
- Equivalent Fractions Card Sort

Unit 9: Use Multiplication to Divide

- Use Multiplication to Solve Division Equations
- Divide by 2
- Divide by 5 and 10
- Divide by 1 and 0
- Divide by 3 and 6
- Divide by 4 and 8
- Word Problems
- Divide by 9
- Divide by 7
- Multiply and Divide Fluently within 100

Unit 10: Use Properties and Strategies to Multiply and Divide

- Patterns with Multiples of 10
- More Multiplication Patterns
- Understand the Associative Property
- Multiplication Equations
- Two-Step Problems Involving Multiplication and Division
- Solve Two-Step Problems
- Explain the Reasonableness of a Solution

Unit 11: Perimeter

- Understand Perimeter
- Determine Perimeter of Figures
- Determine an Unknown Side Length
- Solve Problems Involving Area and Perimeter
- Expressions for Perimeter and Area
- Solve Problems Involving Measurement
- Area and Perimeter Relationships

Unit 12: Measurement and Data

- Measure Liquid Volume
- Estimate and Solve Problems with Liquid Volume
- Measure Mass
- Estimate and Solve Problems with Mass
- **Indiana Lesson:** Measure Weight
- Tell Time to the Nearest Minute
- Solve Problems Involving Time
- Understand Scaled Picture Graphs
- Understand Scaled Bar Graphs
- Solve Problems Involving Scaled Graphs
- Measure to Halves or Fourths of an Inch
- Measuring Length
- Show Measurement Data on a Line Plot
- Solve Money Problems Involving Dollar Bills, and Coins
- Use Tools to Measure Temperature

Unit 13: Describe and Analyze 2-Dimensional Shapes

- Describe and Classify Polygons
- Describe Quadrilaterals
- Classify Quadrilaterals
- Classifying Shapes
- Draw Quadrilaterals with Specific ttributes
- Points, Lines, and Line Segments
- Solid Figures

Program Table of Contents | Grade 4

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(continued)

- Represent Whole Numbers as Fractions
- Represent a Fraction Greater Than One on a Number Line

Unit 9: Addition and Subtraction Meanings and Strategies with Fractions

- Understand Decomposing Fractions
- Represent Adding Fractions
- Add Fractions with Like Denominators
- Represent Subtracting Fractions
- Subtract Fractions with Like Denominators
- Fraction Sums and Difference
- Solve Problems Involving Fractions

Unit 10: Addition and Subtraction Strategies with Mixed Numbers

- Understand Decomposing Mixed Numbers
- Represent Adding Mixed Numbers
- Add Mixed Numbers
- Represent Subtracting Mixed Numbers
- Subtract Mixed Numbers
- Solve Problems Involving Mixed Numbers
- Word Problems with Mixed Numbers

Unit 11: Multiply Fractions by Whole Numbers

- Represent Multiplication of a Unit Fraction By a Whole Number
- Understand Multiplying a Fraction By a Whole Number
- Multiply a Fraction by a Whole Number
- Multiply a Mixed Number by a Whole Number
- Which is Greater?
- Solve Problems Involving Fractions and Mixed Numbers

Unit 12: Decimal Fractions

- Understand Tenths and Hundredths
- Understand Decimal Notation
- Compare Decimals
- Decimal and Fraction Comparison
- Adding Decimals Using Fractions
- Solve Problems Involving Money

Unit 13 Units of Measurement and Data

- Relate Metric Units
- Relate Customary Units of Weight
- Relate Customary Units of Capacity
- Convert Units of Time
- Solve Problems That Involve Units of Measure
- Measuring Length in Inches
- Solve More Problems That Involve Units of Measure
- Solve Problems Using a Perimeter Formula
- Solve Problems Using an Area Formula
- Solve Problems Involving Perimeter and Area
- Display and Interpret Data on a Line Plot
- Solve Problems Involving Data on a Line Plot
- Explore Circle Graphs
- Solve Problems Involving Data in Circle Graphs

Unit 14: Geometric Figures

- Understand Lines, Line Segments, and Rays
- Classify Angles
- Draw and Measure Angles
- Understand Parallel and Perpendicular Lines
- Add and Subtract Angle Measures
- Solve Problems Involving Unknown Angle Measures
- Classify Polygons
- Classifying Shapes
- Classify Triangles
- Understand Line Symmetry
- Draw Lines of Symmetry
- Classify Quadrilaterals

Program Table of Contents | Grade 5

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(continued)

Unit 9: Add and Subtract Fractions

- Estimating Sums and Differences of Fraction
- Make an Estimate of the Sum
- Represent Addition of Fractions with Unlike Denominators
- Add Fractions with Unlike Denominators
- Represent Subtraction of Fractions with Unlike Denominators
- Subtract Fractions with Unlike Denominators
- Add Mixed Numbers with Unlike Denominators
- Subtract Mixed Numbers with Unlike Denominators
- Add and Subtract Mixed Numbers with Regrouping
- Solve Problems Involving Fractions and Mixed Numbers

Unit 10: Multiply Fractions

- Represent Multiplication of a Fraction by a Whole Number
- Multiply a Whole Number by a Fraction
- Fraction Problems
- Represent Multiplication of a Fraction by a Fraction
- Multiply a Fraction by a Fraction
- Determine the Area of Rectangles with Fractional Side Lengths
- Represent Multiplication of Mixed Numbers
- Multiply Mixed Numbers
- Multiplication as Scaling
- Solve Problems Involving Fractions

Unit 11: Divide Fractions

- Relate Fractions to Division
- Solve Problems Involving Division
- Represent Division of Whole Numbers by Unit Fractions
- Divide Whole Numbers by Unit Fractions
- Represent Division of Unit Fractions by Non-Zero Whole Numbers
- Divide Unit Fractions by Non-Zero Whole Numbers
- Which Expressions Represent the Situation?
- Solve Problems Involving Fractions

