

Welcome Teachers to Program Training for...

**GO
MATH!**



Starbucks for Breakfast!



How many calories
are in your Grande
Honey Spice Latte
and Blueberry
Muffin?



Starbucks for Breakfast!



- The number is less than 1000
- Number in the ones place is the only even number to have 4 letters
- Number in the tens place is an odd prime number less than 5
- Number in the hundreds place is the sum of the numbers in the ones and tens place plus 1

834

Number Trick

Think of a number.

Add 3.

Double the result.

Subtract 4.

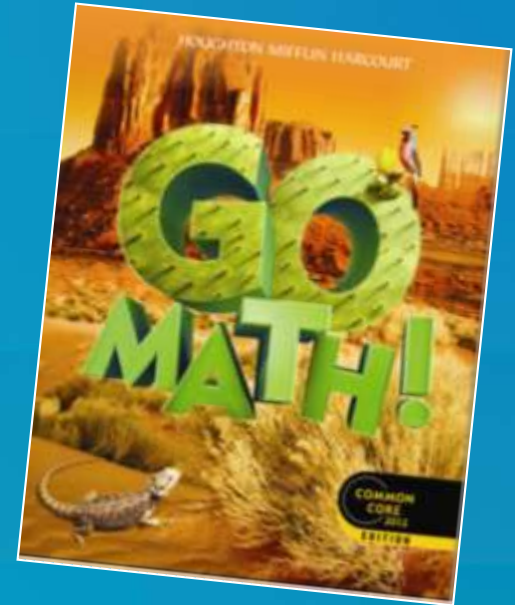
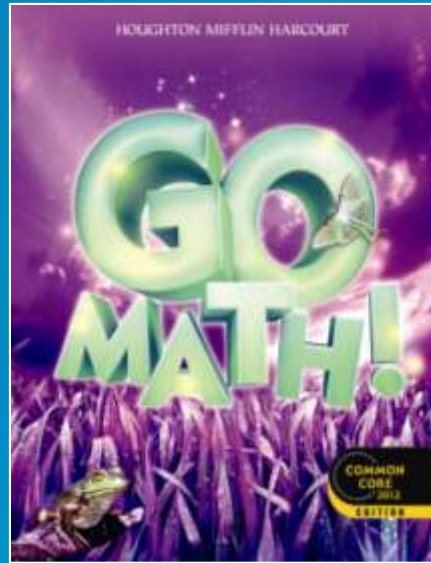
Divide the result by 2.

Subtract the number you first thought of.

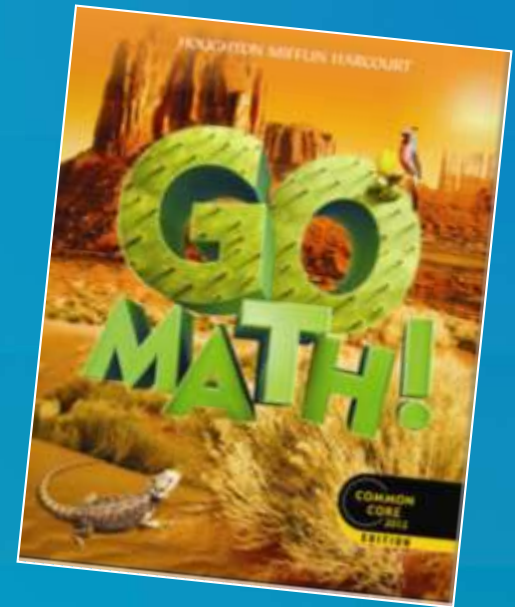
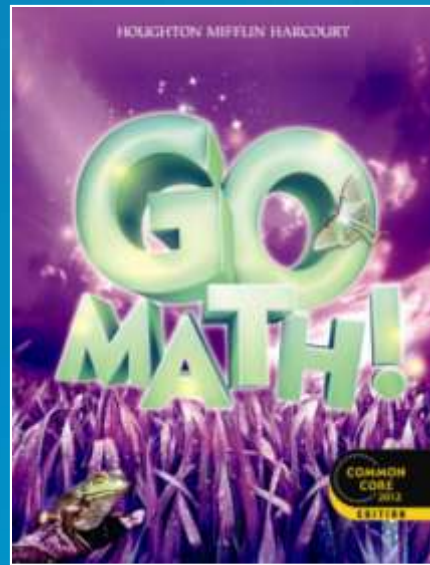
Your answer is 1 !

A G E N D A

- **Common Core Organization**
- **Instructional Resources**
 - The Go Active Lesson**
 - NYC Enhancements**
 - Think Central- *Go Digital***
- **Reflection & Planning**



Common Core Organization



What do you Know about the Standards?



COMMON CORE

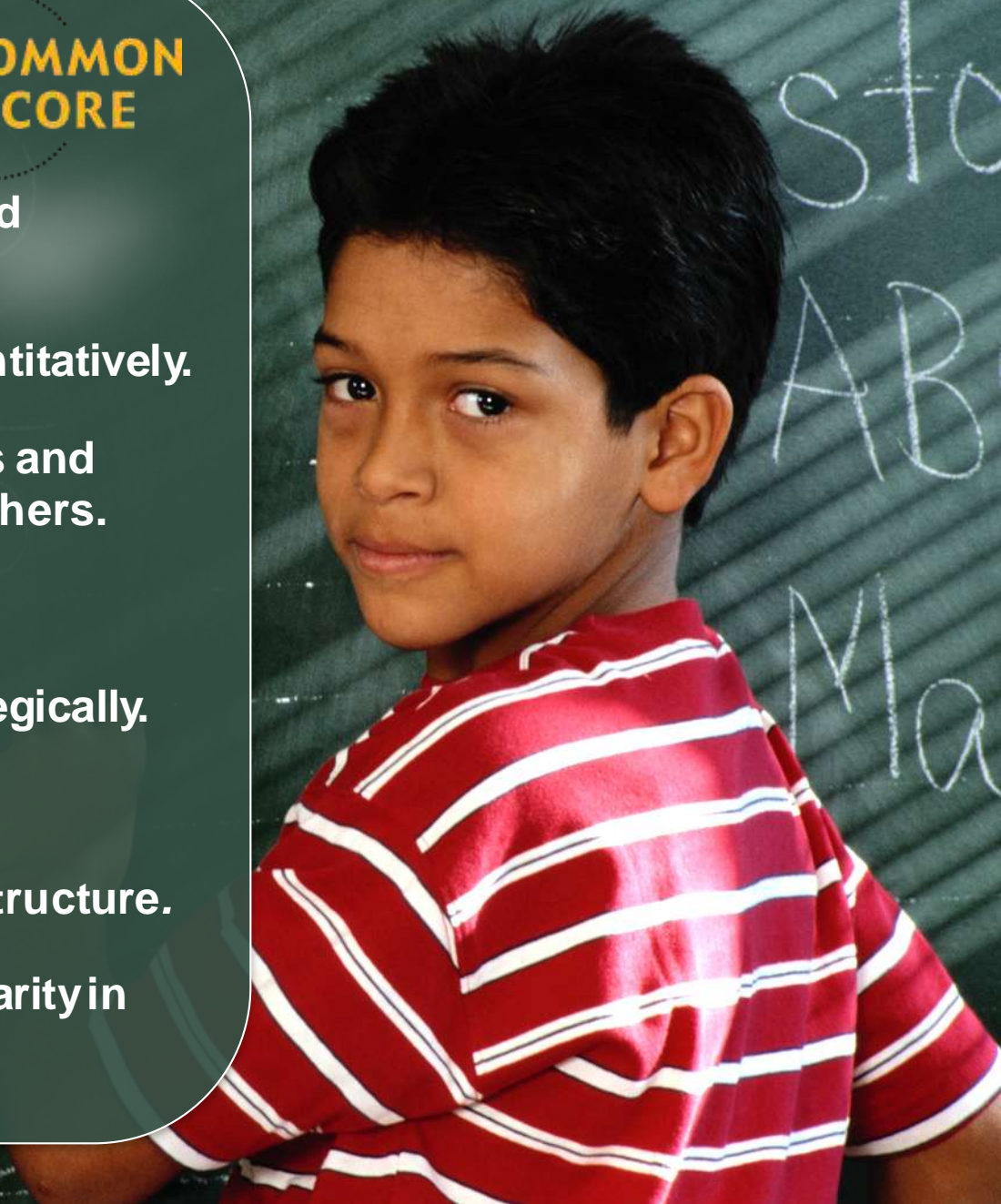
Characteristics

- **Fewer** Standards and more **Rigorous** content
- Aligned with **College** and **Career** expectations
- Application of **Higher-order Skills**
- Built on strengths of **Current State Standards**
- **Internationally** Benchmarked

Mathematical Practices

COMMON
CORE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



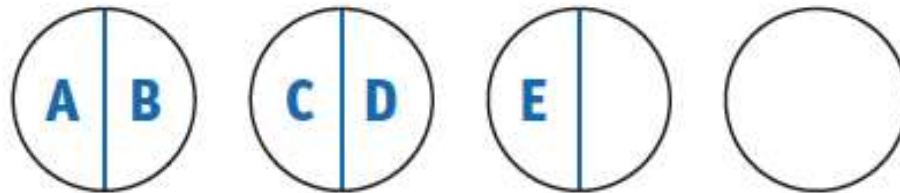
What Standards for Mathematical Practice do you engage in as you solve this problem?

If 4 cookies are shared among 5 people, how many cookies would each person receive?

Now, if 5 people shared 4 cookies, but the baker cut the first 3 cookies in half and each person took a half, how would the remaining pieces of cookies be distributed?

Practice One: Make sense of problems and persevere in solving them.

This practice brings to mind developing a productive disposition as described in *Adding It Up* (NRC, 2001). In order for students to develop the diligence intended with this practice, they must be provided with problems for which a pathway toward a solution is not immediately evident. If students are asked to determine how much of a cookie each person would receive if 4 cookies were shared among 5 people, a solution pathway is evident if students understand fractions. The students could simply divide each cookie into five equal pieces and give each person one fifth of each cookie or $\frac{4}{5}$ of a cookie in all. Now consider the same problem given the constraint that the first three cookies are each broken into two equal pieces to start and each person is given half of a cookie.



Now the problem is more interesting and challenging. How will the remaining pieces of cookies be distributed among the five people? How will the students determine how much of a total cookie each person will have when all the cookies are shared? The students will likely refer back to the context of the problem to make sense of how to solve it, and they will also very likely use pictures in their solution process. A solution is within reach, but will require diligence to persevere in reaching it.



The entire article is in the
PG 24 or PG 26



Standards for Mathematical Practice: Developing Processes and Proficiencies in Mathematics Learners

Dr. Juli K. Dixon

Professor, Mathematics Education, University of Central Florida

Overview

The Common Core State Standards include standards for content as well as for mathematical practice. “The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students” (CCSO & NGA, 2010, p. 6). What does this mean for elementary school students? How do the mathematical practices apply to young learners?

There are eight mathematical practices. They are based on the National Council of Teachers of Mathematics’ (NCTM) Process Standards (NCTM, 2000) and the National Research Council’s (NRC) Strands of Mathematical Proficiency (NRC, 2001). *GO Math!* supports the standards for mathematical practice through several specific features of the series:

- Lessons focused on depth of content knowledge
- Unlock the Problem sections to begin lessons
- Math Talk questions prompting students to use varied strategies and to explain their reasoning

The Three Shifts in Mathematics

- **Focus** strongly where the standards focus
- **Coherence**: Think across grades and link to major topics within grades
- **Rigor**: Require conceptual understanding, fluency, and application

COMMON CORE
STATE STANDARDS FOR

Mathematics



The entire article is in the
PG 22 or PG 24

GO MATH!



Understanding the Common Core State Standards for Mathematics

Dr. Matt Larson
Curriculum Specialist for Mathematics
Lincoln Public Schools—Lincoln, Nebraska

Overview

Intent of the Common Core State Standards for Mathematics

The Common Core State Standards Initiative was a state-led process initiated by The Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA). The goal was to create a set of Career and College Readiness Standards in mathematics (and English/Language Arts) so that all students graduate from high school ready for college and/or work. The K-8 standards outline a grade-by-grade roadmap to prepare students for the Career and College Readiness Standards.

or the workforce. Results of international assessments, including *PISA* (Baldi, Jin, Skemer, Green, & Herget, 2007) and *TIMSS* (Gonzales, Williams, Jocelyn, Roey, Kastberg, & Brenwald, 2008) indicate that U.S. students do not achieve at the level of students in other countries in mathematics, raising concern about U.S. economic competitiveness in an environment where U.S. students compete with students all across the globe.

Organization of the Common Core State Standards for Mathematics

The Common Core State Standards for Mathematics are organized into content standards and standards for mathematical practice.

A 3D white figure stands in a thinking pose, with its hand on its chin. To its left is a large, bold red question mark. A thought bubble originates from the figure, containing the text "Student Edition What would appeal to a student?".

Student Edition
What would appeal to a student?

Break Time!!



A 3D white figure stands in a thinking pose, with its hand on its chin. To its left is a large, bold red question mark. A thought bubble originates from the figure, containing the text:

**Student Edition
Browse your Grade-Level Edition for
the Focus for your Grade?**

**Student Edition
Browse your Grade-Level Edition for
the Focus for your Grade?**

**What' s the main
focus at MY
grade?**





Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.



Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.



Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.



COMMON CORE

STATE STANDARDS INITIATIVE

PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Mathematics | Grade 4

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.



Mathematics | Grade 5

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

Traditional U.S. Approach

K

12

**Number and
Operations**



**Measurement
and Geometry**



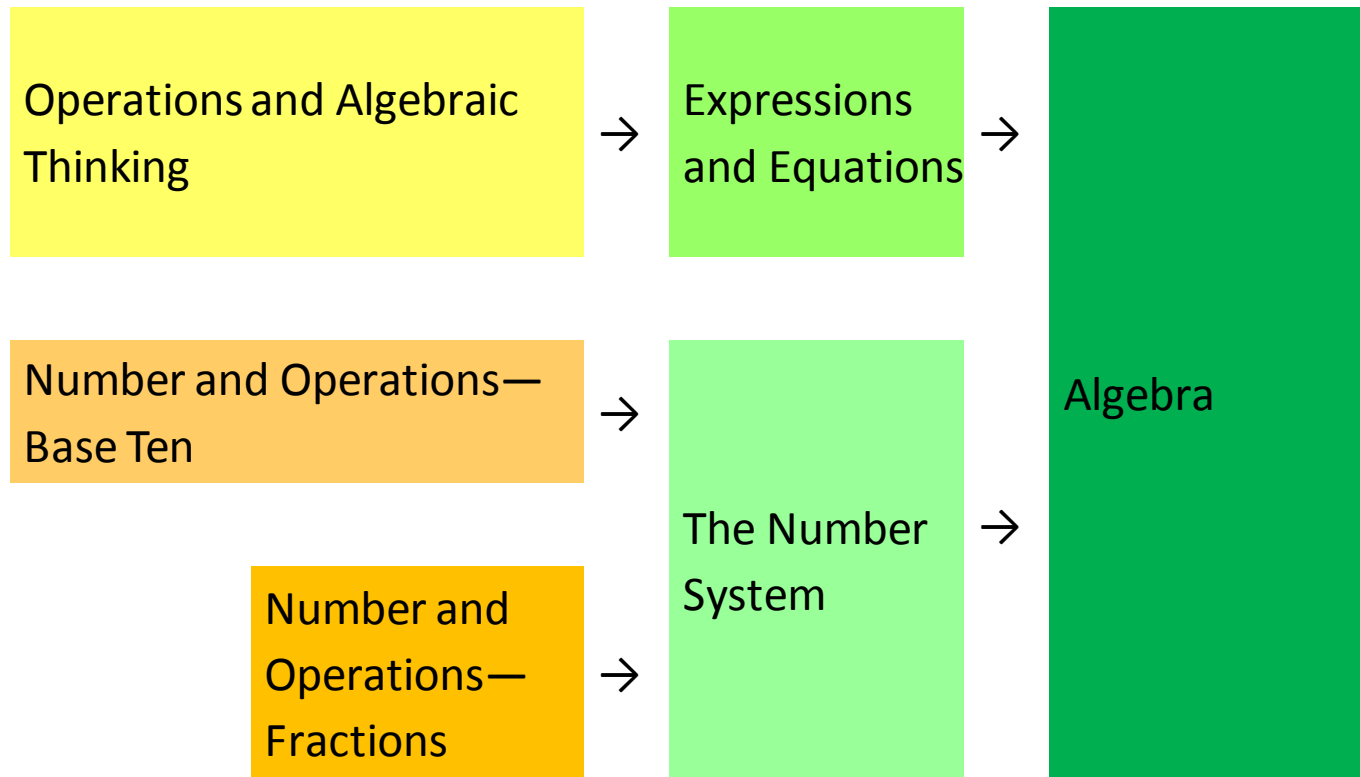
**Algebra and
Functions**



**Statistics and
Probability**



Focusing Attention Within Number and Operations



K 1 2 3 4 5 6 7 8 High School



**What is
Coherence?**

Fractions and Decimals

COMMON CORE

CRITICAL AREA Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers

COMMON CORE

Common Core State Standards Across the Grades

Before

Domain: Number and Operations—Fractions

Develop understanding of fractions as numbers.

CC.3.NF.3a, CC.3.NF.3b, CC.3.NF.3c, CC.3.NF.3d

Grade 4

Domain: Number and Operations—Fractions

Extend understanding of fraction equivalence and ordering.

CC.4.NF.1, CC.4.NF.2

After

Domain: Number and Operations—Fractions

Use equivalent fractions as a strategy to add and subtract fractions.

CC.5.NF.1, CC.5.NF.2

Rigor

Conceptual understanding: The Standards call for conceptual understanding of key concepts, such as place value and ratios. Teachers support students' ability to access concepts from a number of perspectives so that students are able to see math as more than a set of mnemonics or discrete procedures.

Procedural skill and fluency: The Standards call for speed and accuracy in calculation. Teachers structure class time and/or homework time for students to practice core functions such as single-digit multiplication so that students have access to more complex concepts and procedures.