Unit 12: Measurement and Data

- Convert Customary Units
- Convert Metric Units
- Solve Multi-Step Problems Involving Measurement Units
- Represent Measurement Data on a Line Plot
- Solve Problems Involving Measurement Data on Line Plots
- Line Plots
- Determine Mode, Median, and Range of a Data Set
- Determine the Mean of a Data Set

Indiana Unit: More Data

- Collect and Organize Data
- Line Graphs
- Making Predictions from Data
- Analyze Line Graphs

Unit 13: Geometry

- Understand the Coordinate Plane
- Plot Ordered Pairs on the Coordinate Plane
- Represent Problems on a Coordinate Plane
- Classify Triangles by Properties
- Properties of Quadrilaterals
- Ordered Pairs
- Classify Quadrilaterals by Properties

Indiana Unit: More Geometry

- Circles
- Perimeter of Polygons
- Area
- Area of Triangles
- Area of Trapezoid
- Select Appropriate Measurement Formulas

Unit 14: Algebraic Thinking

- Write Numerical Expressions
- Interpret Numerical Expressions
- Evaluate Numerical Expressions
- Order of Operations
- Numerical Patterns
- Relate Numerical Patterns
- Graphs of Numerical Patterns

Digital Experience Guide

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The Digital Experience

Support for Purposeful In-Class and Virtual Learning

Indiana Reveal Math, an elementary math program, develops the problem solvers of tomorrow with a blend of purposeful print and digital resources. With integrated technology and plentiful opportunities for students to explore, collaborate, practice, and reflect, *Indiana Reveal Math* increases both student engagement and students' confidence in their math abilities

For Students:

- Interface designed for elementary students
- Fully interactive student edition
- Animations, videos, and interactive problems
- Digital games designed for purposeful practice
- Instructional mini-lessons
- Rich exploratory STEM adventures
- Highly visual and dynamic *Web Sketchpad*® activities
- Interactive question types, like drag-and-drop, open response, and multi-select

For Teachers:

- Flexible implementation options, offerin two different instructional strategies to develop the math within every lesson
- Ready-made, interactive classroom presentations
- Ability to integrate resources, including documents, presentations, Google Classroom resources, website hyperlinks, and more
- Integrated intensive support, including rich differentiation and targete intervention lessons
- Assignable homework and assessments with in-the-moment performance data and autoscoring
- Actionable reports to help analyze student data
- Integrated professional development modules and author videos

Student Dashboard

Designed with our learners in mind

The Student Dashboard is designed with our young learners in mind—allowing them to access all of the most important learning tools with ease.

1. Open scheduled work or assessments from the To-Do List.
2. View specific lesson resources throughout the course.
3. Review previously completed work and reference students' scores.
4. Access the eToolkit and Interactive Student Edition.

Student Tools Support Learning

Interactive Student Edition

The Indiana Interactive Student Edition allows students to follow along and interact with the student edition as they would in print.

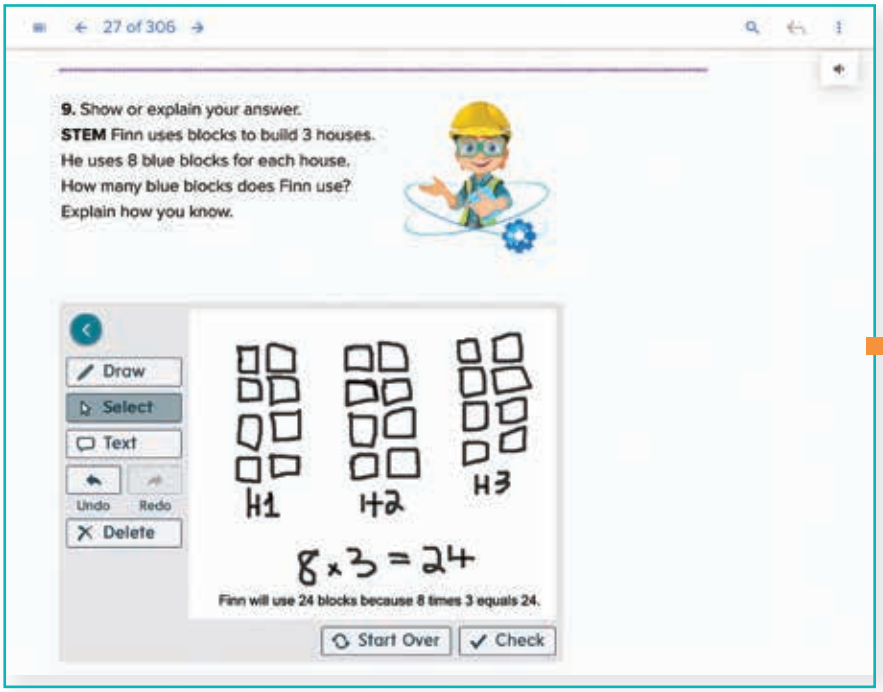
If students can mark up or answer a question in print, they can digitally as well. Slide numbers align with the print page numbers to allow for easy way nding.

Teachers can assign practice pages in the Interactive Student Edition for students to complete independently.

At Home Support

Math Replay Videos

Math Replay videos align with the lesson presentation for the day, providing a one- to two-minute overview of the lesson concept that students and parents can use as a reference while completing independent work.



Embedded tools allow students to type or draw as they work out problems and respond to questions.

eToolkit

Students can access the eToolkit at any time to support modeling and problem-solving using virtual manipulatives. Students will have access to the following manipulatives:

- Counters
- Base-Ten Blocks
- Array Builder
- Fraction Model
- Bucket Balance
- Geometry Sketch
- Money
- Fact Triangles
- Number Line
- And more!