Application: The Standards call for students to use math flexibly for applications. Teachers provide opportunities for students to apply math in context. Teachers in content areas outside of math, particularly science, ensure that students are using math to make meaning of and access content.

Components

Components Carousel Activity

At Each Station

As you look through materials, discuss

PURPOSE AND USE

Using your group's colored Post-It, list one thing you **LEARNED** about the component and/or one way you would **USE THE RESOURCE** in your classroom and **Questions about the Resource.**

Please be prepared to **SHARE**

Instructional Resources



Math Board

Consumable Books



Grab and Go Manipulatives Kit



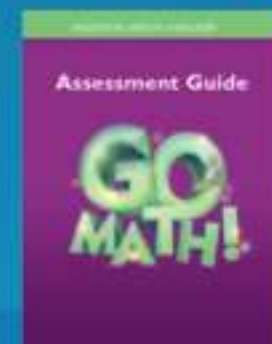
Grab and Go Differentiated Centers Kit



Teacher Edition



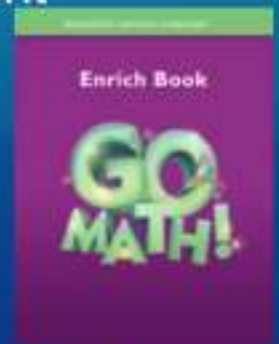
Planning Guide



Assessment Guide



Reteach



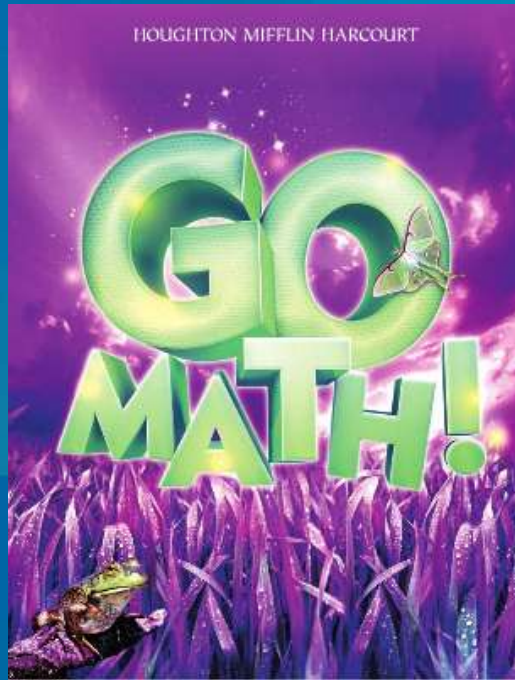
Enrich

Student Materials



Station 1

Student Materials



Write-In
Student Book



Standards
Practice Book

Unlock the Problem

Read the Problem	Solve the Problem
What do I need to find?	Show how to solve the problem.
What information do I need to use?	
How will I use the information?	

Try It!

Write-On/Wipe-Off Math
Boards

Multi Page Lessons

Name _____

ALGEBRA
Lesson 1.1

Number Patterns

Essential Question How can you use properties to explain patterns on the addition table?

COMMON CORE STANDARD: CC.3.OA.8
Solve problems involving the four operations, and identify and explain patterns in arithmetic.

UNLOCK the Problem

A **pattern** is an ordered set of numbers or objects. The order helps you predict what will come next.

+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11

Activity 2 Possible answers are given.

Materials an orange crayon

- Shade all the sums of 5 orange. What pattern do you see?

The sums are on a slant from right to left; they make a diagonal.

+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17

Name _____

Share and Show

Use the addition table on page 6 for 1–15.

1. Complete the addition sentences to show the Commutative Property of Addition.

$3 + 4 = 7$ $4 + 3 = 7$

Find the sum. Then use the Commutative Property of Addition to write the related addition sentence.

2. $8 + 5 = 13$ 3. $7 + 9 = 16$ 4. $10 + 4 = 14$
 $5 + 8 = 13$ $9 + 7 = 16$ $4 + 10 = 14$

Is the sum even or odd? Write *even* or *odd*.

5. $8 + 1 =$ odd 6. $3 + 9 =$ even 7. $4 + 8 =$ even

On Your Own

Find the sum. Then use the Commutative Property of Addition to write the related addition sentence.

8. $0 + 8 = 8$ 9. $7 + 3 = 10$ 10. $8 + 7 = 15$
 $8 + 0 = 8$ $3 + 7 = 10$ $7 + 8 = 15$

Is the sum even or odd? Write *even* or *odd*.

11. $6 + 4 =$ even 12. $5 + 9 =$ even 13. $2 + 3 =$ odd

Problem Solving

14. **Write Math** Look back at the shaded diagonals in Activity 2. Why does the orange diagonal show only odd numbers? Explain.

Possible explanation: for each sum, one addend is even and one is odd. The sum of an even and an odd number is always odd.

15. **Test Prep** Which describes the number sentence?

$5 + 0 = 5$

A Commutative Property of Addition
 B Identity Property of Addition
 C even + even = even
 D odd + odd = odd

Model • Reason • Make Sense

16. Whose statement makes sense? Whose statement is nonsense? Explain your reasoning.

The sum of an odd number and an odd number is odd.

odd + odd = odd
 $5 + 7 = 12$

I can circle pairs of tiles in each addend and there is 1 left over in each addend. So, the sum will be odd.

Joey's statement is nonsense because the two left-over tiles can be paired.

$5 + 7 = 12$; 12 is an even number.

The sum of an even number and an even number is even.

even + even = even
 $4 + 6 = 10$

I can circle pairs of tiles with no tiles left over. So, the sum is even.

Kayley's statement makes sense because there are no left-over tiles. $4 + 6 = 10$; 10 is an even number.

For the statement that is nonsense, correct the statement.

The sum of an odd number and an odd number is even.

End-of-Year Resources

Getting Ready for Grade 4

These lessons review important skills and prepare you for Grade 4.

Name _____

Distributive Property

Write one way to break apart the array. Then find the product.

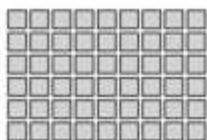
1.



$$(3 \times 7) + (3 \times 7)$$

42

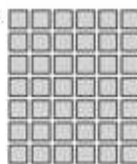
3.



2.



4.



COMMON
Understands
relationships

Problem Solving

5. There are 2 rows of 8 chairs set up in the library for a puppet show. How many chairs are there in all? Use the Distributive Property to solve.

6. A marching band of trumpeters will play in a parade. There are 5 trumpeters in each row. How many trumpeters are there in the marching band if there are 6 rows?

LESSON PRACTICE

Lesson 1	Numbers to Ten Thousand	P259	GRP1
Lesson 2	Read and Write Numbers to Ten Thousand	P261	GRP2
Lesson 3	Relative Size on a Number Line	P263	GRP3
Lesson 4	Compare 3- and 4-Digit Numbers	P265	GRP4
Checkpoint	P267	
Lesson 5	Multiply with 11 and 12	P269	GRP5
Lesson 6	Divide with 11 and 12	P271	GRP6
Lesson 7	Algebra • Multiplication and Division Relationships	P273	GRP7
Lesson 8	Use Multiplication Patterns	P275	GRP8
Lesson 9	Use Models to Multiply Tens and Ones	P277	GRP9
Lesson 10	Model Division with Remainders	P279	GRP10
Lesson 11	Use Models to Divide Tens and Ones	P281	GRP11
Checkpoint	P283	
Lesson 12	Model Tenths and Hundredths	P285	GRP12
Lesson 13	Fractions Greater Than One	P287	GRP13
Lesson 14	Equivalent Fractions	P289	GRP14
Lesson 15	Equivalent Fractions on a Multiplication Table	P291	GRP15
Checkpoint	P293	
Lesson 16	Same Size, Same Shape	P295	GRP16
Lesson 17	Algebra • Change Customary Units of Length	P297	GRP17
Lesson 18	Algebra • Change Metric Units of Length	P299	GRP18
Lesson 19	Estimate and Measure Liquid Volume	P301	GRP19
Lesson 20	Estimate and Measure Weight	P303	GRP20
Checkpoint	P305	

Grab & Go Manipulatives

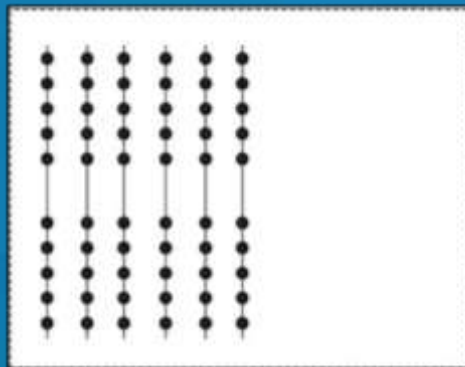


Station 2

Grab-and-Go Manipulatives Kit



Secret Code Cards



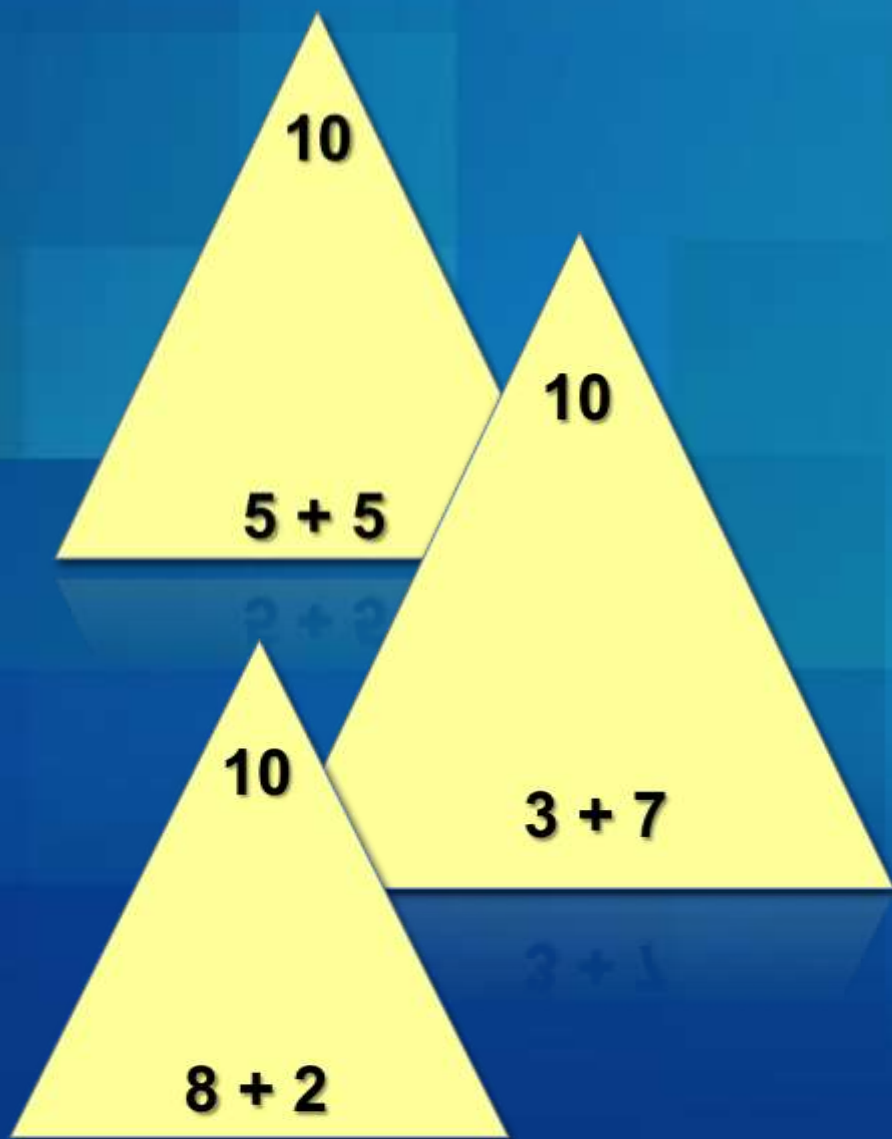
200
2 0 0

60
6 0

5
5

200 2	60 6	5 5
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Fluency Builder



Fluency Builder

Materials Math Mountain Cards (see *eTeacher Resources*)

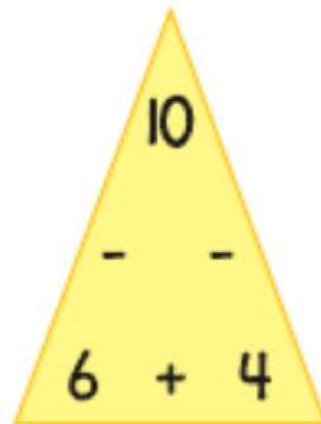
Subtraction Circle

Divide the class into small groups of approximately 8 children. Have each group form a circle on the floor. Give a volunteer in each group a stack of Math Mountain Cards with facts within 10.

Explain that children should pass the cards around the circle, each child taking one card. When a child receives a card, the child should use the numbers on the card to write a subtraction fact.

$$10 - 6 = 4$$

$$10 - 4 = 6$$



Grab & Go Center

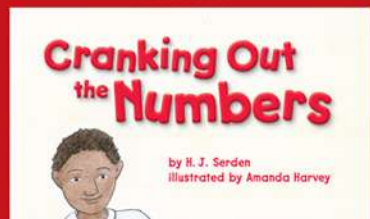


Station 3

Grab-and-Go!



Games



Math Readers



Computation and Mental Math Activities



Geometry and Measurement Activities



Games



Math Readers



Challenge Activities



Grab - and - Go!

Chapter	Grade 3		
1 Addition and Subtraction Within 1,000	Readers	More Acorns! So Many Seashells! Soccer Bash	
	Games	Auto Addition Picnic Pattern Path Time to Subtract	
	Activity Cards	Card 1	Roll to 100! Block It Out!
		Card 3	What's the Difference Ready! Aim! Subtract!
Card 5		Super Subtraction To Add or Subtract? Mystery Numbers	
2 Represent and Interpret Data	Readers	The Class Trip Diego's Perfect Fit	
	Activity Card	Card 2	And the Survey Says... It's in the Bag Life Span Pictographs
	Readers	Collections Times Four Here's What I Do The Workshop	

RTI – Response to Intervention



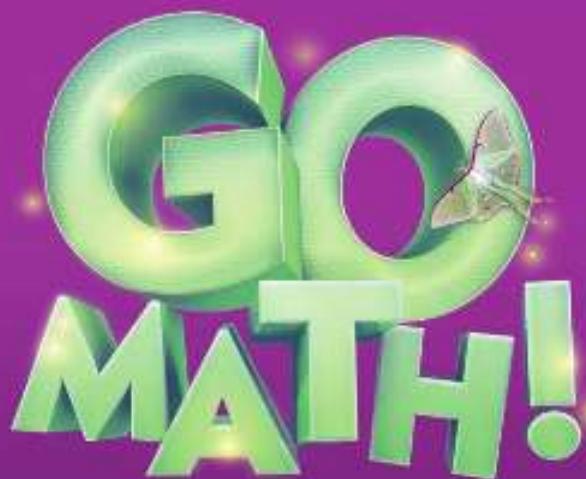
Station 4

Response to Intervention

Tier 1

HOUGHTON MIFFLIN HARCOURT

Reteach Book



Lesson 1.1
Reteach

Name _____

Algebra • Number Patterns

A **pattern** is an ordered set of numbers or objects. The order helps you predict what will come next.

Use the addition table to find patterns.

- Color the row that starts with 1. What pattern do you see?

The numbers increase by 1.

- Color the column that starts with 1. What pattern do you see?

The numbers increase by 1. The numbers are the same as in the row starting with 1.

- Circle the sum of 4 in the column you colored. Circle the addends for that sum. What two addition sentences can you write for that sum of 4?

$2 + 1 = 4$ and $1 + 3 = 4$

The addends are the same. The sum is the same.

The **Commutative Property of Addition** states that you can add two or more numbers in any order and get the same sum.

+	0	1	2	3	4
0	0	1	2	3	4
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8

Use the addition table to find the sum.

1. $2 + 3 = 5$ $3 + 2 = 5$ 2. $2 + 0 = 2$ $0 + 2 = 2$

Find the sum. Then use the **Commutative Property of Addition** to write the related addition sentence.

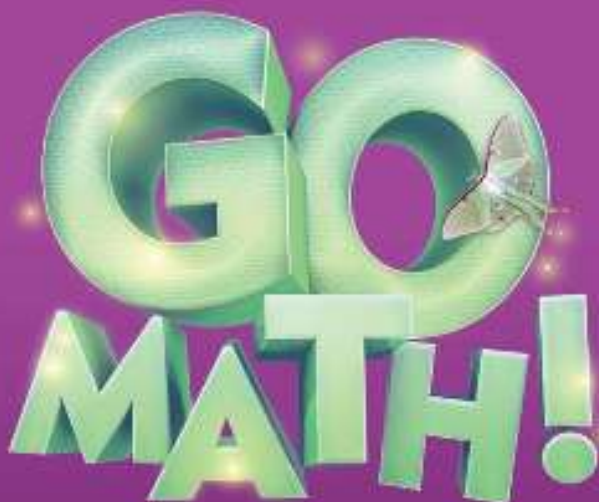
a. $3 + 0 = 3$ 4. $4 + 1 = 5$ 5. $2 + 3 = 5$
 $0 + 3 = 3$ $1 + 4 = 5$ $3 + 2 = 5$

Response to Intervention

Tier 2

HOUGHTON MIFFLIN HARCOURT

Strategic Intervention Teacher Activity Guide



Regroup Tens as Hundreds

Skill 1

Objective

To regroup tens as hundreds and tens

Vocabulary

hundred A number which is equal to 10 tens or 100 ones

Manipulatives

base-ten blocks

COMMON ERROR

- Students may confuse hundreds and tens.
- To correct this, have students use base-ten blocks to model the numbers. Discuss how many tens rods can be regrouped as, or traded for, a hundred block. Explain that regrouping allows you to rename a number, but does not change its value.

Learn the Math page IN3 Read the problem with students. Point out that 23 tens is not the standard way to write the number. Explain that it is easier to understand the number by writing it using hundreds and tens.

Provide students with base-ten blocks. Ask: **How many tens are needed to equal 1 hundred?** 10 tens Have students draw a circle around each group of 10 tens. Ask: **How many groups of 10 tens are there?** 2 How many tens is that? 20 tens **How many hundreds is 20 tens?** 2 hundreds Have students count the remaining tens. Guide students to write 23 tens as 2 hundreds 3 tens.

REASONING Ask: How can you decide if Christina is correct? **Possible answer:** I can model the problem and after regrouping I can count the number of hundreds and the number of tens that represent 35 tens.

Do the Math page IN4 Read and discuss Exercise 1 with students. Ask: **What are you asked to find?** how many groups of 100 tiles Angie can make and how many boxes will be left Guide students in modeling the problem. Have them regroup 30 tens as hundreds. Ask: **When you regroup 32 tens, how many hundreds and how many tens are there?** 3 hundreds 2 tens

Assign Exercises 2–7 and monitor students' work.

Discuss Problem 8 with students. Point out that 40 boxes of 10 pencils is the same as 40 tens. Ask: **How many groups of 100 pencils can Alex make? Why?** 4 groups of a hundred; possible answer: 40 tens is the same as 4 hundreds.

Students who make more than 2 errors in Exercises 1–8 may benefit from the **Alternative Teaching Strategy**.

Alternative Teaching Strategy

Manipulatives: base-ten blocks

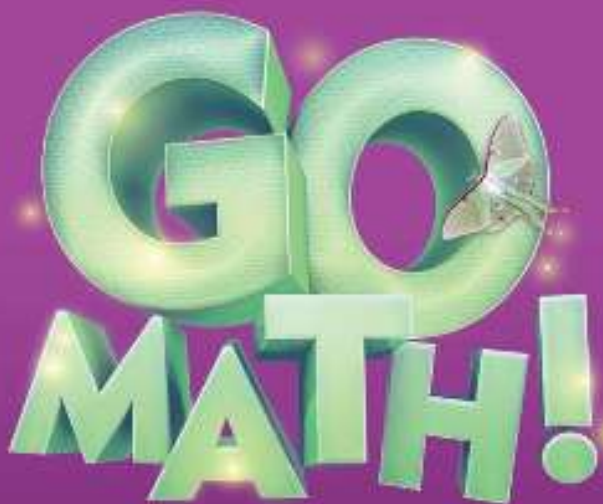
Have students work in small groups. Give each group a handful of tens rods. Ask them to count and record the number of tens. Then have them make as many groups of ten as possible and trade each group for a hundred block, or flat. Have students write their numbers as hundreds and tens. Discuss which form of the number is easier to read and why. Repeat with other groups of tens rods.

Response to Intervention

Tier 3

HOUGHTON MIFFLIN HARCOURT

Intensive Intervention User Guide



Intensive Intervention Activities

Use these Activities to build prerequisite skills for the *Show What You Know* Skills in each Grade 3 chapter.

Activity 1

Objective: Regroup ten ones as one ten.

Materials: connecting cubes.

- Give the student 23 connecting cubes. Ask him or her to make a group of ten. Help the student count out 10 cubes and make a train.
- Ask: Can you make another group of 10? How will you find out? Yes, I can count out 10 more cubes. Have student make another train.
- Ask: Now can you make another group of 10? no How many cubes are left over? 3
- Repeat with other numbers between 21 and 29.
- Look for the student to count and group ten ones as one ten accurately.

Activity 2

Objective: Relate addition and subtraction.

Materials: connecting cubes, number cards 5–10.

- Put a pile of number cards face down.
- Have the student choose a number card and connect 2 colors of cubes to show that number. Then tell an addition sentence to match the cubes.
- Have the student separate the two colors and tell a subtraction sentence.
- Repeat with other numbers.
- Look for the student to translate the models into addition and subtraction sentences accurately.

Planning Guide

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Getting Ready for Grade 4

These lessons review prerequisite skills and prepare for next year's content.

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Teaching Plan for Getting Ready Lessons

GETTING READY FOR GRADE 2

LESSON 1

Algebra • Ways to Expand Numbers

LESSON AT A GLANCE

Common Core Standards
Understand place value.
CC.1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.

Lesson Objective
Write two-digit numbers in expanded form.

Essential Question
How can you write a two-digit number in different ways?

Materials
MathBoard

Understand place value.
CC.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Digital Path

- Animated Math Models
- Interactive Base Ten Blocks
- IMM Mega Math

1 TEACH and TALK

Model and Draw

Have children count the first set of base-ten models.

- How many tens are there? 8 How many ones? 7
- What number does 8 tens stand for? 80 What number does 7 ones stand for? 7
- What number is 80 plus 7? 87

2 PRACTICE

Share and Show • Guided Practice

- Look at Exercise 1. Explain how you will write the number in different ways. First, I will write how many tens (8) and how many ones (7). Then, I will write 3 tens as 30 and 5 ones as 5, or 30 + 5. I will write the number with the 3 as the tens digit and the 5 as the ones digit, or 35.

PG78 Planning Guide

This lesson builds on place value presented in Chapter 6 and prepares children for expanded notation taught in Grade 2.

Name _____

Algebra • Ways to Expand Numbers

Essential Question How can you write a two-digit number in different ways? See **Planning Guide • End-of-Year Resources for Lesson Plans**.

Model and Draw

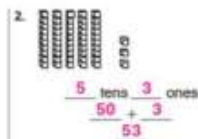
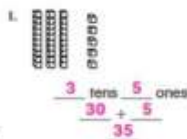
There are different ways to think about a number.



8 tens and 7 ones is the same as 80 plus 7.

Share and Show

Write how many tens and ones. Write the number in two different ways.



The 7 represents 70 because the number 72 is made up of 7 tens and 2 ones.

Math Talk Does the 7 in this number show 7 or 70? Explain.

Getting Ready for Grade 2

two hundred forty-nine P249

Online Standards Practice, p. GRP1

Algebra • Ways to Expand Numbers

Write how many tens and ones. Write the number in two different ways.

PROBLEM SOLVING

5. Draw the same number using only tens. Write how many tens and ones. Write the number in two different ways.

Online Reteach, p. GRP1

Algebra • Ways to Expand Numbers

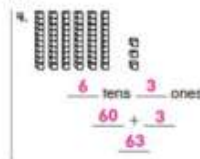
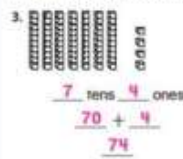
Write how many tens and ones. Write the number in two different ways.

Write how many tens and ones. Write the number in two different ways.

End-of-Year Resources

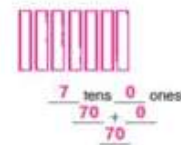
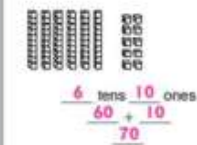
On Your Own

Write how many tens and ones. Write the number in two different ways.



PROBLEM SOLVING

5. Draw the same number using only tens. Write how many tens and ones. Write the number in two different ways.



TASK HOME ACTIVITY Write a two-digit number to 75. Ask your child to write the same number using only tens and ones and then write the number a different way.

P250 two hundred fifty

Have children complete Exercise 2.

Use **Math Talk** to ensure that children understand that the 7 in the number 72 represents 7 tens or 70.

On Your Own

If children answered Exercises 1–2 correctly, assign Exercises 3–4. It is important that children understand the difference in value between the tens and ones digits.

- In Exercise 3, what number does the 7 stand for in 74? 70 How do you know? Possible answer: 7 is the digit in the tens place, so it stands for 7 tens, 7 tens is 70.

Problem Solving

UNLOCK THE PROBLEM Exercise 5 requires children to use higher order thinking skills. They need to understand that 10 ones is equivalent to 1 ten. It may be helpful to have children use models and match 10 ones next to 1 ten to show they are equivalent. Be sure children understand that they must replace the 10 ones with 1 ten and not just eliminate the ones.

- Why can you write this number using only tens? because I can trade the 10 ones for 1 ten
- What number did you show in two different ways? 70

3 SUMMARIZE

Essential Question

How can you write a two-digit number in different ways? I can write a two-digit number by writing the number of tens and the number of ones, like 6 tens 7 ones. Then I can write the number of tens as a number and the number of ones as another number, like 60 + 7. Then I can write the number with 6 as the tens digit and 7 as the ones digit, like 67.

Math Journal

Draw quick pictures to show 9 tens 2 ones. Write the number in three different ways.

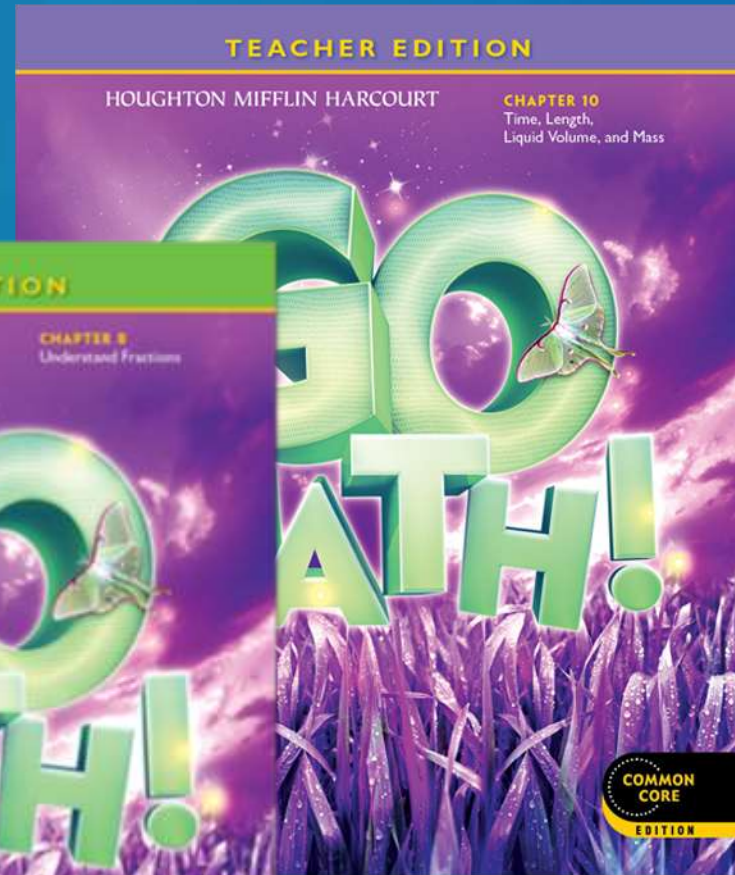
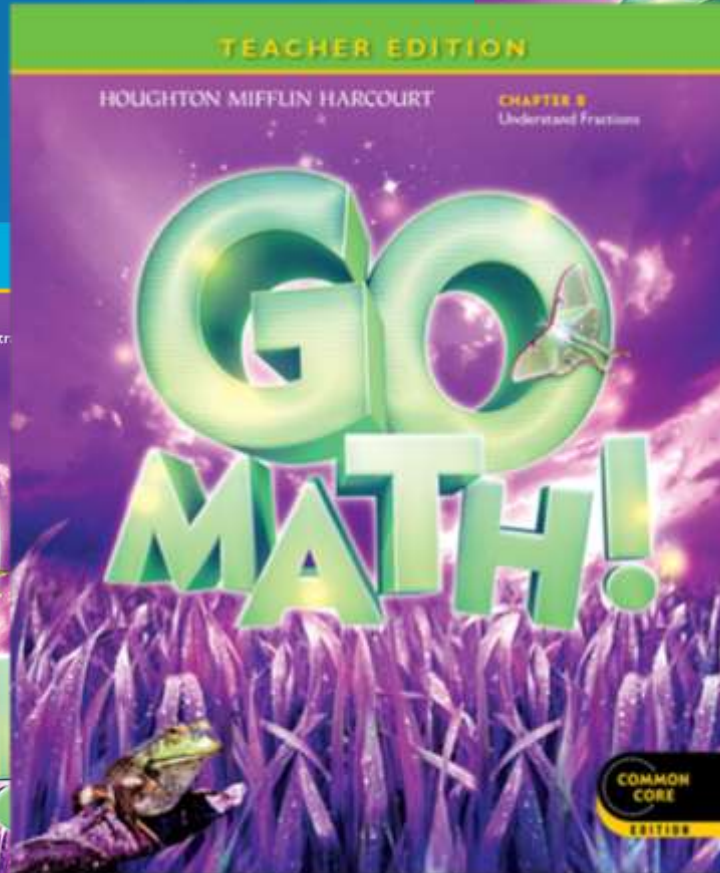
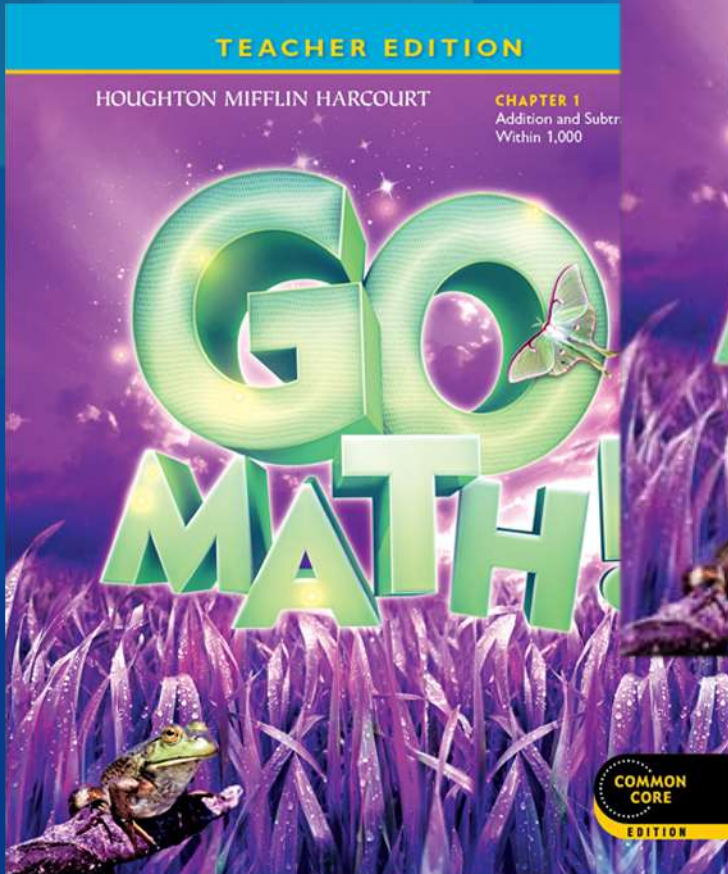
Getting Ready for Grade 2 Lesson 1 PG79

Teacher Materials



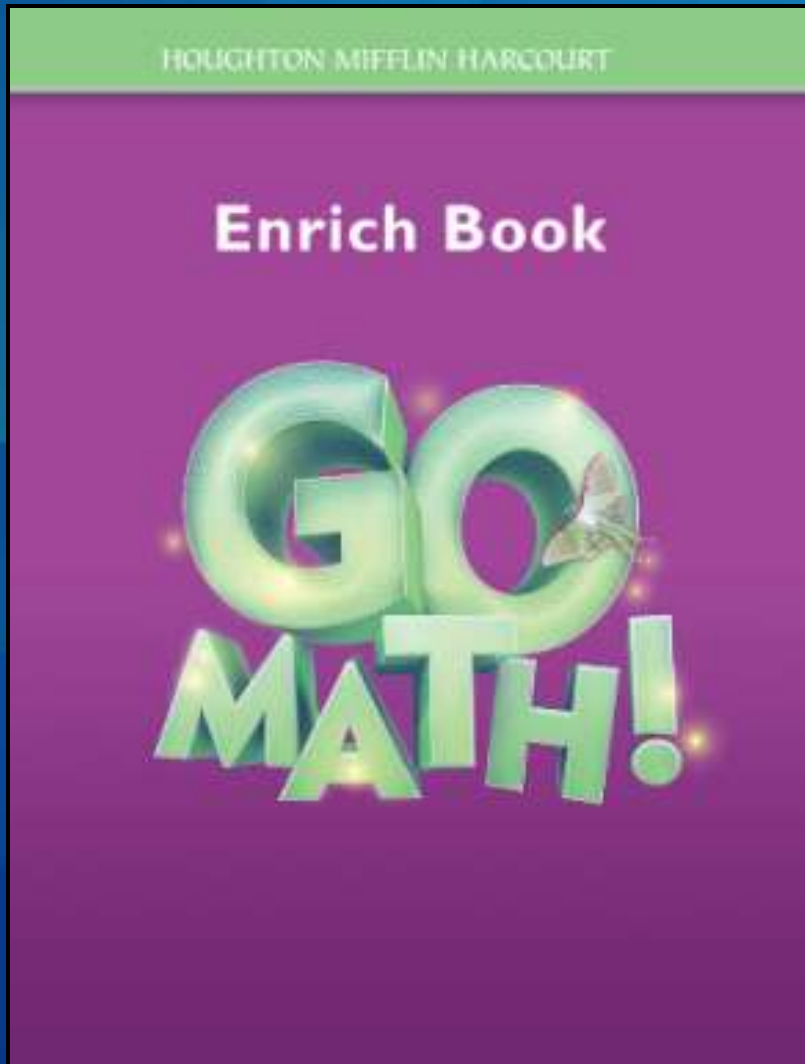
Station 5

Common Core



Teacher Edition

Enrich



Name _____

Lesson 1.1
Enrich

Pattern Pairs and Quads

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

1. Look at a pair of numbers next to each other in any *row* of the addition table. Is their sum even or odd? **Explain.**

2. Look at a pair of numbers next to each other in any *column* of the addition table. Is their sum even or odd? **Explain.**

3. **Stretch Your Thinking** Look at any square of four numbers in the addition table. One square is outlined as an example. Is the sum of the four numbers even or odd? **Explain.**

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**GO
MATH!**

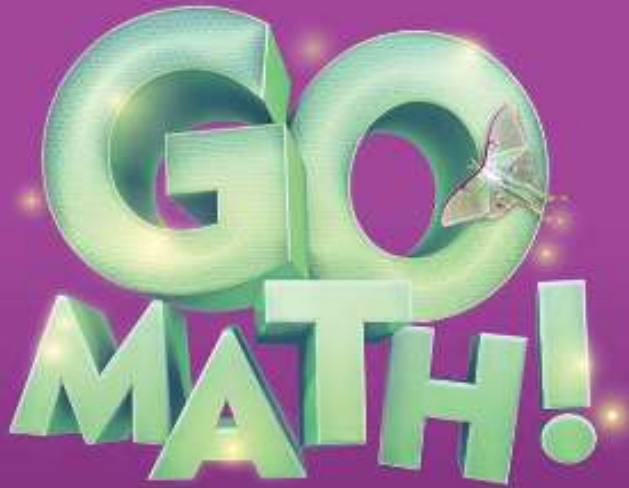
COMMON
CORE
2012
EDITION

**What does
ASSESSMENT
look like in
GO Math?**

Assessment Guide

HOUGHTON MIFFLIN HARCOURT

Assessment Guide



- Prerequisite Diagnostic Skills
- Beginning of the Year Test
- Middle of the Year Test
- End of the Year Test
- Chapter Assessments



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MIFFLIN
HARCOURT

Account, Student1 --Performance by Go Math!