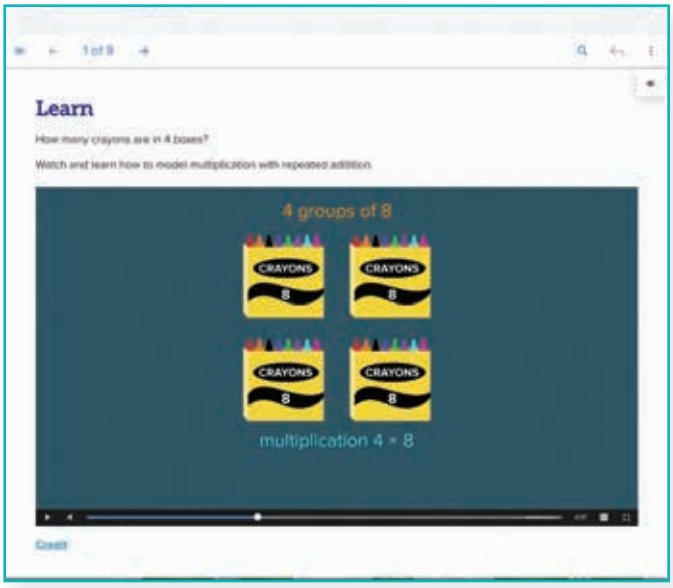
Tailored Lesson Resources

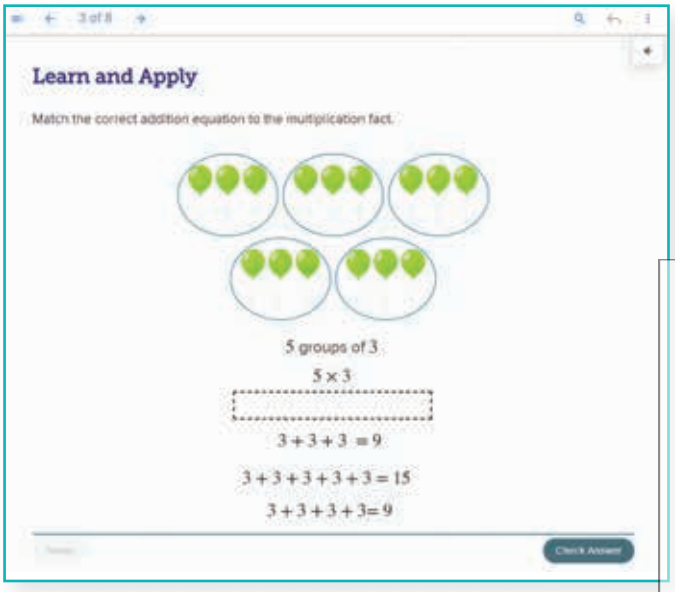
Indiana Reveal Math includes a variety of interactive di erentiation options that tailor di erentiation time to speci c objectives, such as reinforcing understanding, building pro ciency, or extending thinking.

Take Another Look

Take Another Look digital mini-lessons provide quick, actionable data to help inform instruction while supporting each student with a three-part, gradual-release activity:

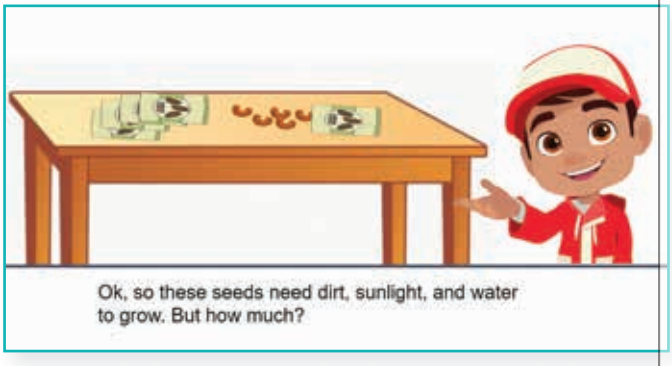
- Modeling
- Interactive Practice
- Lesson Check





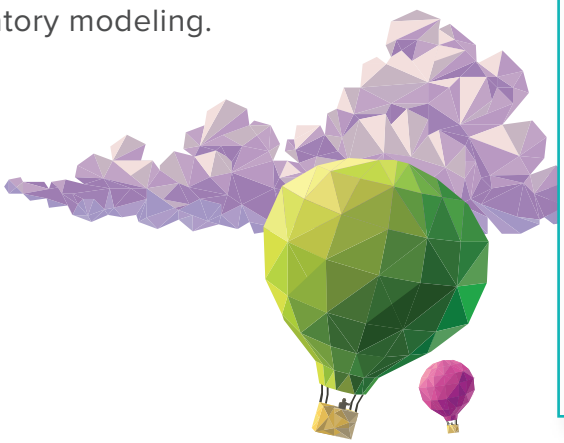
STEM Adventures

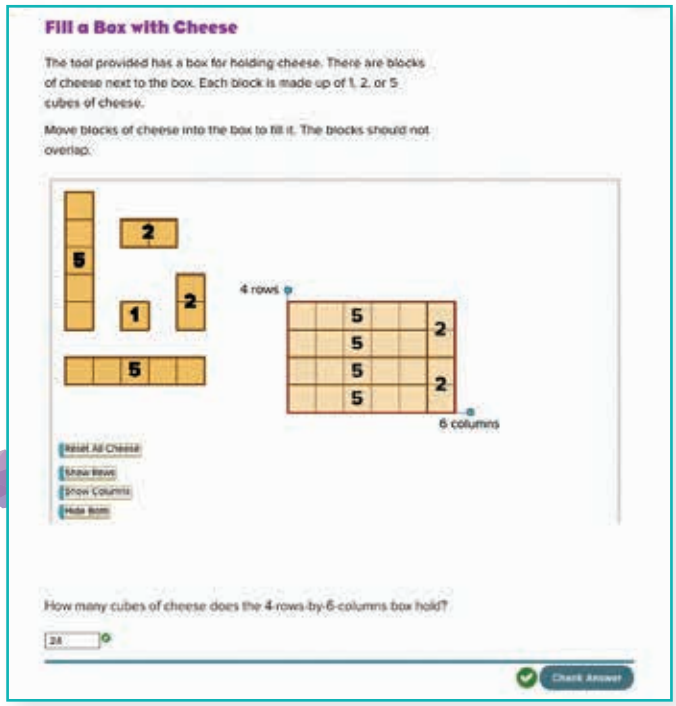
STEM Adventures are rich digital simulations that allow students to apply skills and concepts to solve real-world problems. Simulations deliver multiple outcomes as a result of the student's choices throughout the experience.