Lesson Objectives

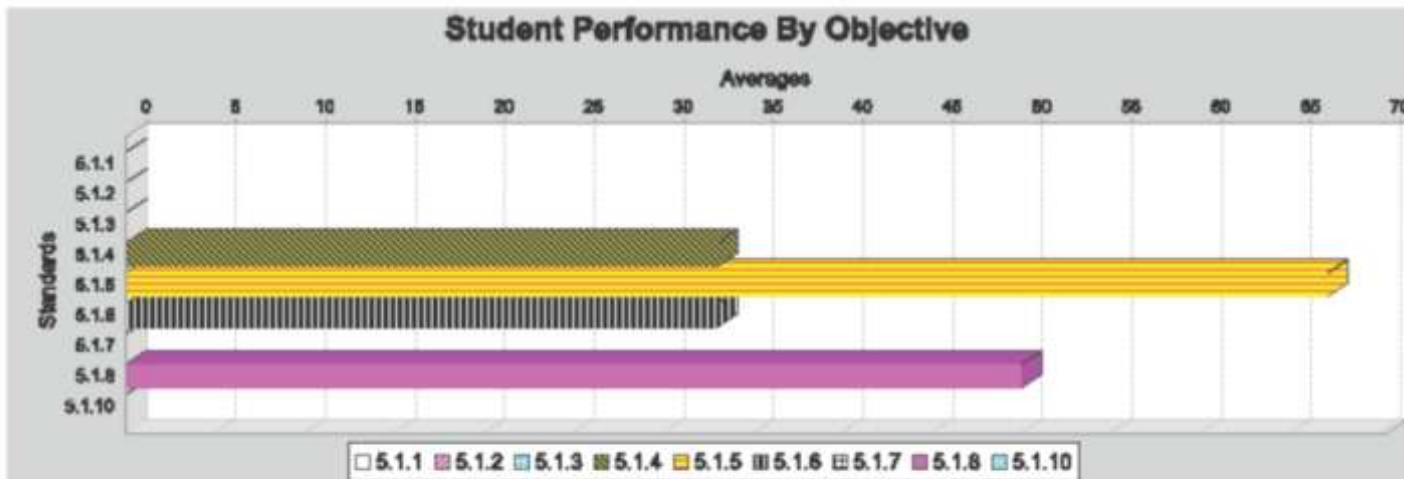
Student: Account, Student1, Mathematics, My Class

Teacher: Teacher Account

Assessment for: All

Test Item Types: Multiple choice, Essay, Fill-in-blank

When Assessments
are taken online
then...



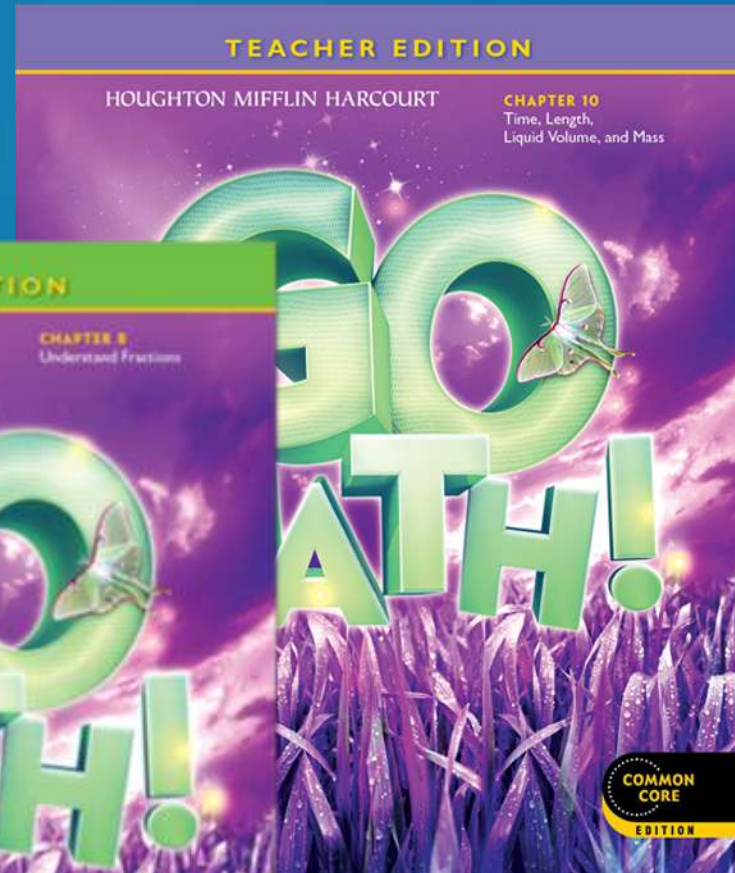
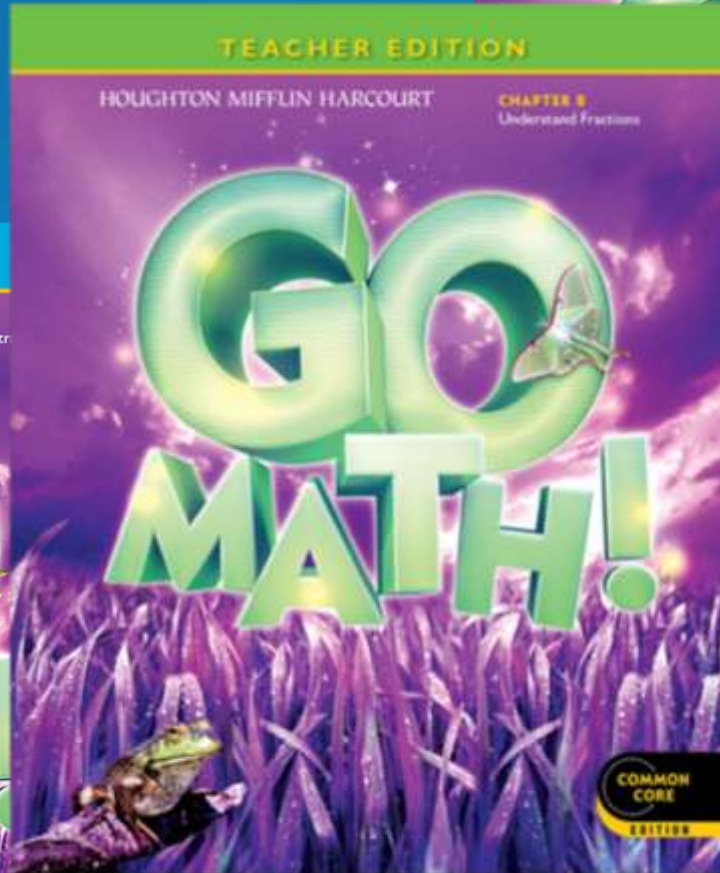
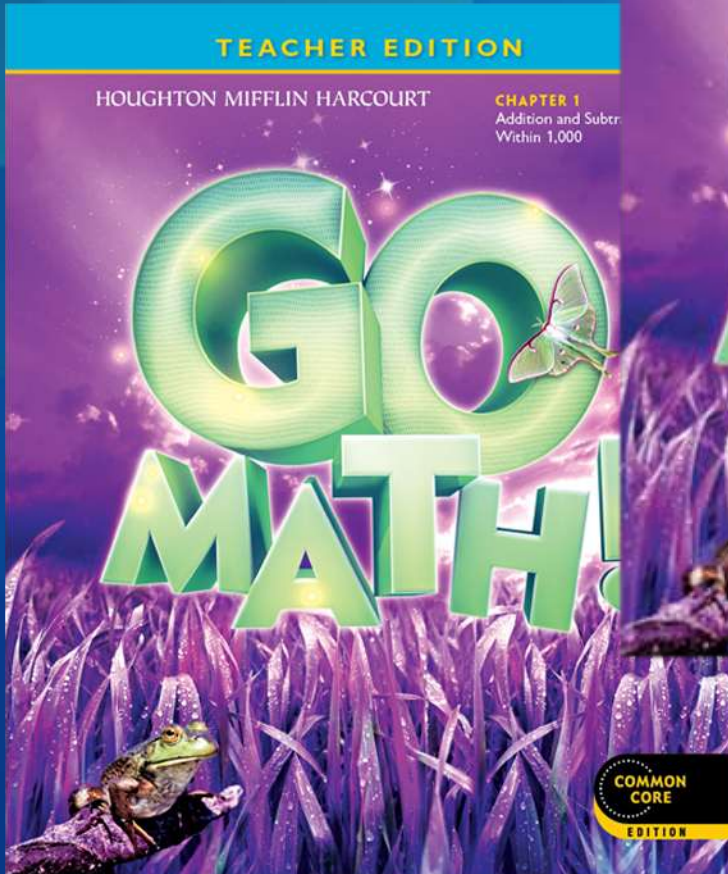
Standard/Objective	Number Correct	Total Questions	Score
5.1.1	0	3	0%
5.1.10	0	2	0%
5.1.2	0	3	0%
5.1.3	0	3	0%

Lunch Break!!



60 Minutes

Common Core



Teacher Edition

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GO MATH!

COMMON
CORE
2012
EDITION

How does every
CHAPTER in GO
Math! begin?

Chapter 1

Addition and Subtraction Within 1,000 3

Domains: Operations and Algebraic Thinking CC.3.OA
 Number and Operations in Base Ten CC.3.NBT

Lessons

Grade 3 Common Core State Standards

- 1.1 Solve problems involving the four operations, and identify and explain patterns in arithmetic.
 CC.3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
- 1.2, 1.3, 1.8 Use place value understanding and properties of operations to perform multi-digit arithmetic.
 CC.3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
- 1.4–1.7,
1.9–1.11 Use place value understanding and properties of operations to perform multi-digit arithmetic.
 CC.3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 1.12 Solve problems involving the four operations, and identify and explain patterns in arithmetic.
 CC.3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Chapter 2

Represent and Interpret Data 59

Chapter 3

Understand Multiplication 95

Chapter 4

Multiplication Facts and Strategies 131

Chapter 5

Use Multiplication Facts 179

Chapter 6

Understand Division 207

Chapter 7

Division Facts and Strategies 251

Whole Number Operations	Page
Critical Area At A Glance	1A
Digital Path	1C
Project	1

Chapter 1 Addition and Subtraction Within 1,000



Domains:

Operations and Algebraic Thinking CC.3.OA
 Number and Operations in Base Ten CC.3.NBT



Mathematical Practices:

CC.K-12.MP.5 Attend to precision.
 CC.K-12.MP.7 Look for and make use of structure.

Planning	Page
Chapter At A Glance	3A
Teaching for Depth	3E
Daily Classroom Management	3F
Review Prerequisite Skills	3G
Developing Math Language	3H
Introduce the Chapter	3
Show What You Know	3
Vocabulary Builder	4

Lessons	Common Core State Standards	Page
1.1 Algebra • Number Patterns	CC.3.OA.9	5A
1.2 Round to the Nearest Ten or Hundred	CC.3.NBT.1	9A
1.3 Estimate Sums	CC.3.NBT.1	13A
1.4 Mental Math Strategies for Addition	CC.3.NBT.2	17A
1.5 Algebra • Use Properties to Add	CC.3.NBT.2	21A
1.6 Use the Break Apart Strategy to Add	CC.3.NBT.2	25A
1.7 Use Place Value to Add	CC.3.NBT.2	29A
Mid-Chapter Checkpoint		33
1.8 Estimate Differences	CC.3.NBT.1	35A



Chapter At A Glance

Domains: Operations and Algebraic Thinking
Number and Operations in Base Ten

Chapter Essential Question How can you add and subtract whole numbers and decide if an answer is reasonable?

Use the Chapter Planner in the Go Math! Planning Guide for pacing.

Lesson At A Glance

Essential Question

Objective

Vocabulary

Materials

LESSON 1.1 CC.3.OA.9

Algebra • Number
Patterns 5A

How can you use properties to explain patterns on the addition table?

Identify and describe whole-number patterns and solve problems.

Commutative Property of Addition, Identity Property of Addition, pattern, even, odd

MathBoard, Addition Table (see *eTeacher Resources*), orange and green crayons, Counting Tape

LESSON 1.2 CC.3.NBT.1

Round to the Nearest
Ten or Hundred 9A

How can you round numbers?

Round 2- and 3-digit numbers to the nearest ten or hundred.

round

MathBoard, Counting Tape

LESSON 1.3 CC.3.NBT.1

Estimate Sums 13A

How can you use compatible numbers and rounding to estimate sums?

Use compatible numbers and rounding to estimate sums.

compatible numbers, estimate

MathBoard, Counting Tape

Print Resources

1.1 Student Edition

1.1 Standards Practice Book

1.1 Reteach

1.1 Enrich

Grab-and-Go™ Centers Kit

ELL Strategy • Model Language

1.2 Student Edition

1.2 Standards Practice Book

1.2 Reteach

1.2 Enrich

Grab-and-Go™ Centers Kit

ELL Strategy • Describe

1.3 Student Edition

1.3 Standards Practice Book

1.3 Reteach

1.3 Enrich

Grab-and-Go™ Centers Kit

ELL Strategy • Model Language

Digital Path

1.1 eStudent Edition

1.1 eTeacher Edition

Real World Video, Ch. 1

iTools

HMH Mega Math

1.2 eStudent Edition

1.2 eTeacher Edition

Animated Math Models

HMH Mega Math

1.3 eStudent Edition

1.3 eTeacher Edition

Animated Math Models



Teaching for Depth

by Juli K. Dixon

Professor of Mathematics Education
University of Central Florida
Orlando, Florida

Strategies for Adding Multidigit Numbers

Regardless of the strategies students use for adding greater numbers, they need to be able to explain why the strategies work.

- Students should use place-value language as they describe the procedures for adding multidigit numbers.

$$\begin{array}{r} 1 \quad 1 \\ 2 \quad 6 \quad 9 \\ + 3 \quad 7 \quad 8 \\ \hline 6 \quad 4 \quad 7 \end{array}$$

- When using the standard algorithm, students should say that they added 9 ones and 8 ones to get 17 ones, then they regrouped 17 ones to record the 7 ones in the sum and combine the 1 ten with 6 tens and 7 tens to get 14 tens, and so on.
- Making sense of the strategies students use, whether they are based on the traditional algorithm or invented algorithms, will lead to procedural fluency.

From the Research

“The development of algorithms is an essential component of mathematics...Teaching students algorithms they don’t understand, however, has limited potential at best and, more important, leads to isolated skills that do not contribute to students’ general mathematical knowledge.”

(Gravemeijer & van Galen, 2003, p. 120)

Strategies for Subtracting Multidigit Numbers

A student who has procedural fluency with multidigit subtraction may use a traditional algorithm in a flexible way to compute with greater numbers:

- This problem would traditionally be classified as *subtracting across zero*, but the emphasis now is on the value of the entire number rather than the values of particular digits in isolation.

$$\begin{array}{r} 4 \quad 9 \quad 14 \\ \cancel{5} \quad \cancel{0} \quad \cancel{5} \\ - 2 \quad 4 \quad 5 \\ \hline 2 \quad 5 \quad 6 \end{array}$$

- Rather than using individual digits and subtracting, it is more efficient to think of 504 as 50 tens 4 ones, and then regroup the tens and ones to get 49 tens 14 ones.

COMMON CORE

Mathematical Practices

Students have many experiences that lead them to **make sense of problems and persevere in solving them**. They explore strategies, including their own as well as the standard algorithms for adding and subtracting multidigit numbers. Having multiple strategies allows students to persevere because they can try another way when one way does not yield a reasonable answer. Students need to first make sense of problems so they can choose appropriate solution strategies.



Professional Development Video Podcasts

Place Value and Operations: Whole Numbers, Grades 3–6, Segments 2 and 3



Daily Classroom Management



Differentiated Instruction



Review Prerequisite Skills



RtI

Activities

Find It!

Objective: Write basic facts for addition and subtraction.

Materials: blue and red connecting cubes, MathBoard

Have students make a train using 3 blue and 8 red connecting cubes.



TIER 2

Add It!

Objective: Use a model to add 2-digit numbers.

Materials: base-ten blocks, MathBoard

Have students write an addition problem using two 2-digit numbers such as $63 + 24$ in vertical form on



TIER 3

COMMON
CORE

Common Core State Standards Across the Grades

Before

Domain: Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction.

CC.2.OA.1

Work with equal groups of objects to gain foundations for multiplication.

CC.2.OA.3

Domain: Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract.

CC.2.NBT.5, CC.2.NBT.6, CC.2.NBT.7, CC.2.NBT.8

Grade 3

Domain: Operations and Algebraic Thinking

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

CC.3.OA.8, CC.3.OA.9

Domain: Number and Operations in Base Ten

Use place value understanding and properties of operations to perform multi-digit arithmetic.

CC.3.NBT.1, CC.3.NBT.2

After

Domain: Operations and Algebraic Thinking

Use the four operations with whole numbers to solve problems.

CC.4.OA.3

Generate and analyze patterns.

CC.4.OA.5

Domain: Number and Operations in Base Ten

Generalize place value understanding for multi-digit whole numbers.

CC.4.NBT.3

Use place value understanding and properties of operations to perform multi-digit arithmetic.

CC.4.NBT.4

Developing Math Language

Chapter Vocabulary

Associative Property of Addition the property that states that when the grouping of addends is changed, the sum is the same

Commutative Property of Addition the property that states that you can add two or more numbers in any order and get the same sum.

compatible numbers numbers that are easy to compute mentally

estimate a number close to an exact amount

Identity Property of Addition the property that states that the sum of any number and zero is that number

pattern a repeating or growing sequence that follows a rule

round to replace a number with another number that tells how many or how much



ELL Vocabulary Activity

Objective Understand estimation vocabulary.

Use the word *same* to define rounding. Say: **An estimate is a number close to an exact amount. When we round numbers to estimate a sum or difference, we can round both numbers to the same place value. We round both numbers to the nearest hundred or ten. Model the steps for students.**

Use the terms *easy* and *one or more* to define compatible numbers. Say: **When we use compatible numbers, we change one or more numbers into numbers that are easy to add or subtract.**

Practice vocabulary by using questioning strategies such as:

Beginning

- Round 46 to 50 and 37 to 40. Did you round to the same place value?

Intermediate

- Round 46 to 50 and 37 to 40. Which are compatible numbers—46 and 37 or 50 and 40? Why?

Advanced

- How can we estimate the sum of 46 and 37? Use the words *round* and *compatible numbers* to explain.

See **ELL** Activity Guide for leveled activities.

Vocabulary Strategy • Graphic Organizer

Materials Word Descriptions (see *eTeacher Resources*)

- Have students complete the word descriptions graphic organizer for the vocabulary words *estimate* and *compatible numbers*. The outer sections of the organizer should contain the following:
 - Definition
 - Characteristics
 - Examples
 - Nonexamples



Show What You Know

Chapter

1

Addition and Subtraction Within 1,000

Show What You Know



Show What You Know • Diagnostic Assessment

Use to determine if students need intervention for the chapter's prerequisite skills.

Were students successful with Show What You Know?

If NO...then
INTERVENE

If YES...then use
INDEPENDENT
ACTIVITIES

	Skill	Missed More Than	Intervene With	Soar to Success Math
TIER 3	Think Addition to Subtract	1	Intensive Intervention Skill 12; Intensive Intervention User Guide Activity 1	Warm-Up 14.10
TIER 2	Addition Facts	1	Strategic Intervention Skill 3	Warm-Up 10.21
TIER 2	Subtraction Facts	1	Strategic Intervention Skill 4	Warm-Up 11.15



Differentiated Centers Kit

Use the *Enrich Book* or the independent activities in the *Grab-and-Go™ Differentiated Centers Kit*.

For Diagnostic Interview Tasks for Show What You Know skills, see *Assessment Guide*.

3 Chapter 1

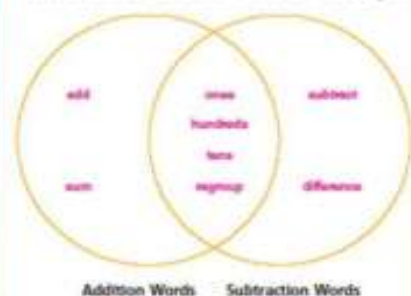
Manuel's puppy chewed part of this homework paper. Two of the digits in his math problem are missing. Be a Math Detective to help him figure out the missing digits. What digits are missing?



Assessment Options: Soar to Success Math

Vocabulary Builder

- **Visualize It**
Sort the review words with a ✓ into the Venn diagram.



Review Words

- ✓ add
- ✓ difference
- ones
- ✓ hundreds
- add
- ✓ ones
- ✓ regroup
- ✓ subtract
- ✓ tens
- ✓ tens

Preview Words

- Associative Property of Addition
- Commutative Property of Addition
- Compatible numbers
- estimate
- Identity Property of Addition
- pattern
- round

- **Understand Vocabulary**
Complete the sentences by using preview words.

- A number close to an exact number is called an estimate.
- You can round a number to the nearest ten or hundred to find a number that tells about how much or about how many.
- Compatible numbers are numbers that are easy to compute mentally.
- The Commutative Property of Addition states that you can add two or more numbers in any order and get the same sum.

4

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Vocabulary Builder



Have students complete the activities on this page by working alone or with partners.

- **Visualize It**

A Venn diagram shows relationships between sets of things. Words relating to addition should be placed in the left circle. Words relating to subtraction should be placed in the right circle. Words relating to both addition and subtraction should be placed in the section where the circles overlap.

- **Understand Vocabulary**

Introduce the new words for the chapter.

- A number close to an exact number is called an **estimate**.
- To find a number that tells about how much or about how many, you **round**.
- Compatible numbers** are numbers that are easy to compute mentally and are close to the actual numbers.
- The **Commutative Property of Addition** states that you can add two or more numbers in any order and get the same sum.



School-Home Letter available in English and Spanish, *Student Practice Book*, pp. P1–P2



Intervention Options Response to Intervention

Use *Show What You Know*, *Lesson Quick Check*, and *Assessments* to diagnose students' intervention levels.

TIER 1

On-Level Intervention





For students who are generally at grade level but need early intervention with the lesson concepts, use:

-  Tier 1 Activity for every lesson
-  Soar to Success Math

TIER 2

Strategic Intervention




For students who need small group instruction to review concepts and skills needed for the chapter, use:

-  Tier 2 Activity for every lesson
-  Strategic Intervention Guide
-  Prerequisite Skills Activities
-  Soar to Success Math

TIER 3

Intensive Intervention

For students who need one-on-one instruction to build foundational skills for the chapter, use:

-  Intensive Intervention Guide
-  Prerequisite Skills Activities
-  Soar to Success Math

ENRICHMENT

Independent Activities

For students who successfully complete lessons, use:

-  **Grab, Go!**
Differentiated Centers Kit
- Enrich Activity for every lesson
- Enrich Book
-  HMH Mega Math

Go Active Lesson Model

Unlock the problem/draw
(whole group)

Share and Show
(small group)

On your Own
(Guided/Independent)

Problem solving
(whole / guided / independent)

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GO MATH!

COMMON
CORE
2012
EDITION

How does
every LESSON
in GO Math!
begin?

LESSON AT A GLANCE

Common Core Standard

Solve problems involving the four operations, and identify and explain patterns in arithmetic.
CC.3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Lesson Objective

Identify and describe whole-number patterns and solve problems.

Essential Question

How can you use properties to explain patterns on the addition table?

Materials MathBoard, Addition Table (see *eTeacher Resources*), orange and green crayons

Vocabulary commutative Property of Addition, Identity Property of Addition, pattern

Digital Path

Real World Video, Ch. 1

HMH Mega Math

iTools: Number Charts

eStudent Edition



About the Math

Teaching for Depth Exploring number patterns helps students develop algebraic thinking skills. Identifying and describing number patterns are important skills that prepare students for the study of functions in later grades.

In this lesson, students shade different rows, columns, and diagonals of the addition table in order to develop a conceptual understanding of the Identity and Commutative Properties of Addition. They go on to formalize the properties in order to use them, instead of patterns, to solve problems. Students use the addition table to find other patterns as well.



Professional Development Video Podcasts

Daily Routines



Common Core



Problem of the Day



Test Prep Karen picks 3 apples. Ty picks 5 apples. How many more apples do they need to pick to have 12 apples altogether?

- A 2
- B 4
- C 8
- D 20

Fluency Builder

Counting Tape



Materials Counting Tape

You will find *Every Day Counts*® activity suggestions in many *Go Math!* lessons. The *Every Day Counts*® *Calendar Math* program, in just 10–15 minutes a day, helps students build mathematical understanding and confidence. To learn more about *Every Day Counts*, see the *Go Math! Planning Guide*.

Introduce the *Every Day Counts*® Counting Tape on the first day of school or as soon as possible. Begin with a 4- or 5-foot section of adding machine tape posted in a prominent spot.

Tell students that one square will be attached for each day students come to school this year, and that the paper squares will alternate between two colors to show the pattern of odd and even numbers. As you update each day, ask questions such as:

- How many days have we been in school so far?
- What color will today's square be?
- Is today's number odd or even? How do you know?

1 2 3 4 5 6 7 8

Differentiated Instruction Activities

ELL Language Support



Auditory / Verbal
Small Group

Strategy: Model Language

Materials Addition Table (see *eTeacher Resources*)

- Students may be familiar with the addition table but may need support to read and pronounce the numbers.
- Model pronunciation as you read the row for 1 on an addition table. Have students repeat the numbers aloud. Then guide students to shade the even numbers on the chart.
- Invite students to share five even numbers and five odd numbers with the class.

even numbers:

odd numbers:

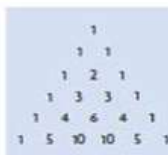
See **ELL** Activity Guide for leveled activities.

Enrich



Visual
Individual

- Display the arrangement of numbers (Pascal's Triangle) shown on the right.
- Ask students to look for patterns in the diagram. Encourage them to find the relationship between a number and the numbers in the horizontal row above it. *Students should identify that the numbers 2, 3, 4, 5, 6, and 10 are the sums of the closest two numbers in the row above.*



- Display the next row of Pascal's Triangle for students:
1, __, 15, __, 6, 1
- Challenge students to find the missing numbers using the patterns they found. *6; 20; 15*



RtI

Response to Intervention

Reteach Tier 1



Visual / Auditory
Whole Class / Small Group

Materials Addition Table (see *eTeacher Resources*), color pencil

- Distribute addition tables to students. **Shade all of the sums of 6 orange from left to right. What pattern do you notice?** *They are on a diagonal.*
- **Look at the first sum that you shaded. Write an addition sentence for this sum.** $6 + 0 = 6$
- **What property did you use to find $6 + 0 = 6$?** *the Identity Property of Addition*
- **Look at the second sum and the second to last sum that you shaded. Write addition sentences for these sums.** $5 + 1 = 6$ and $1 + 5 = 6$ **What property is demonstrated by these sentences?** *the Commutative Property of Addition*
- Have students shade other sums that show the Identity and Commutative Properties of Addition.

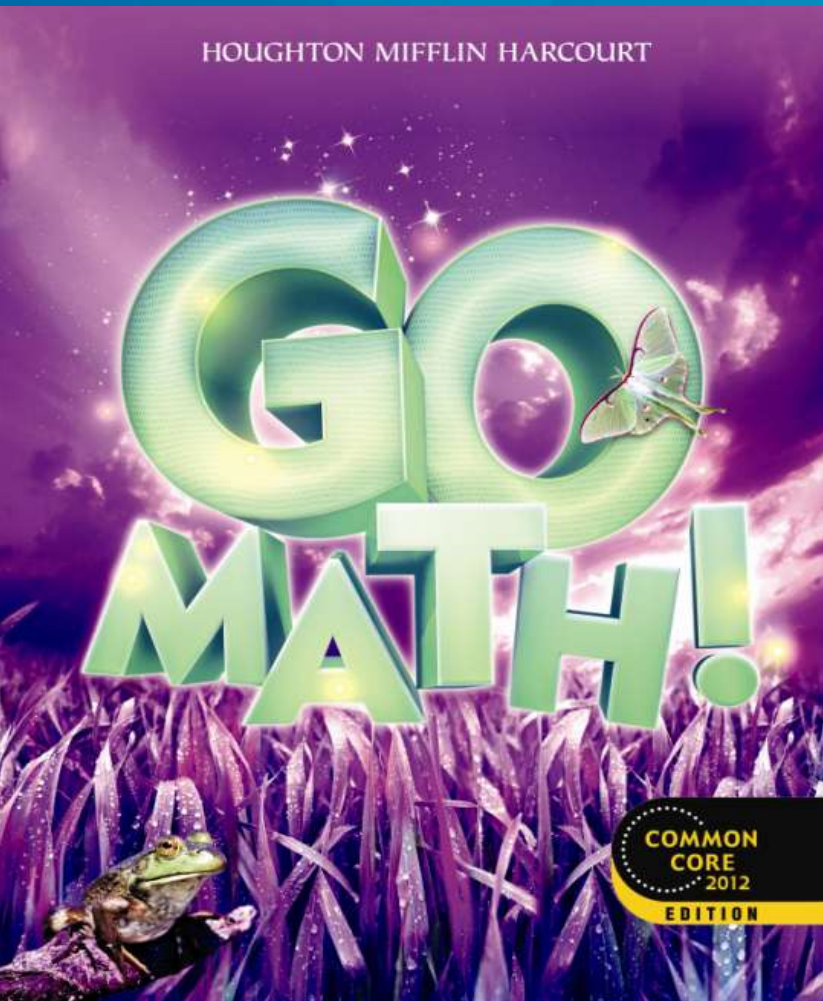
Tier 2



Visual / Kinesthetic
Small Group

Materials counters, paper

- Ask students to model the number 6 using counters. Then ask them to add 0 counters. **Based on your counters, what is the sum of 6 and 0?** *6*
- Ask students to repeat this step with other numbers to show that the Identity Property of Addition works with any number.
- Ask students to use counters to model $5 + 1$. **What is the sum of $5 + 1$?** *6*
- Ask students to use counters to model $1 + 5$. **What is the sum of $1 + 5$?** *6*
- **What property did you just demonstrate?** *the Commutative Property of Addition*
- Ask students to repeat these steps with other pairs of addition sentences.



What does
The “Go Active”
Lesson look
like?

Go Active Lesson Model

Unlock the problem/draw
(whole group)

Share and Show
(small group)

On your Own
(Guided/Independent)

Problem solving
(whole / guided / independent)

Step 1: Engage

Step 2: Teach and Talk

1 ENGAGE GO Online Real World Video, Ch. 1

Access Prior Knowledge Have students watch the *Composing Music* video.

- How are patterns used in composing music? Possible answer: a group of notes may repeat over and over.
- How does a piano keyboard show a pattern? The keys repeat: C, D, E, F, G, A, B are repeated on the keyboard.

Encourage students to think of songs that contain patterns or words that repeat.

2 TEACH and TALK GO Online eTools

Materials: Addition Table (see eTeacher Resources)

▶ Unlock the Problem REASONING

What patterns are in our place-value system? Discuss the addition table with students. Students can find the sum of two numbers by locating the first addend in the first column, the second addend in the top row, and moving to the right and down until the column and row meet.

Point out that patterns in the addition table can be found in each row, column, and diagonal. Notice that each diagonal going upwards from left to right contains the same sum and can be used to find all of the addition facts for that sum.

▶ Activity 1

Have students complete each step of the activity. Make sure students understand that the Identity Property of Addition means that adding 0 to a quantity does not change the value of the quantity.

- How does the row for 1 that you shaded green compare to the row for 0 that you shaded orange? Possible answer: each number in the row for 1 is 1 more than the number above it.
- How does the row for 1 compare to the row below it for 2? Possible answer: if I add 1 to each number in the row for 1, I get the numbers in the row for 2.
- Make a conjecture about the relationship between each row in the addition table and the row after it. Possible answer: if I add 1 to each number in a row, I get the numbers in the row below it.

Point out that the same relationships are true for the columns in the addition table.

ALGEBRA Lesson 1.1

Name _____

Number Patterns

Essential Question How can you use properties to explain patterns in the addition table?

UNLOCK the Problem

A **pattern** is an ordered set of numbers or objects. The order helps you predict what will come next.

You can use the addition table to explore patterns.

Activity 1 Possible answers are given.

Materials orange and green crayons

- Look across each row and down each column. What pattern do you see?
The numbers increase by 1. 1 is added to each number.
- Shade the row and column orange for the addend 0. Compare the shaded squares to the yellow row and the blue column. What pattern do you see?
The numbers are the same.
- What happens when you add 0 to a number?
The sum is the same as the other number.
- Shade the row and column green for the addend 1. What pattern do you see?
The numbers are in order from 1 to 11.
- What happens when you add 1 to a number?
It is the summing; I get the next number. The sum is 1 more than the other number.

The Identity Property of Addition states that the sum of any number and zero is that number.
 $7 + 0 = 7$

Math Talk What other patterns can you find in the addition table?

Possible answer: diagonals from right to left show the same number starting at 0; diagonals from left to right show even numbers, then odd numbers, then even numbers, and so on.

Chapter 1 5

Standards Practice 1.1

Common Core **1.OA.A.8**

Number Patterns

Use the addition table to explore patterns.

Problem Solving

Use the addition table to explore patterns.

Number Patterns

Use the addition table to explore patterns.

Share and Show



3 PRACTICE

► Share and Show • Guided Practice

Students may wish to shade parts of rows and columns of the addition table on page 6 to help them identify addends and sums. Use Exercises 2 and 7 for Quick Check.



Quick Check



if a student misses Exercises 2 and 7

Then Differentiate Instruction with

- RtI Tier 1 Activity, p. 5B
- Reteach 1.1

 Soar to Success Math 10.23, 27.12

Property of Addition with the Identity Property of Addition.

C or D They do not recognize even and odd numbers correctly.

Name _____

Math Talk: Possible explanation: the property allows you to write the addends in a different order to get the same sum.

Share and Show

Use the addition table on page 6 for 1–15.

1. Complete the addition sentences to show the Commutative Property of Addition.

$$3 + 4 = 7 \quad 4 + 3 = 7$$

Find the sum. Then use the Commutative Property of Addition to write the related addition sentence.

2. $8 + 5 = 13$ 3. $7 + 9 = 16$ 4. $10 + 4 = 14$
 $5 + 8 = 13$ $9 + 7 = 16$ $4 + 10 = 14$

Is the sum even or odd? Write *even* or *odd*.

5. $8 + 1 =$ odd 6. $3 + 9 =$ even 7. $4 + 8 =$ even

On Your Own



Find the sum. Then use the Commutative Property of Addition to write the related addition sentence.

8. $0 + 8 = 8$ 9. $7 + 3 = 10$ 10. $8 + 7 = 15$
 $8 + 0 = 8$ $3 + 7 = 10$ $7 + 8 = 15$

Is the sum even or odd? Write *even* or *odd*.