Websketch Explorations

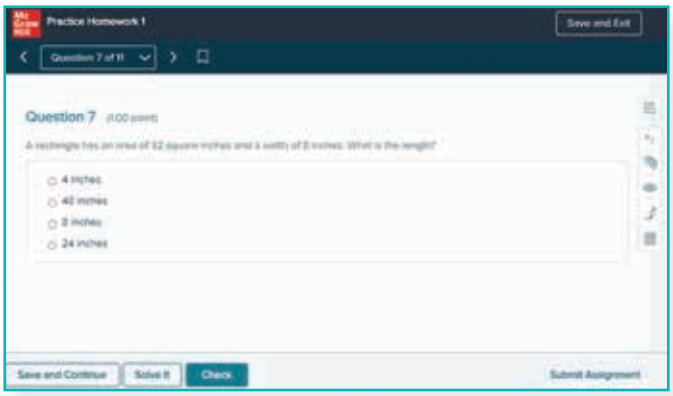
Websketch Explorations are highly visual and engaging activities that demonstrate math concepts in action. Students engage with a concept through an open-ended environment and exploratory modeling.





Digital Practice

Interactive Practice and Spiral Review provide a dynamic experience, complete with learning aids integrated into problems at point-of-use, that supports students engaged in independent practice.



Digital Games

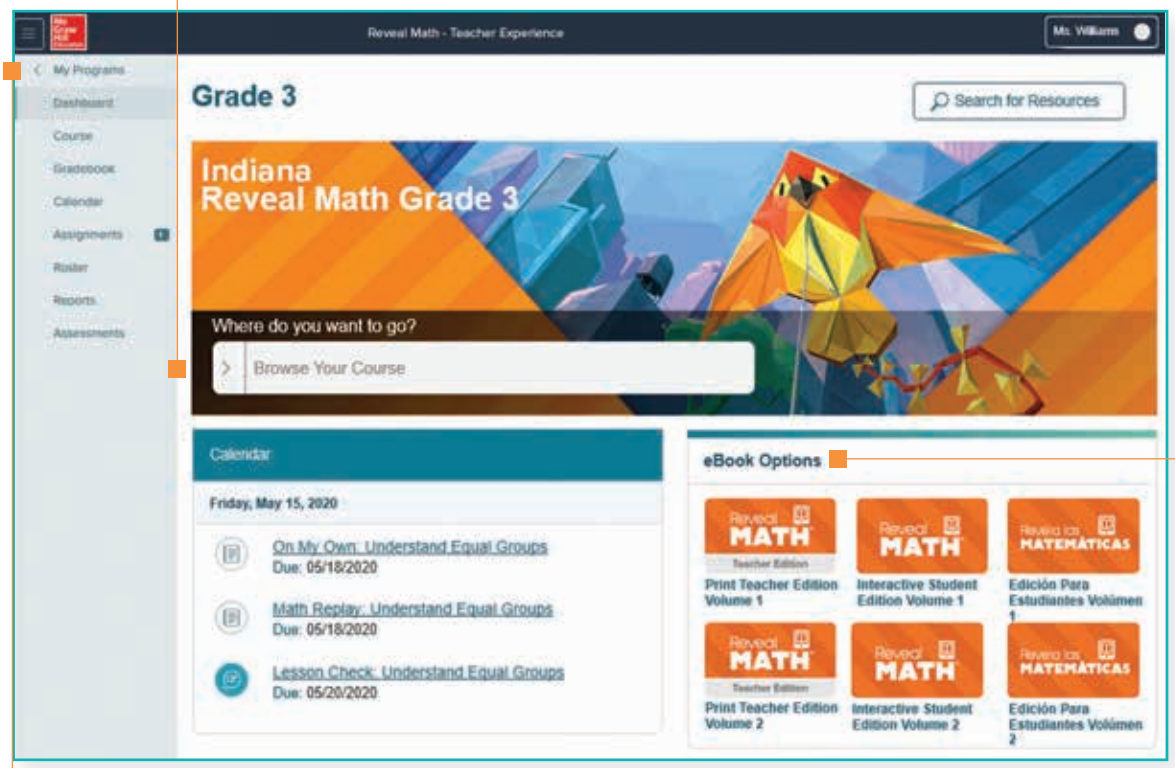
Digital Games encourage pro ciency through a fun and engaging practice environment.

Planning and Teaching Tools

Teacher Dashboard

Teachers can access digital classroom resources and tools through the Teacher Dashboard.

Browse the Course Navigation Menu to go directly to a unit or lesson.



eBook shortcuts for the Teacher Edition and Student Editions are available on the dashboard.