11. $6 + 4 =$ even 12. $5 + 9 =$ even 13. $2 + 3 =$ odd

Problem Solving

14.   Look back at the shaded diagonals in Activity 2. Why does the orange diagonal show only odd numbers? **Explain.**

Possible explanation: for each sum, one addend is even and one is odd. The sum of an even and an odd number is always odd.

15.  Which describes the number sentence?

$$5 + 0 = 5$$

- (A) Commutative Property of Addition
 (B) Identity Property of Addition
 (C) even + even = even
 (D) odd + odd = odd

Chapter 1 • Lesson 1 7

Step 3: Practice

Extend the Math

Activity

Identifying Patterns Within Patterns

Materials Hundred Chart (see eTeacher Resources), crayons

This activity provides students with an opportunity to extend their understanding of patterns, and to connect understanding of even and odd numbers with patterns on a hundred chart.

Investigate Students will work with a partner to create and identify patterns. Encourage students to be creative in the patterns they choose.

- One student records the first five numbers of a pattern by shading the boxes of the numbers on a hundred chart. The other partner states the pattern, and then extends the pattern as far as possible on the hundred chart. Partners then analyze the pattern to see the relationship of even and odd numbers to the pattern,

and the relationship of the digits within the pattern numbers.

- For example, one partner might record the pattern 5, 16, 27, 38, 49. The second partner might identify the pattern as *add 11* and shade the boxes for 60, 71, 82, and 93. Together, partners would see that numbers in the pattern alternate between even and odd, and that the difference between the tens digit and ones is first 5, and then increases to 6.
- Students take turns providing the pattern, and identifying and extending the pattern. Students might use a different color crayon to record different patterns on the same chart.

Summarize Ask students how their patterns might change if they started with a different number. Ask how starting with an even or odd number might affect the pattern.

Differentiated Instruction Activities

ELL Language Support

Auditory / Verbal
Small Group

Strategy: Model Language

Materials Addition Table (see *eTeacher Resources*)

- Students may be familiar with the addition table but may need support to read and pronounce the numbers.
- Model pronunciation as you read the row for 1 on an addition table. Have students repeat the numbers aloud. Then guide students to shade the even numbers on the chart.
- Invite students to share five even numbers and five odd numbers with the class.

even numbers:

odd numbers:

See **ELL** Activity Guide for leveled activities.

Enrich

Visual
Individual

- Display the arrangement of numbers (Pascal's Triangle) shown on the right.
- Ask students to look for patterns in the diagram. Encourage them to find the relationship between a number and the numbers in the horizontal row above it. *Students should identify that the numbers 2, 3, 4, 5, 6, and 10 are the sums of the closest two numbers in the row above.*
- Display the next row of Pascal's Triangle for students:
1, __, 15, __, 6, 1
- Challenge students to find the missing numbers using the patterns they found. *6; 20; 15*



RtI Response to Intervention

Reteach Tier 1

Visual / Auditory
Whole Class / Small Group

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- Have students shade other sums that show the Identity and Commutative Properties of Addition.

Tier 2

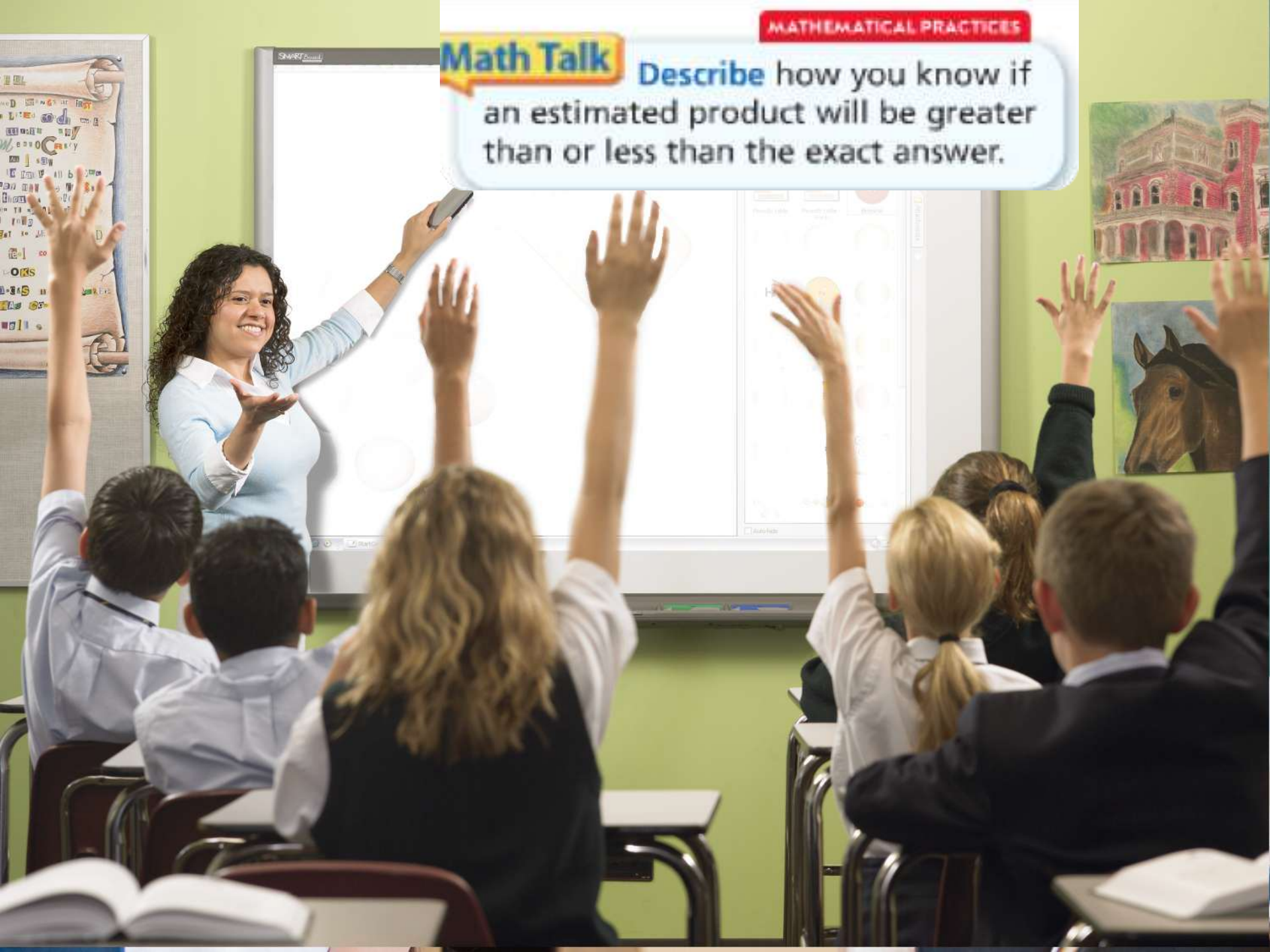
Visual / Kinesthetic
Small Group

Materials counters, paper

- Ask students to model the number 6 using counters. Then ask them to add 0 counters. **Based on your counters, what is the sum of 6 and 0?** *6*
- Ask students to repeat this step with other numbers to show that the Identity Property of Addition works with any number.
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- **What property did you just demonstrate?** *the Commutative Property of Addition*
- Ask students to repeat these steps with other pairs of addition sentences.

Math Talk

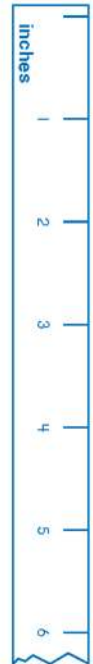
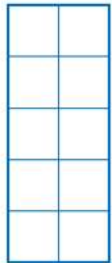
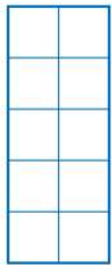
Describe how you know if an estimated product will be greater than or less than the exact answer.





Show how you know.

Estimate the product
 96×34



On Your Own

Go Deeper

MATHEMATICAL PRACTICES

Help students connect multiplication and division as they make equal groups.

- How is finding $\frac{1}{3}$ of 12 like division? I divide 12 by 3 to make 3 equal groups.
- How can you check that 4 counters are $\frac{1}{3}$ of 12? I can multiply 3×4 . $3 \times 4 = 12$
- Why can you check division using multiplication? Because multiplication and division are inverse operations.

Name _____

On Your Own

Circle equal groups to solve. Count the number of flowers in 1 group.

5. $\frac{1}{4}$ of 12 = _____



6. $\frac{1}{3}$ of 15 = _____



7. $\frac{1}{4}$ of 16 = _____



8. $\frac{1}{3}$ of 9 = _____



9. $\frac{1}{6}$ of 18 = _____



10. $\frac{1}{8}$ of 8 = _____



12. $\frac{1}{3}$ of 12 = _____



13. **Hot!** $\frac{1}{2}$ of 6 = _____



Then circle equal groups to solve.

15. $\frac{1}{6}$ of 24 = _____

Problem Solving



★ Test Prep Coach

Test Prep Coach helps teachers to identify common errors that students can make.

In Exercise 19, if students selected:

- A They circled groups of 3.
- C They counted the number of counters in 2 groups.
- D They counted the number of counters in 3 groups.

Step 4: Summarize

Problem Solving REAL WORLD

Use the table for 16–17.

16. One fourth of the seed packs Ryan bought are violet seeds. How many packs of violet seeds did Ryan buy? Draw counters to solve.

17. **KOT Write Math** One third of Brooke's seed packs and one fourth of Cole's seed packs are daisy seeds. How many packs of daisy seeds did they buy altogether? Explain how you know.

18. **Sense or Nonsense?** Sophia bought 12 pots. One sixth of them are green. Sophia said she bought 2 green pots. Does her answer make sense? Explain how you know.

Yes
Sophia had six equal groups, so one sixth of them would be two.

19. **★ Test Prep** Bailey picked 15 flowers. One third of them are yellow. How many yellow flowers did Bailey pick?

- A 3
- B 5
- C 10
- D 15



Flower Seeds Bought

Name	Number of Packs
Ryan	8
Brooke	12
Cole	20

SHOW YOUR WORK



Mid-Chapter Checkpoint

Mid-Chapter Checkpoint

Vocabulary

Choose the best term from the box to complete the sentence.

- A fraction is a number that names part of a whole or part of a group. (p. 315)
- The denominator tells how many equal parts are in the whole or in the group. (p. 319)

Vocabulary

denominator
fraction
numerator

Concepts and Skills

Write the number of equal parts. Then write the name for the parts. (CC.3.NF.1)

3.



4.



5.



Data-Driven Decision Making RtI

Item	Lesson	*CCSS	Common Error	Intervene With	Soar to Success Math
1, 11, 21	8.4	MACC.3.NF.1.1	May miscount the number of shaded parts in the model	R—8.4; TE—p. 319B	5.07, 5.09
2, 7, 17	8.1	MACC.3.NF.1.1	May not understand equal parts or their names	R—8.1; TE—p. 307B	5.04, 5.05, 5.06
3, 12, 22	8.8	MACC.3.NF.1.1	May not understand how to use a fraction to find part of a group	R—8.8; TE—p. 337B	
4, 10, 24	8.2	MACC.3.NF.1.1	May not understand how to divide whole objects to share equally	R—8.2; TE—p. 311B	5.03

*CCSS—Common Core State Standards

Key: R—Reteach Book; TE—RtI Activities

9. point A 6 10. point B 6 11. point C 6

Chapter Review/Test

Name _____

✓ Chapter 8 Review/Test

► Vocabulary

Choose the best term from the box to complete.

Vocabulary

► Constructed Response

17. Destiny has 6 library books on her desk. One third of them are about animals. How many of Destiny's library books are about animals? Draw a diagram to show your work.

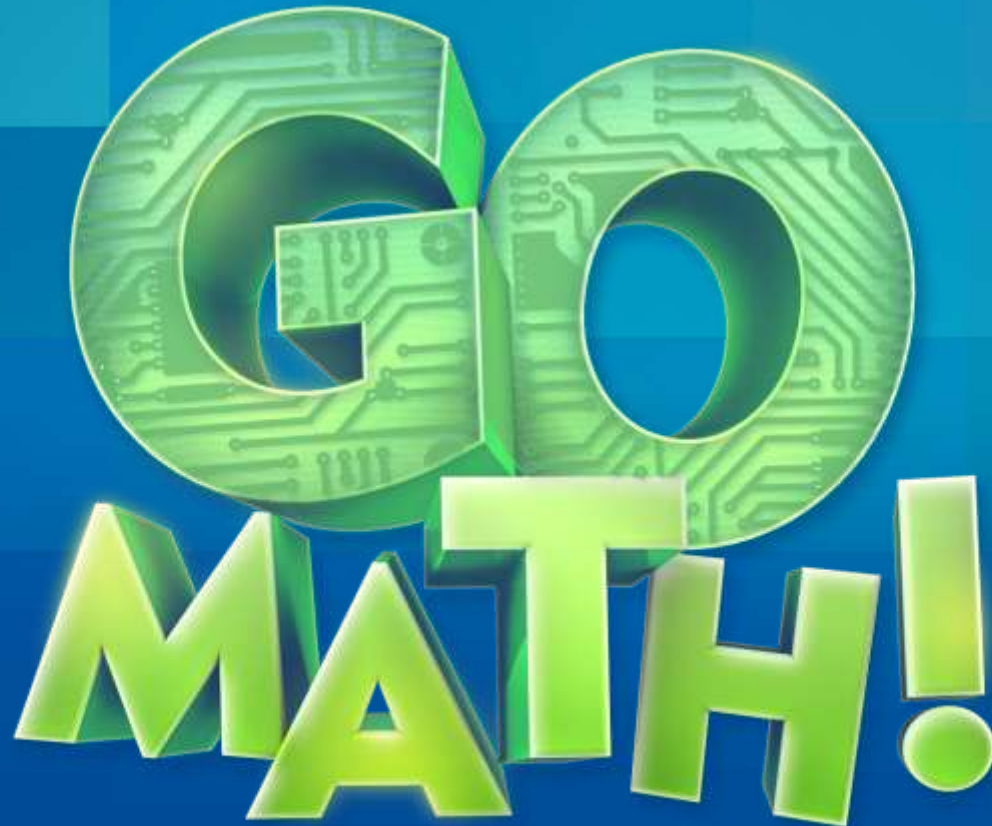
(CC.3.NF.1)

✓ Data-Driven Decision Making RtI

Based on the results of the Chapter Review/Test, use the following resources to review skills.

Item	Lesson	*CCSS	Common Error	Intervene With	Soar to Success Math
4, 5	8.6	CC.3.NF.3c	May reverse the numerator and denominator	R—8.6; TE—p. 329B	5.12
6, 7, 14	8.7	CC.3.NF.1	May not use the total amount as the denominator	R—8.7; TE—p. 333B	6.08, 6.09
8–10	8.8	CC.3.NF.1	May incorrectly determine the number of objects in a group that represents the unit fraction	R—8.8; TE—p. 337B	
11	8.3	CC.3.NF.1	May incorrectly count the number of equal parts	R—8.3; TE—p. 315B	5.08, 5.10
12	8.5	CC.3.NF.2a CC.3.NF.2b	May choose incorrect point on number line	R—8.5; TE—p. 323B	31.14
13	8.2	CC.3.NF.1	May not realize how many people to share with	R—8.2; TE—p. 311B	5.03
15	8.1	CC.3.NF.1	May incorrectly count the number of equal parts	R—8.1; TE—p. 307B	5.04, 5.05, 5.06
16	8.9	CC.3.NF.1	May misidentify the number of wholes	R—8.9; TE—p. 341B	

Take a Look at the RTI support
for the 'Go Active' Lessons in



GO
MATH!

The image features the words "GO MATH!" in a 3D, blocky font. The letters "GO" are significantly larger than "MATH!". The "GO" letters are a vibrant green and feature a detailed white circuit board pattern on their surfaces. The "MATH!" letters are a lighter, lime green color. The entire graphic is set against a background of blue squares in various shades, creating a grid-like effect.

Response to Intervention




3 OPTIONS FOR INTERVENTION



	TIER 1	TIER 2	TIER 3	Enrich
Print				
Activity	<p>Enrich Tier 1</p> <p>Materials: paper plates, counters</p> <ul style="list-style-type: none"> Have groups use paper plates and 15 counters to find $\frac{1}{3}$ of 15. Have students put an equal number of counters on each plate. How did you decide on the number of plates to use? <p>Have students divide the counters equally onto 3 plates.</p> <ul style="list-style-type: none"> How many plates of counters will you use to find $\frac{1}{3}$ of 15? 	<p>Tier 2</p> <p>Materials: counters</p> <ul style="list-style-type: none"> Have students use 2 counters. How can you find $\frac{1}{2}$ of 2? <ul style="list-style-type: none"> Continue by having students use counters to find $\frac{1}{3}$ of 3, $\frac{1}{4}$ of 4, $\frac{1}{6}$ of 6, and $\frac{1}{8}$ of 8. Help students notice that when the denominator is the same as the whole number, there will be 1 counter in each group. A unit fraction is 1 out of a group; for example, $\frac{1}{4}$ is 1 out of 4. 	<p>Activity 3</p> <p>Materials: whole-food grapes</p> <p>Materials: paper bag, paper</p> <ul style="list-style-type: none"> Provide the student with a bag of grapes. Have the student reach into the bag and remove a handful of grapes. Guide the student to see how many equal groups of 2, 3, and 10 he or she can make from a handful of grapes. Encourage the student to show a picture drawing the equal groups. Ask for the student to make groups that contain an equal number of grapes. 	<p>Enrich</p> <p>Materials: pattern blocks</p> <ul style="list-style-type: none"> Give students a set of pattern blocks. Explain that the yellow hexagon represents 1 whole. Have students find what fraction of the yellow hexagon is represented by other blocks. For example, 2 red trapezoids together completely cover the yellow hexagon. So, a red trapezoid is $\frac{1}{2}$ of a yellow hexagon. <p>whole one-half one-third one-sixth</p>
Technology				

Tier 1

Tier 2

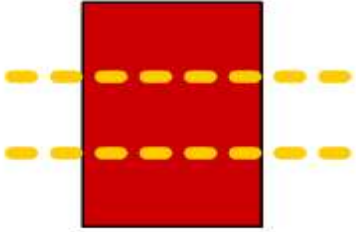
Tier 3

Soar to Success Math 

 eGlossary  eManipulatives  Album Help ? Quit X



Question 6 of 10

Does this picture show equal parts?



Yes
 No

OK

250 points   East 

Think and Reflect

What are some ways the
“GO Active” model in GO
Math! will support student
learning?



NYC Enhancements

Question: What are the NYC Enhancements?

Answer: 2 Booklets + Julie Dixon videos

NYC Enhancements

The 2 Booklets

- **Performance Tasks with Supporting Materials**
- **NYC Implementation and Planning Materials**

Performance Task Booklet

Performance Tasks with Supporting Materials

- Tasks at the Critical Area (unit) and Chapter Level
- Student-facing materials to guide the task
- Teacher support pages
- Task-specific, 4-point rubric
- Examples of student work for each scoring level

Chapter and Critical Area Performance Task Booklet

Contents

Chapter 1 Performance Task

Student Blackline Master	1
Teacher Support.....	3
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Student Work Samples.....	5A

Chapter 2 Performance Task

Student Blackline Master	6
Teacher Support.....	8
Rubric.....	10
Student Work Samples.....	10A

Chapter 3 Performance Task

Student Blackline Master	11
Teacher Support.....	13
Rubric.....	15
Student Work Samples.....	15A

Chapter 4 Performance Task

Student Blackline Master	16
Teacher Support.....	18
Rubric.....	20

Performance Tasks Engage Students in Meaningful, Significant Work

Alberto's Collections

Alberto collects sports cards, stamps, and coins. He puts his collections into albums. Alberto uses math strategies to add and subtract items in his collections.

1. Alberto has 318 baseball cards and 273 basketball cards. Estimate how many sports cards Alberto has. Describe the strategy you used to estimate.

Performance Tasks

Alberto's Collections

Alberto collects sports cards, stamps, and coins. He puts his collections into albums. Alberto uses math strategies to add and subtract items in his collections.

1. Alberto has 318 baseball cards and 273 basketball cards. Estimate how many sports cards Alberto has. Describe the strategy you used to estimate.

2. Alberto has 92 stamps in one large album and 45 stamps in a small album. How can he use mental math to find how many stamps are in the large album? Use a strategy to solve.

3. Alberto has 62 pennies, 41 nickels, and 29 dimes. What strategy can Alberto use to find the total number of coins? Describe it and show your work.

4. Suppose Alberto collects another 343 coins. How many coins will he have in his collection now? Describe two strategies you can use. Then choose one strategy and solve.

5. Of Alberto's total number of coins, 168 are quarters. Describe two strategies you can use to find how many coins are not quarters. Estimate the difference. Then choose one strategy and solve.

- Critical Area level: Four pages of student facing materials
- Chapter level: Two pages of student facing materials

Teacher Support

- Two pages per task
- Materials and Preparation Hints set the stage for success

Addition and Subtraction Within 1,000

Alberto's Collections

COMMON CORE STANDARDS

- CC.3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.
- CC.3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

PURPOSE

To assess the ability to add and subtract whole numbers using rounding, estimating and math strategies

TIME

25–30 minutes

GROUPING

Individuals

MATERIALS

- Performance Task, paper, pencil

PREPARATION HINTS

- Review basic facts for addition and subtraction.
- Review adding two-digit numbers with base-ten blocks.

IMPLEMENTATION NOTES

- Read the task aloud to students and make sure that all students have a clear understanding of the task.
- Students may use manipulatives to complete the task.
- Allow students as much paper as they need to complete the task.

REPRESENTATION

In this task teachers can...

- Provide options for comprehension by activating prior knowledge about adding and subtracting whole numbers.
- Provide options for language by providing a glossary of mathematical language and explaining math properties and strategies.

ACTION and EXPRESSION

In this task teachers can...

- Provide options for physical action by offering base-ten blocks to students while completing the task.

ENGAGEMENT

In this task, teachers can...

- Promote expectations and beliefs that optimize motivation by providing prompts and questions to help students identify personal goals.
- Increase mastery by providing feedback that is substantive and informative.

EXPECTED STUDENT OUTCOMES

- Complete the task within the time allowed
- Reflect engagement in a productive struggle
- Add and subtract whole numbers with accuracy

SCORING

Use the associated Rubric to evaluate each student's work.

Performance Task Rubric

Task Specific

ALBERTO'S COLLECTIONS	
A level 4 response	<ul style="list-style-type: none">• Indicates that the student has made sense of the task and persevered• Accurately uses place value concepts and properties of operations to perform multi-digit arithmetic• Demonstrates an understanding of using math strategies such as break apart, rounding and estimating, and compatible numbers• Accurately applies math strategies and properties of operations to solve problems
A level 3 response	<ul style="list-style-type: none">• Indicates that the student has made sense of the task and persevered• Accurately uses place value concepts and properties of operations to perform multi-digit arithmetic• Demonstrates an understanding of using math strategies such as break apart, rounding and estimating, and compatible numbers• Accurately applies math strategies and properties of operations to solve problems• Addresses most or all aspects of the task, but may make minor errors that can be corrected with revision
A level 2 response	<ul style="list-style-type: none">• Shows that the student has made sense of at least some elements of the task• Shows evidence of understanding some math strategies• May not indicate a complete understanding of how to use math

Samples of Student Work at EACH Scoring Level

Name _____ Chapter 1

Alberto's Collections

Alberto collects sports cards, stamps, and coins. He puts his collections into albums. Alberto uses math strategies to add and subtract items in his collections.

1. Alberto has 318 baseball cards and 273 basketball cards. Estimate how many sports cards Alberto has. Describe the strategy you used to estimate.

590 sports cards I rounded to the nearest 10 and added

590	
P	P
320	270

$$\begin{array}{r} 320 \\ + 270 \\ \hline 590 \end{array}$$

2. Alberto has 92 stamps in one large album and 38 stamps in another small album. How can he use mental math to find how many more stamps are in the large album? Use drawings to show your answer.

Number model: $92 - 38 = 54$

Start	change	End
92	- 38	54
or	- 36	54

54 stamps because $90 - 36$ is easier to do in my head

Name _____ Chapter 1

Alberto's Collections

Alberto collects sports cards, stamps, and coins. He puts his collections into albums. Alberto uses math strategies to add and subtract items in his collections.

1. Alberto has 318 baseball cards and 273 basketball cards. Estimate how many sports cards Alberto has. Describe the strategy you used to estimate.

$$\begin{array}{r} 310 \\ + 270 \\ \hline 580 \end{array}$$

I went to the nearest ten because if you go to the nearest ten you only have to add a few numbers.

2. Alberto has 92 stamps in one large album and 38 stamps in another small album. How can he use mental math to find how many more stamps are in the large album? Use drawings to show your answer.

Counted by 10s and used a number line

10	20	30	40	50	60	70	80	90
----	----	----	----	----	----	----	----	----

$$\begin{array}{r} 92 \\ - 38 \\ \hline 54 \end{array}$$

NYC Planning Guide

Implementation and Planning Materials

- Scope and Sequence
- Overview Materials
- Enhanced Lessons, supporting Common Core Instruction
- Lesson Roadmaps

GO Math! Scope and Sequence

Grade 3: Suggested Sequence for the <i>GO Math!</i> program	Suggested Amount of Time (in days)
Critical Area 1: Whole Number Operations	75 days
<i>NYCDOE Fall Benchmark Assessment</i>	
Critical Area 2: Understanding Fractions	20 days
Critical Area 3: Measurement	23 days
<i>NYCDOE Spring Benchmark Assessment</i>	
Critical Area 4: Geometry	11 days
<i>State Examination¹</i>	

GO Math! Scope and Sequence

Critical Area 1: Whole Number Operations Chapters 1–7 75 Days (Instructional Days: 61; Assessment Days: 14)

Pacing

Focus or Main
CC Standards

Represent and solve problems involving multiplication and division.

- 3.OA.1** Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.
- 3.OA.2** Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares; the number of shares when 56 objects are partitioned into equal shares of 8 objects each.
- 3.OA.3** Use multiplication and division within 100 to solve word problems 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.OA.4** Determine the unknown whole number in a multiplication or division equation involving three whole numbers.

Understand properties of multiplication and the relationship between multiplication and division.

- 3.OA.5** Apply properties of operations as strategies to multiply and divide.
- 3.OA.6** Understand division as an unknown-factor problem.

Multiply and divide within 100.

- 3.OA.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

- 3.OA.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- 3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Represent and interpret data.

- 3.MD.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
- 3.MD.4** Generate measurement data by measuring lengths using rulers marked with halves and

- Suggested sequence of instruction and assessment, including NYCDOE assessments
- Divided into Common Core Critical Areas – just as the *GO Math!* program is

Enhanced Lessons Demonstrate Common Core Instruction and Integrated Math Practices Questioning

Name _____

Round to the Nearest Ten or Hundred

Essential Question How can you round numbers?

COMMON CORE STANDARD CC.3.NBT.1

Use place value understanding and properties of operations to perform multi-digit arithmetic.

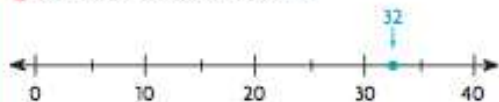
UNLOCK the Problem REAL WORLD

When you **round** a number, you find a number that tells you *about* how much or *about* how many.

Mia's baseball bat is 32 inches long. What is its length rounded to the nearest ten inches?

One Way Use a number line to round.

A Round 32 to the nearest ten.



Find which tens the number is between.

32 is between 30 and 40.

32 is closer to 30 than it is to 40.

32 rounded to the nearest ten is 30.

So, the length of Mia's bat rounded to the

nearest ten inches is 30 inches.

B Round 174 to the nearest hundred.



Find which hundreds the number is between.

174 is between 100 and 200.

174 is closer to 200 than it is to 100.

So, 174 rounded to the nearest hundred is 200.



Math Talk **MATHEMATICAL PRACTICES**
Name three other numbers that round to 30 when rounded to the nearest ten. **Explain.**

Possible answer: 28, 31, 34;
possible explanation: 28 is between 20 and 30 but it is closer to 30; 31 and 34 are between 30 and 40 but they are closer to 30.

Round to the Nearest Ten or Hundred

Common Core Standard CC.3.NBT.1

Use place value understanding to round whole numbers to the nearest 10 or 100.

Lesson Objective Round 2- and 3-digit numbers to the nearest ten or hundred.

Essential Question How can you round numbers?

Vocabulary round

1 ENGAGE Math Board

Access Prior Knowledge Discuss with students situations where you do not need to know an exact number, but knowing about how much or about how many is sufficient. For example, the length of a car is about 10 feet. There are about 100 seats in the auditorium. The height of a house is about 20 feet.

How are these numbers alike? They all have zeros. They all tell about how many.

2 TEACH and TALK GO Online Animated Math Models

Unlock the Problem MATHEMATICAL PRACTICES

When would you round a number?

Discuss the problem. Be sure that students understand that 32 is an exact number and they need to round 32 to the nearest ten.

- What is an example of a rounded number?
Numbers with a zero at the end can be examples of rounded numbers, such as 10, 20, 30, and so on.
- What are the tens that are closest to the number 32? 30 and 40.

One Way

- Why is a number line a good way to think about which numbers should be rounded?
A number line can show how far apart numbers are from each other so they can be compared easily.
- Why does the first number line include tens and not hundreds? Possible answer: because 32 is a 2-digit number and I am rounding 32 to the nearest 10.

- Between which two tens is 32? Which ten is it closer to? **Explain.** 30 and 40. 32 is closer to 30. It is only 2 numbers away from 30 but 8 numbers away from 40.

Use **Math Talk** to focus students' thinking on the fact that more than one number would round to 30.

- What makes a number able to be rounded to 30? It must be 25 or greater, or less than 35.
- In which direction would you round 28 to get to 30? **up**
- In which direction would you round 34 to get to 30? **down**

You might draw a number line on the board from 20 to 40 so students can see that the numbers 25–29 and 31–34 would round to 30.

- Look at the second number line. How is rounding to the nearest hundred similar to rounding to the nearest ten? Possible answer: when I round to the nearest ten, I look at the number line to see which ten the number is closer to. When I round to the nearest hundred, I look at the number line to see which hundred the number is closer to.
- What is 144 rounded to the nearest hundred? 100



Lesson-by-Lesson Roadmaps

Enhance Instruction and Foster Teacher Decision-Making

Lesson 2.2

Algebra • Comparisons Problems
Instructional Time: 1 day

Common Core Standard
 CC.4.OA.2 Multiply or divide to solve word problems 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.

Lesson Objective
 Solve problems involving multiplicative comparison and additive comparison.

Essential Question
 How does a model help you solve a comparison problem?

Materials

- MathBoard
- Math Journal
- HMH Mega Math
- Tools Counters

1 Engage *Approximately 5 min.*

This activity reviews prerequisite skills, establishing a common conceptual foundation for the lesson. Use evidence of students' understanding to decide how deeply to discuss.

2 Teach and Talk *Approximately 20 min.*

Unlock the Problem • Activity to Build Conceptual Understanding
 Remember, this is the core instruction for this lesson. In which conceptual development is key. The goal of this activity is for students to use models to solve comparison problems that are multiplicative and additive. As students work through Unlock the Problem, gauge their level of understanding to make better decisions about how to progress through instruction.
 Build on students' understanding of addition and multiplication to develop sound mathematical practices by asking these questions.

3 Practice

Share and Show *Approximately 10 min.*
 Use the checked exercises as a diagnostic assessment. If students answer either exercise incorrectly, use RtI (Response to Intervention).

On Your Own *Approximately 10 min.*
 Students can begin independent practice once they understand these comparison concepts. Select exercises based on students' depth of understanding. The exercises below require higher order thinking skills and critical reasoning, making them especially rich. Exercises 4, 5, 7 or 8–10

4 Summarize *Approximately 5 min.*

Essential Question
 How does a model help you solve a comparison problem?
A bar model helps you visualize the amounts that are being compared and helps you decide if you need to multiply or subtract to solve.

Math Journal
 Write a problem involving how much more than and solve it. Explain how drawing a diagram helped you solve the problem.

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Instructional purpose and overview

Math Practices questioning

Pacing

Guidance on item selection

Julie Dixon videos



Julie Dixon videos

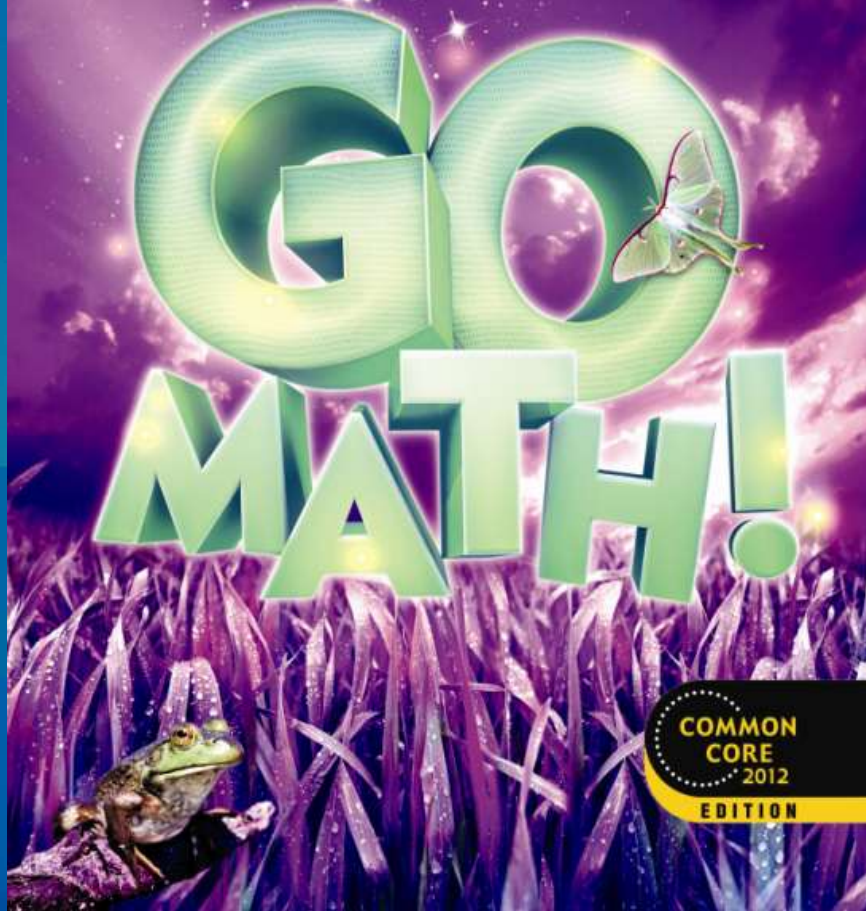


Think and Reflect

**What are some ways the
NYC Enhancements will
support Common Core
Instruction?**







Online Resources

www-k6.thinkcentral.com

https://www-k6.thinkcentral.com/ePC/teacherLanding.do

THINK
central

Welcome Teacher Account [not you?](#)

Help Log Out

Resources
Start here to access all materials, including eBooks, activities, and ancillaries

The POWER of Magnets

Classes & Students
Create and manage student accounts; create and populate classes and groups; make resources available to students

Account
Update your user profile; manage your system settings; choose the products that appear in your Resources view

Guides & Tutorials
Download & print detailed information about how to use ThinkCentral; view animated demos

Reports
Chart student and class progress

Planning
Customize your calendar with ThinkCentral resources

Assignments
Add tests or resources to your students' to-do lists; review results; make prescriptions

347

Resources

Start here to access all materials, including eBooks, activities, and ancillaries



Print Help Log Out

Issues & Students

Assignments

Reports

Account

View Resources



GO Math! Intensive
Intervention Teacher Guide
G6



GO Math! Teacher Edition, G1



GO Math! Teacher Edition, G2



GO Math! Teacher Edition, G3



GO Math! Teacher Edition, G4



GO Math! Teacher Edition, G5



GO Math! Teacher Edition, G6



GO Math! Teacher Edition,
GK

Chapter 8 Planner

Understand Fractions

Planning Resources

COMMON CORE Grade 3 Common Core State Standards for Mathematics

CRITICAL AREA 2 Developing understanding of fractions, especially unit fractions (fractions with numerator 1)

Domain: Number and Operations—Fractions
Develop understanding of fractions as numbers.