The menu provides access to:

- My Programs
- Dashboard
- Course View
- Table of Contents
- Gradebook
- Calendar
- Assignments
- Roster
- Reports
- Assessments

Unit and Lesson Resource Pages

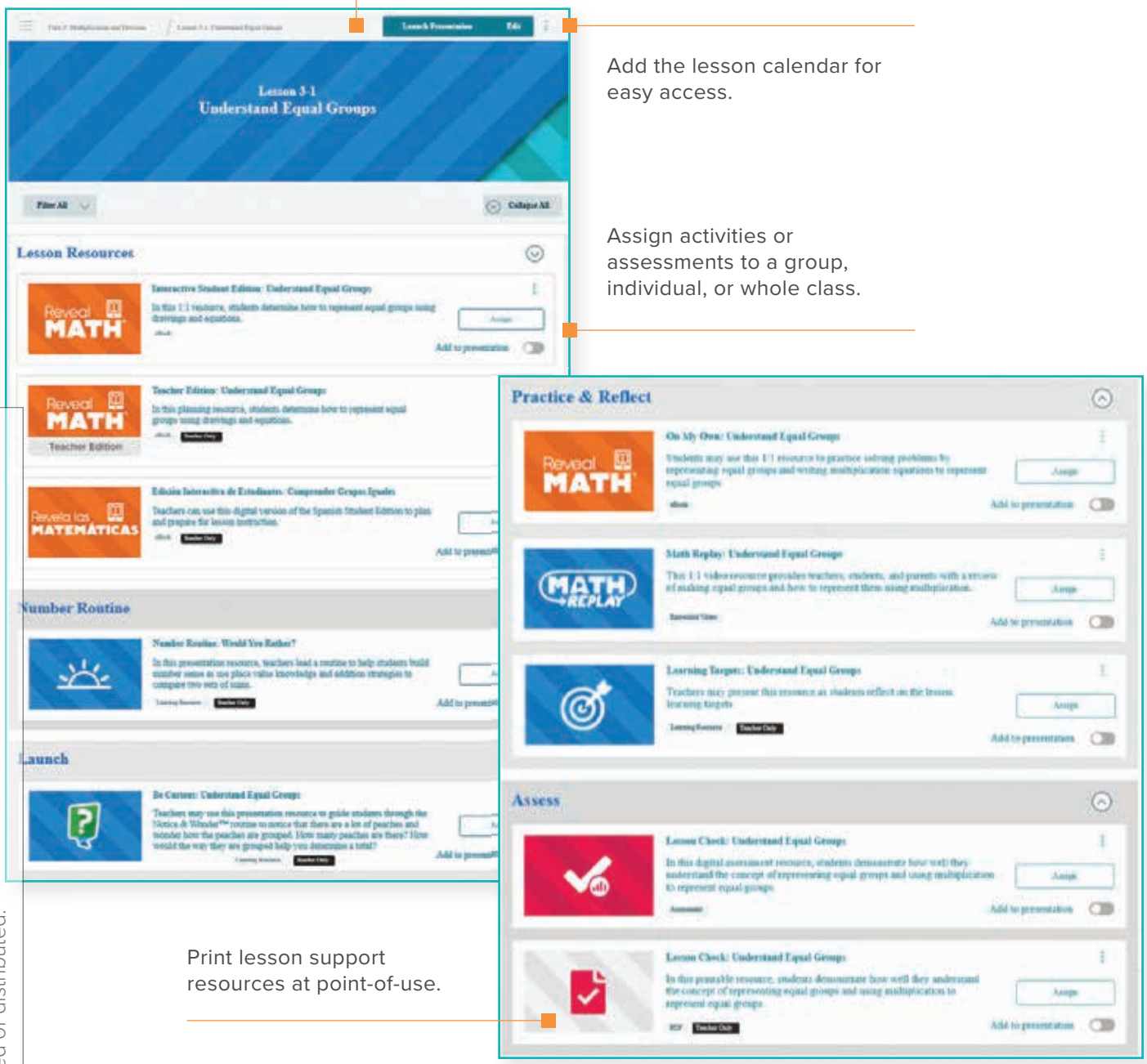
Unit and lesson components are organized into landing pages for point-of-use access. Teachers can easily plan and prepare units and lessons using the simple layout organization that aligns with their print Teacher's Edition.

Launch/rearrange lesson presentations.

Add the lesson calendar for easy access.

Assign activities or assessments to a group, individual, or whole class.

Print lesson support resources at point-of-use.



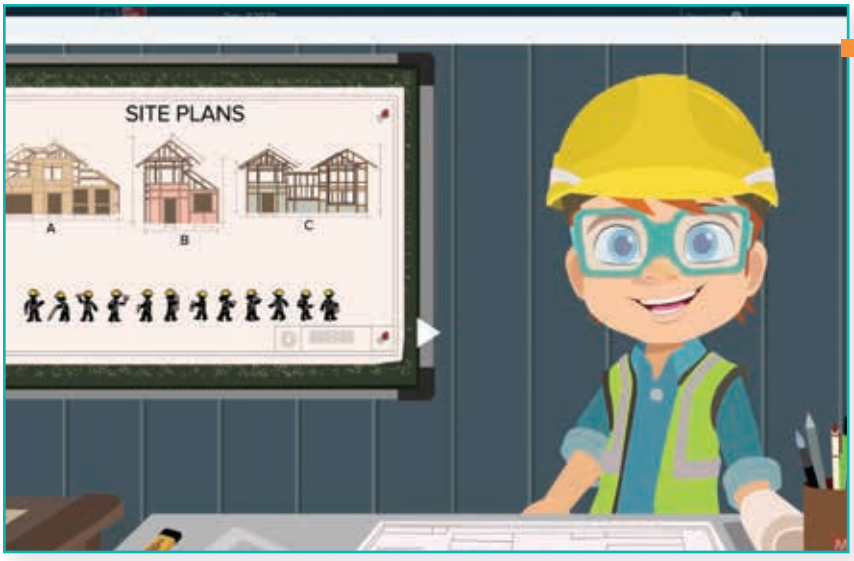
Easy to Use Presentations

Along with print and PDF resources, *Indiana Reveal Math* integrates purposeful digital resources that enrich both instruction and the classroom experience.

Unit Opener: STEM in Action Videos

Every unit opens with two videos to introduce the STEM Focus for the unit.

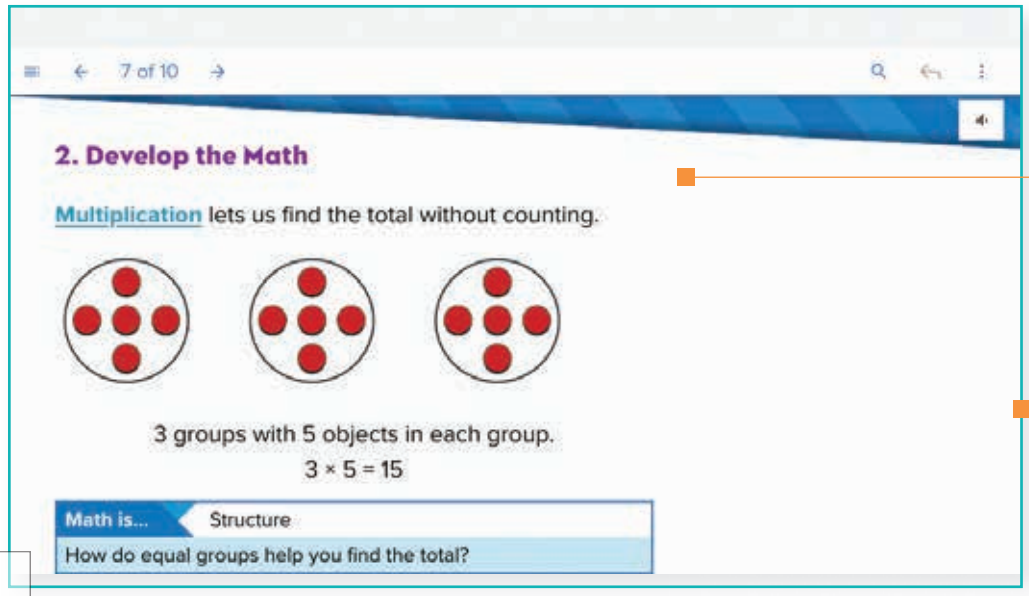
The STEM Career Kid video introduces a STEM career and provides an overview of the job responsibilities.



Math in Action videos apply the unit math content with the STEM career focus to bring the content to the real world.

Daily Lesson Presentations

Indiana Reveal Math provides a number of lesson presentation resources to support daily instruction. Presentations include videos, gifs, animations, and interactive tools to enhance the modeling and invite students to engage in the math.



Embedded glossary items provide an integrated review of mathematical vocabulary.

Virtual Manipulatives allow for interactive digital modeling and invite students to participate.

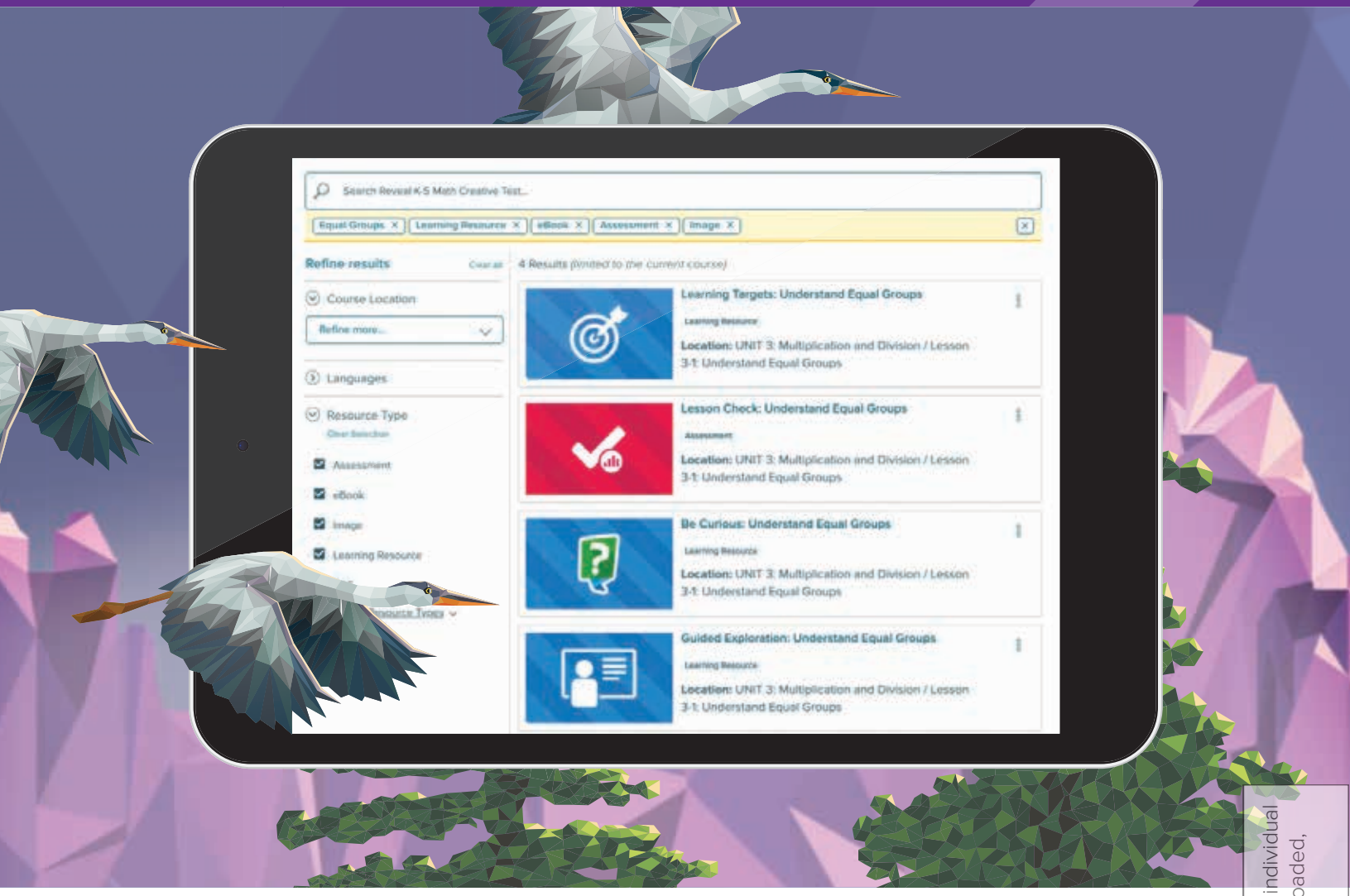
Targeted Intervention

Both the Unit Readiness Diagnostic and the End-of-Unit Assessment have a connected intervention lesson aligned to an item-analysis.