CC.3.NF.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

CC.3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

b. Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

CC.3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Also CC.3.NF.2, CC.3.G.2

Mathematical Practices:

CC.K-12.MP.2 Reason abstractly and quantitatively.

CC.K-12.MP.4 Model with mathematics.

Daily Pacing Chart

Introduction	Instruction	Assessment	Total
1 day	9 days	2 days	12 days

Opening Resources

Critical Area Resources

- Project

Print Resources

- Diagnostic: Show What You Know
- Chapter 8 School Home Letter

Digital Path

LESSON 8.5 Fractions on a Number Line

CC.3.NF.2a, CC.3.NF.2b
Also CC.3.NF.2

Objective: Represent and locate fractions on a number line.

Print Resources

- 8.5 Student Edition
- 8.5 Standards Practice Book

Digital Path

LESSON 8.9 PROBLEM SOLVING • Find the Whole Group Using Unit Fractions

CC.3.NF.1

Objective: Solve fraction problems by using the strategy draw a diagram.

Print Resources

- 8.9 Student Edition
- 8.9 Standards Practice Book

Digital Path

Digital Path Use the Go Math! digital Chapter ePlanners to view, schedule, and print online resources.

- Animated Math Models
- Assessment
- Projects
- CARMEN SANDIEGO™
- HMH Mega Math
- eStudent Edition
- iTools
- Multimedia eGlossary
- Professional Development Podcasts
- Real World Videos
- Soar to Success

LESSON 8.1 Equal Parts of a Whole

CC.3.NF.1
Also CC.3.G.2

Objective: Identify equal shares.

Print Resources

- 8.1 Student Edition
- 8.1 Standards Practice Book

Digital Path

LESSON 8.6 Relate Fractions and Numbers

CC.3.NF.3c Also CC.3.NF.2a, CC.3.NF.2b

Objective: Relate fractions and whole numbers as fractions that are equivalent to whole numbers.

Print Resources

- 8.6 Student Edition
- 8.6 Standards Practice Book

Digital Path

Assessment

Print Resources

- Diagnostic: Show What You Know, 1
- Formative: Mid-Chapter Checkpoint
- Summative: Chapter 8 Review/Test, Chapter 8 Test, AG

Digital Path

Daily Transparencies Lesson 9.1

- VIEW
- SCHEDULE

Reteach SE Lesson 9.1

- VIEW
- SCHEDULE

Reteach TE Lesson 9.1

- VIEW
- SCHEDULE

Enrich SE Lesson 9.1

- VIEW
- SCHEDULE

Enrich TE Lesson 9.1

- VIEW
- SCHEDULE

Standards Practice Book SE Lesson 9.1

- VIEW
- SCHEDULE

Standards Practice Book TE Lesson 9.1

- VIEW
- SCHEDULE

Student Edition Lesson 9.1

- VIEW
- SCHEDULE
- ASSIGN

Teacher Edition Lesson 9.1

LESSON 8.3 Unit Fractions of a Whole

CC.3.NF.1
Also CC.3.G.2

Objective: Use a fraction to name one part of a whole that is divided into equal parts.

Print Resources

- 8.3 Student Edition
- 8.3 Standards Practice Book

Digital Path

LESSON 8.8 Find Part of a Group Using Unit Fractions

CC.3.NF.1

Objective: Find fractional parts of a group using unit fractions.

Print Resources

- 8.8 Student Edition
- 8.8 Standards Practice Book

Digital Path

LESSON 8.4 Fractions of a Whole

CC.3.NF.1
Also CC.3.G.2

Objective: Read, write, and model fractions that represent more than one part of a whole that is divided into equal parts.

Print Resources

- 8.4 Student Edition
- 8.4 Standards Practice Book

Digital Path



Online Chapter Resources

Chapter Resources
Chapter Resources

Chapter 8 Planner
Understand Fractions
Planning Resources

COMMON CORE
Grade 3 Common Core State Standards for Mathematics

CRITICAL AREA Developing understanding of fractions, especially unit fractions (fractions with numerator 1)

Domain: Number and Operations—Fractions
Develop understanding of fractions as numbers.

CC.3.NF.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

CC.3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts; recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.

b. Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.

CC.3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Also **CC.3.NF.2**, **CC.3.G.2**

Mathematical Practices:
CC.K-12.MP.2 Reason abstractly and quantitatively.
CC.K-12.MP.4 Model with mathematics.

Daily Pacing Chart

Introduction	Instruction	Assessment	Total
1 day	9 days	2 days	12 days

LESSON 8.1 Equal Parts of a Whole

CC.3.NF.1
Also **CC.3.G.2**

Objective: Explore and identify equal parts of a whole.

Print Resources
• 8.1 Student Edition • 8.1 Standards Practice Book

Digital Path

LESSON 8.2 Equal Shares

CC.3.NF.1
Also **CC.3.G.2**

Objective: Divide models to make equal shares.

Print Resources
• 8.2 Student Edition • 8.2 Standards Practice Book

Digital Path

LESSON 8.3 Unit Fractions of a Whole

CC.3.NF.1
Also **CC.3.G.2**

Objective: Use a fraction to name one part of a whole that is divided into equal parts.

Print Resources
• 8.3 Student Edition • 8.3 Standards Practice Book

Digital Path

LESSON 8.4 Fractions of a Whole

CC.3.NF.1
Also **CC.3.G.2**

Objective: Read, write, and model fractions that represent more than one part of a whole that is divided into equal parts.

Print Resources
• 8.4 Student Edition • 8.4 Standards Practice Book

Digital Path

LESSON 8.5 Fractions on a Number Line

CC.3.NF.2a, **CC.3.NF.2b**
Also **CC.3.NF.2**

Objective: Represent and locate fractions on a number line.

Print Resources
• 8.5 Student Edition • 8.5 Standards Practice Book

Digital Path

LESSON 8.6 Relating Fractions and Whole Numbers

CC.3.NF.3c Also **CC.3.NF.2**, **CC.3.NF.2a**, **CC.3.NF.2b**, **CC.3.G.2**

Objective: Relate fractions and whole numbers by expressing whole numbers as fractions and recognizing fractions that are equivalent to whole numbers.

Print Resources
• 8.6 Student Edition • 8.6 Standards Practice Book

Digital Path

LESSON 8.7 Fractions of a Group

CC.3.NF.1

Objective: Model, read, and write fractional parts of a group.

Print Resources
• 8.7 Student Edition • 8.7 Standards Practice Book

Digital Path

LESSON 8.8 Find Part of a Group Using Unit Fractions

CC.3.NF.1

Objective: Find fractional parts of a group using unit fractions.

Print Resources
• 8.8 Student Edition • 8.8 Standards Practice Book

Digital Path

LESSON 8.9 **PROBLEM SOLVING • Find the Whole Group Using Unit Fractions**

CC.3.NF.1

Objective: Solve fraction problems by using the strategy *draw a diagram*.

Print Resources
• 8.9 Student Edition • 8.9 Standards Practice Book

Digital Path

Assessment

Print Resources
• Diagnostic: Show What You Know, SE
• Formative: Mid-Chapter Checkpoint, SE
• Summative: Chapter 8 Review/Text, SE
Chapter 8 Test, AG

Digital Path

Digital Path Use the *Go Math!* digital Chapter ePlanners to view, schedule, assign, and print online resources.

Animated Math Models

Assessment

Projects

CARMEN SANDIEGO™

HMH Mega Math

eStudent Edition


iTools

Multimedia eGlossary

Professional Development Video Podcasts

Real World Videos

Snare to Success Math



Chapter 8 Planner PG59

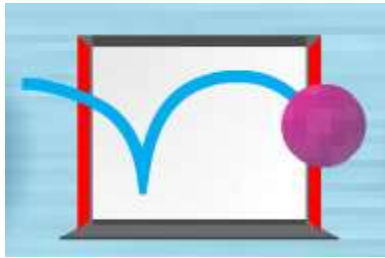
PG58 Planning Guide

Chapter 8 Planner PG59

Online Student Edition



Destination Math



Animated Math



iTools

**Try This! Find part of a group.**

Joseph picks 20 flowers from his mother's garden. One fourth of them are purple. How many of the flowers are purple?



STEP 1 Draw a row of 4 counters.

Think: To find $\frac{1}{4}$, make 4 equal groups.



STEP 2 Continue to draw as many rows of 4 counters as you can until you have 20 counters.



STEP 3 Then circle ____ equal groups.

Think: Each group represents $\frac{1}{4}$ of the flowers.



There are ____ counters in 1 group.

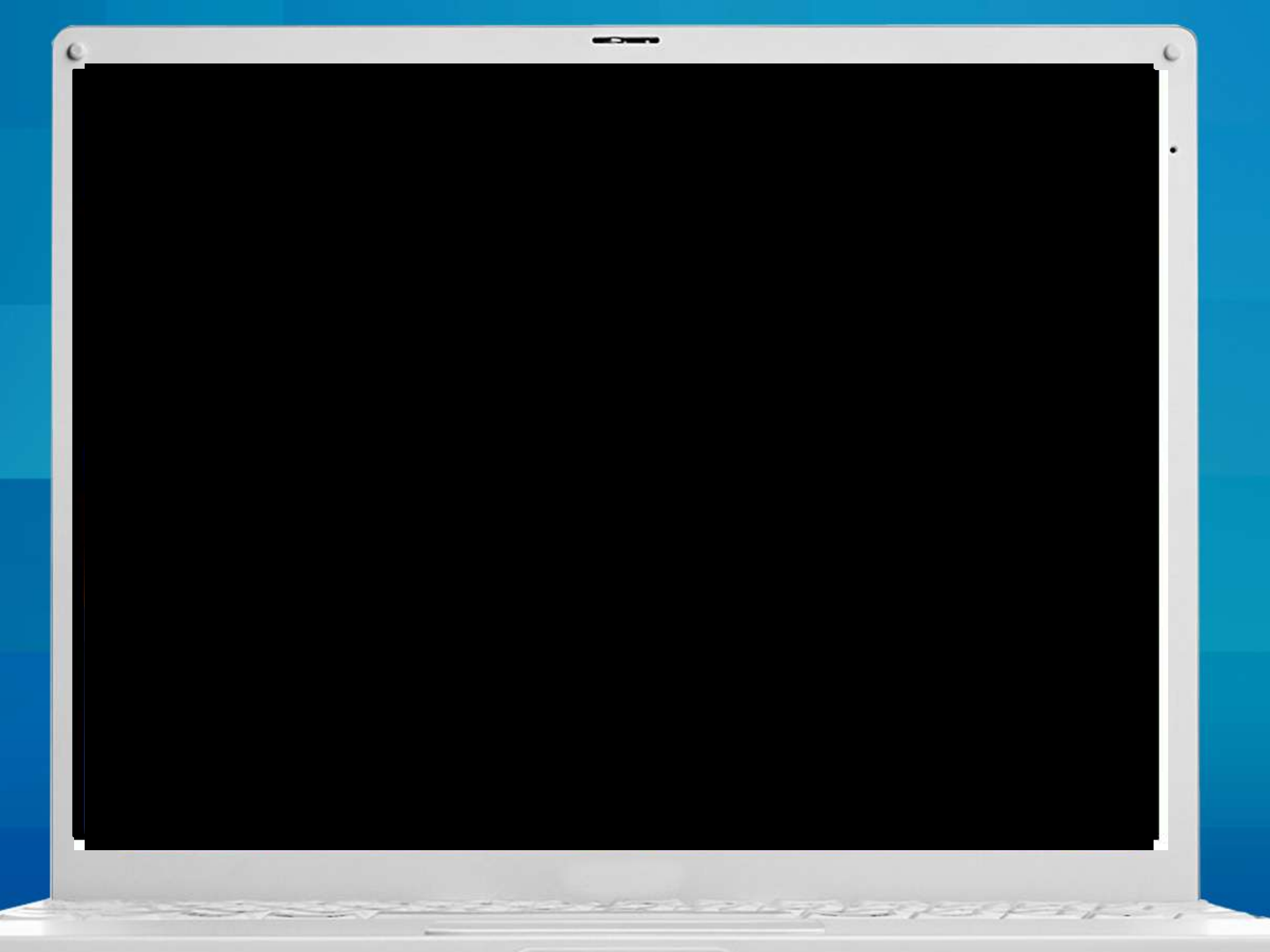
$\frac{1}{4}$ of 20 = ____



So, ____ of the flowers are purple.

UTAH





Animated Math Models
Model Joining



Learn the Math

Do the Math

Independent Practice

Quiz





▶ Base-Ten Blocks

▶ Measurement

▶ Fractions

▶ Number Charts

▶ Counters

▶ Number Lines

▶ Geometry

▶ Probability

▶ Graphs

▶ Algebra

[View Correlations to Curriculum Standards \(PDF\)](#)

Exit

Menu

Base-Ten Blocks

Activities



Use Base-Ten Blocks to Multiply

1

10

100

1,000



Multiply

Line Up

	0
x	1
<hr/>	

Hide

Groups: 1

1 × 0 =

Check

Menu

Fraction Concepts ▶

Activities ▼



Use Fraction Bars to Subtract Fractions

1

$\frac{1}{2}$

$\frac{1}{3}$

$\frac{1}{4}$

$\frac{1}{5}$

$\frac{1}{6}$

$\frac{1}{8}$

$\frac{1}{10}$

$\frac{1}{12}$

whole whole

$-$

Make equal size pieces Subtract

whole



$\frac{0}{0} - \frac{0}{0} =$

Check

Hide ◀

Full Version

Menu

Counters

Activities



Use Counters to Add



4 blue bear counters

6 red bear counters

+

Add

Line up

	4
+	6
<hr/>	

Hide

$$4 + 6 = \square$$

Fact Family

Check



Interactive White Board Lessons

Hundreds, Tens, and Ones

Hundreds, Tens, and Ones

Essential Question

How do you write the 3-digit number that is shown by a set of blocks?

- Listen and Draw
- Model and Draw
- Share and Show
- On Your Own
- Problem Solving
- H.O.T. Problem
- Test Prep
- Summarize

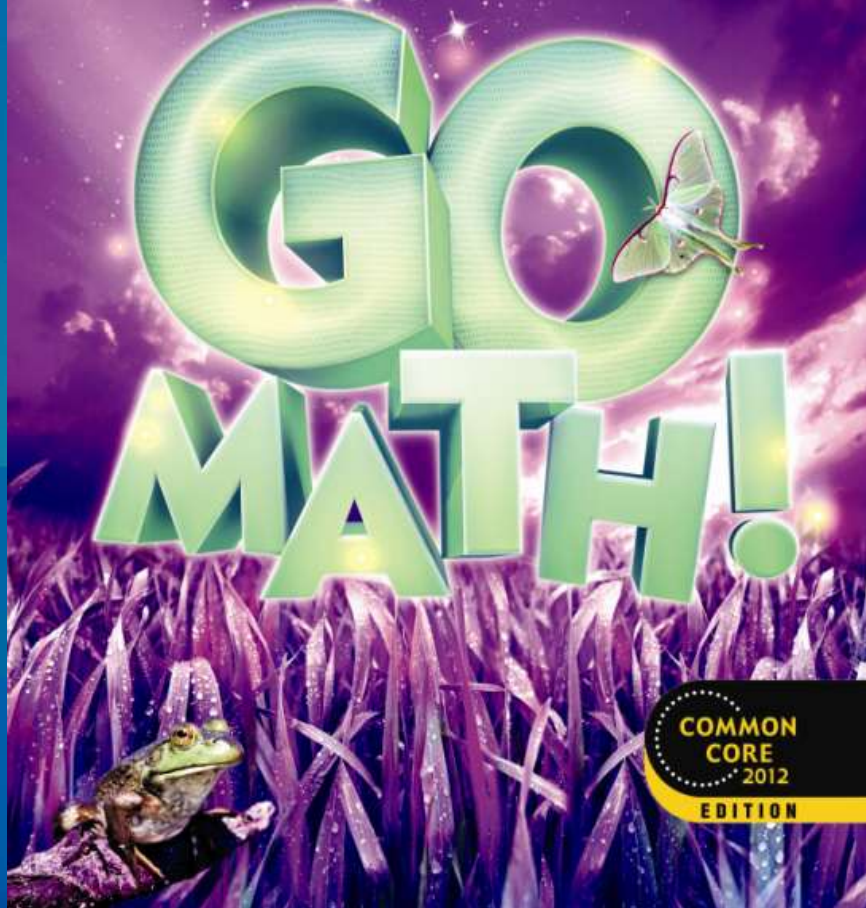
2/13

Think and Reflect

What online resources are you most excited about?

Which one would you like to learn more about?





Reflection and Planning

Classroom Connect gives you the support you need to teach our Houghton Mifflin Harcourt programs successfully.

Link to courseware and community

Learn anytime, anywhere.



QUICK LOOK

Get a quick overview of the Holt McDougal Mathematics programs.



LEARNING PATHS

Learn how to teach a lesson, differentiate instruction, integrate technology, and use assessment to inform instruction.



EXPLORE FURTHER

Explore further the program components and strategies being used in the classroom.

Reading/

Mathematics

Science

**Go Math has me
most excited
about...**



Please take a moment to complete the session evaluation. The information below should be used when completing. Please record this information if you will be completing the evaluation at a later time. The evaluation can be completed on a computer, tablet, or smart phone.

www.hmhco.com/cspd-evaluation



Session Number: **Enter Training Number (SRF# 056428)**

Trainer Name(s): **Dan Jazwinski**

Program: **Go Math**

Session Type: **Session Type**
Implementation Workshop

Thank you!

Think and Reflect

3 - 2 - 1

- 3** Aspects about Go Math you are the most excited about
- 2** Things you learned today that will make your planning easier
- 1** Thing about Go Math you would like to learn more about

**Thank You for Attending
this Training for**

**GO
MATH!**