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

Skills Support Sheets provide extra practice on previously learned skills.

Search



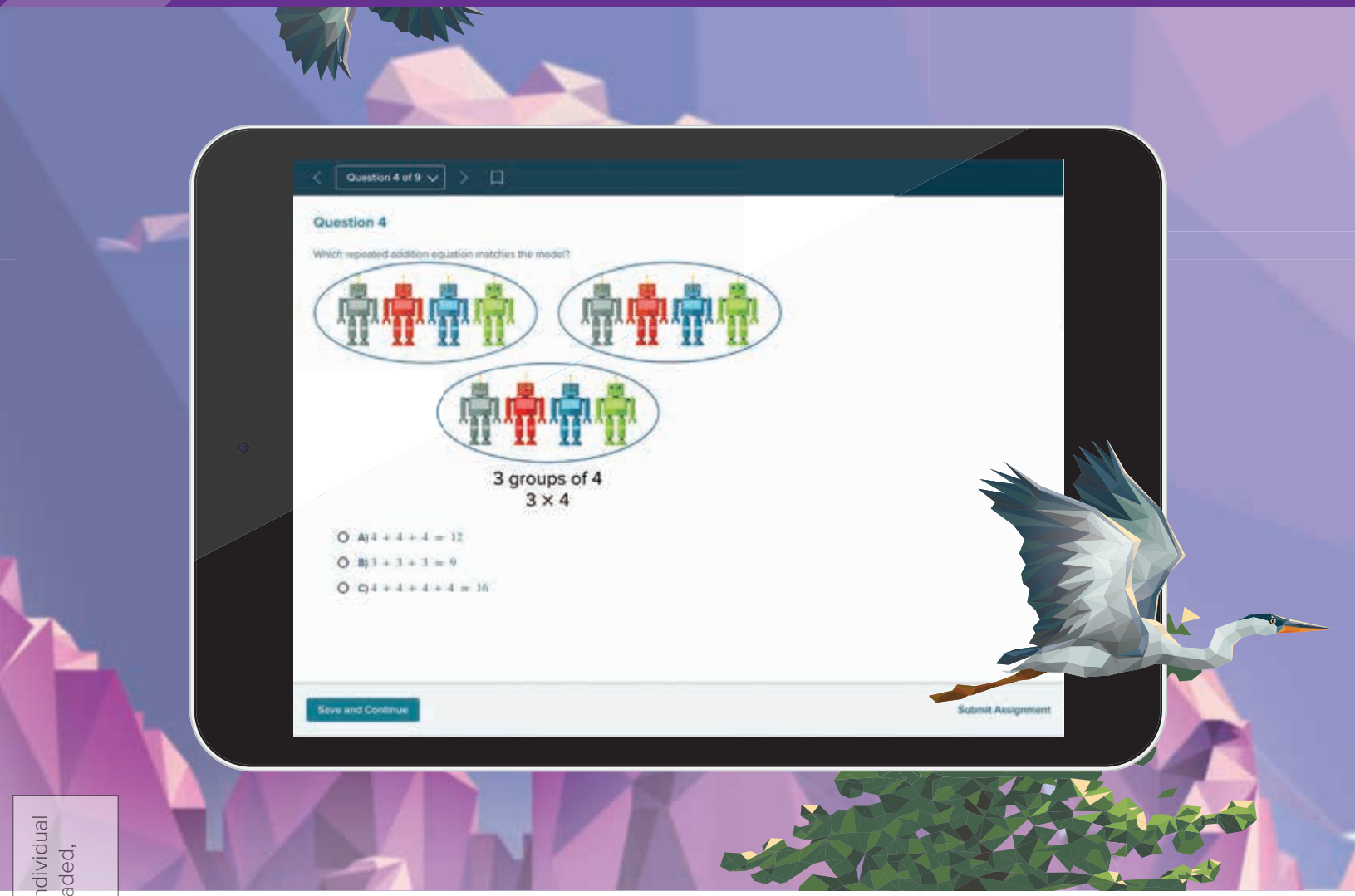
Easily Find Lesson Resources

Navigate the full course content using a keyword search. Using the search results, teachers can preview, schedule, or assign lessons and activities. Teachers can also open the course location to view the resources for a full lesson.

Filter resources by:

- Course Location to nd resources fast within each unit.
- Browse Standards to search for resources that pertain to speci c standards.
- Language to lter for English and Spanish materials.
- Resource Type to sort by assessment, video, PDF, and more.

Digital Assessment



Create a Customizable Assessment Experience

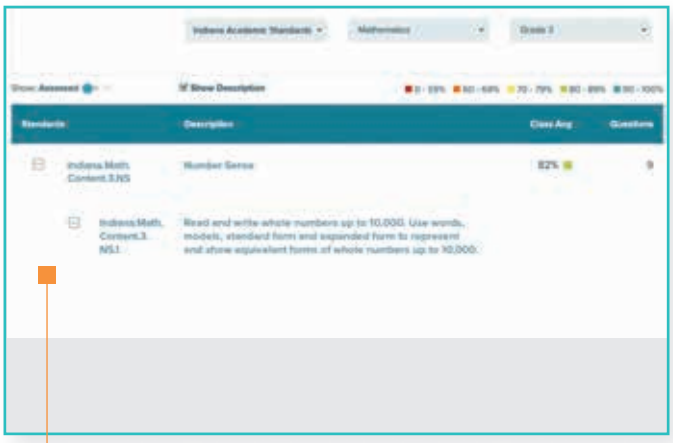
Indiana Reveal Math assessments can be assigned and completed digitally or in print. In addition, interactive assessments can be created and assigned to a student, a group of students, or the whole class. Interactive authoring templates make digital assessments that align with standardized testing easy.

- Digital and printable versions are available to meet the needs of you and your students.
- Create and customize assessments to meet your classroom needs.
- Tailor assessment features by class or student.
- Randomize questions with premade answer keys.
- Utilize pre-populated standards-based question banks.

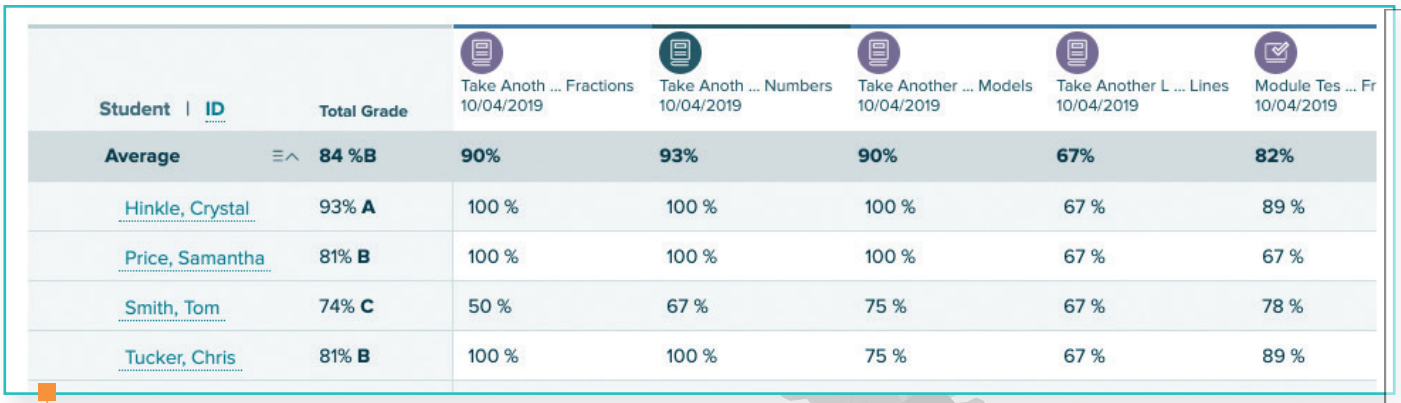
Reporting

Interactive performance reports provide immediate feedback to teachers allowing them to make data-driven instructional decisions.

Activity Performance Report
Teachers can review useful data points for class activities, including item analysis by student and class, as well as overall performance.



Standards Performance Report
Teachers can access information on class performance by standard, including a cumulative score by class and student, as well as the number of questions answered.



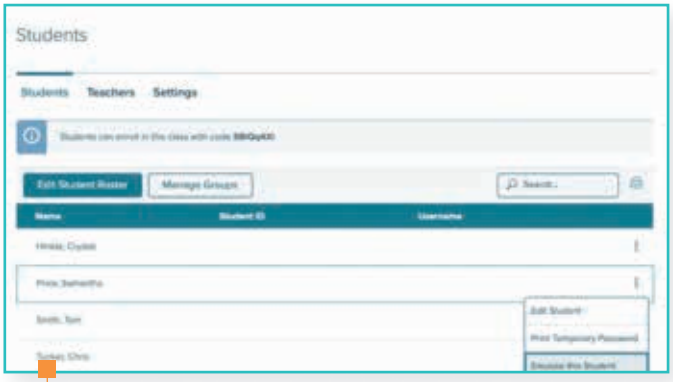
Student | ID	Total Grade	Take Anoth ... Fractions 10/04/2019	Take Anoth ... Numbers 10/04/2019	Take Another ... Models 10/04/2019	Take Another L ... Lines 10/04/2019	Module Tes ... Fr 10/04/2019
Average	**84 %B**	**90%**	**93%**	**90%**	**67%**	**82%**
Hinkle, Crystal	93% **A**	100 %	100 %	100 %	67 %	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 %

Discover and Track More Data with Gradebook
Within the digital gradebook, teachers can:

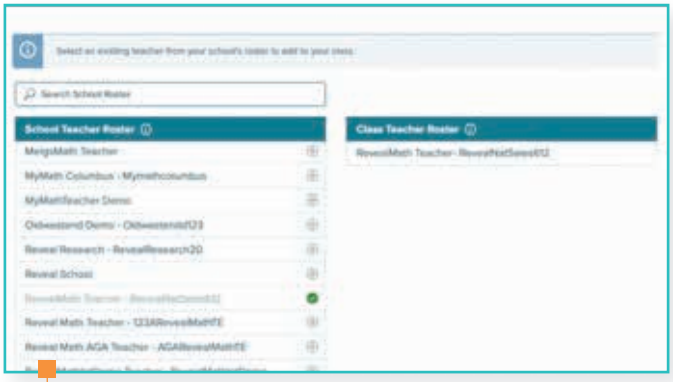
- Edit and manage classroom scores.
- Sort grades by group, by student, by grading period, and performance.
- Customize grading scales.
- Export data.
- View score sheets.

Class Management Tools

Class Management tools help maximize planning time.



Preview Student Experience
Emulate Student allows teachers to view which resources students will see and have access to in their Student Digital Center. This will help ensure that assignments are set up correctly and will allow teachers to demonstrate usability and teach digital routines.



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.

Copy Class
Copy functionality allows teachers to copy all assignments and customizations to the course to another class.

Group Your Students
By making groups, teachers can di erentiate assignments and assessments by instructional grouping as well as lter their gradebook by group.

Digital Experience Guide

NOTES: