

Name \_\_\_\_\_

## Compare and Order Numbers

**Essential Question** How can you compare and order numbers?

**COMMON CORE STANDARD** CC.4.NBT.2

Generalize place value understanding for multi-digit whole numbers.

### UNLOCK the Problem REAL WORLD

Grand Canyon National Park in Arizona had 651,028 visitors in July 2008 and 665,188 visitors in July 2009. In which year did the park have more visitors during the month of July?

- How many visitors were there in July 2008?  
\_\_\_\_\_
- How many visitors were there in July 2009?  
\_\_\_\_\_



Name \_\_\_\_\_

## Round Numbers

**Essential Question** How can you round numbers?

**COMMON CORE STANDARD** CC.4.NBT.3

Generalize place value understanding for multi-digit whole numbers.



During May 2008, the Mount Rushmore National Monument in South Dakota welcomed 138,202 visitors. A website reported that about 1 hundred thousand people visited the park during that month. Was the estimate reasonable?

- Underline what you are asked to find.
- Circle the information you will use.

An **estimate** tells you about how many or about how much. It is close to an exact amount. You can **round** a number to find an estimate.

1. What number is halfway between 100,000 and 200,000?

\_\_\_\_\_

2. How does knowing where the halfway point is help you find which hundred thousand 138,202 is closest to? **Explain.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

## Add Whole Numbers

**Essential Question** How can you add whole numbers?

**COMMON CORE STANDARD** CC.4.NBT.4

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

### UNLOCK the Problem REAL WORLD

Alaska is the largest state in the United States by area. Its land area is 570,374 square miles and its water surface area is 86,051 square miles. Find the total area of Alaska.

- Underline what you are asked to find.
- Circle the information you will use.



▲ The area of Alaska is outlined in the photo above.

Name \_\_\_\_\_

## Subtract Whole Numbers

**Essential Question** How can you subtract whole numbers?**COMMON CORE STANDARD** CC.4.NBT.4

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



Mt. Bear and Mt. Bona are two mountains in Alaska. Mt. Bear is 14,831 feet tall and Mt. Bona is 16,421 feet tall. How much taller is Mt. Bona than Mt. Bear?



▲ Mt. Bear and Mt. Bona are in the St. Elias Mountain Range located in the Wrangell-St. Elias National Park and Preserve in Alaska.

Name \_\_\_\_\_

**Problem Solving • Comparison Problems**  
**with Addition and Subtraction**

**Essential Question** How can you use the strategy *draw a diagram* to solve comparison problems with addition and subtraction?

**COMMON CORE STANDARD** CC.4.NBT.4

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

**UNLOCK the Problem** **REAL WORLD**

Hot air balloon festivals draw large crowds of people. The attendance on the first day of one festival was 17,350. On the second day the attendance was 18,925. How many more people attended the hot air balloon festival on the second day?

Use the graphic organizer to help you solve the problem.



**Read the Problem**

**What do I need to find?**

**What information do I need to use?**

**How will I use the information?**

**Solve the Problem**

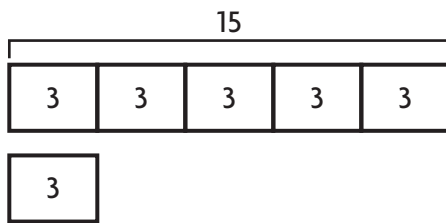
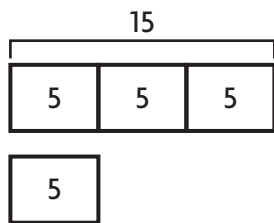
Name \_\_\_\_\_

### Multiplication Comparisons

**Essential Question** How can you model multiplication comparisons?

You can use multiplication to compare amounts. For example, you can think of  $15 = 3 \times 5$  as a comparison in two ways:

*15 is 3 times as many as 5.*     *15 is 5 times as many as 3.*



**COMMON CORE STANDARD** CC.4.OA.1

Use the four operations with whole numbers to solve problems.

#### Remember

The Commutative Property states that you can multiply two factors in any order and get the same product.

### UNLOCK the Problem

#### REAL WORLD


Carly has 9 pennies. Jack has 4 times as many pennies as Carly. How many pennies does Jack have?

- What do you need to compare?

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-  **Explain** how the equation for *4 is 2 more than 2* is different from the equation for *4 is 2 times as many as 2*.

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Name \_\_\_\_\_

**Multiply Tens, Hundreds, and Thousands****Essential Question** How does understanding place value help you multiply tens, hundreds, and thousands?**COMMON CORE STANDARD** CC.4.NBT.5

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



Each car on a train has 200 seats. How many seats are on a train with 8 cars?



Name \_\_\_\_\_

**Estimate Products****Essential Question** How can you estimate products by rounding and determine if exact answers are reasonable?**COMMON CORE STANDARD** CC.4.NBT.5

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

**UNLOCK the Problem** REAL WORLD

An elephant can reach as high as 23 feet with its trunk. It uses its trunk to pick up objects that weigh up to 3 times as much as a 165-pound person. About how much weight can an African elephant pick up with its trunk?

- Cross out the information you will not use.
- Circle the numbers you will use.
- How will you use the numbers to solve the problem?

\_\_\_\_\_



An African elephant is the largest living land mammal.

1. Is 200 less than or greater than 165? \_\_\_\_\_
2. So, would the product of 3 and 165 be less than or greater than 600? \_\_\_\_\_



Name \_\_\_\_\_

## Multiply Using Mental Math

**Essential Question** How can you use mental math and properties to help you multiply numbers?

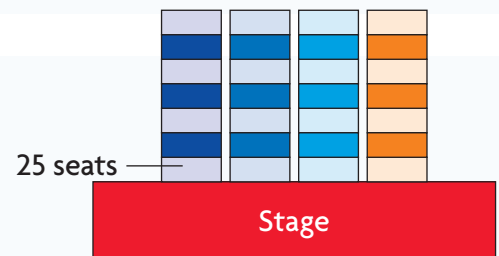
**COMMON CORE STANDARD** CC.4.NBT.5

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

### UNLOCK the Problem **REAL WORLD**

Properties of Multiplication can make multiplication easier.

There are 4 sections of seats in the Playhouse Theater. Each section has 7 groups of seats. Each group has 25 seats. How many seats are there in the theater?



**Try This!** Use mental math and properties.

**A** Find  $(6 \times 10) \times 10$ .

**B** Find  $(4 \times 9) \times 250$ .

### Remember

The Associative Property states that you can group factors in different ways and get the same product. Use parentheses to group the factors you multiply first.

Name \_\_\_\_\_

**Problem Solving • Multistep**

**Multiplication Problems**

**Essential Question** When can you use the *draw a diagram* strategy to solve a multistep multiplication problem?


**COMMON CORE STANDARD** CC.4.OA.3

Use the four operations with whole numbers to solve problems.

**UNLOCK the Problem** **REAL WORLD**

At the sea park, one section in the stadium has 9 rows with 18 seats in each row. In the center of each of the first 6 rows, 8 seats are in the splash zone. How many seats are not in the splash zone?

Use the graphic organizer to help you solve the problem.



<b>Read the Problem</b>	<b>Solve the Problem</b>
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

- What else do you need to do to solve the problem?

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Name \_\_\_\_\_

# Multiply 2-Digit Numbers with Regrouping

COMMON CORE STANDARD CC.4.NBT.5

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

**Essential Question** How can you use regrouping to multiply a 2-digit number by a 1-digit number?

## UNLOCK the Problem REAL WORLD

A Thoroughbred racehorse can run at speeds of up to 60 feet per second. During practice, Celia’s horse runs at a speed of 36 feet per second. How far does her horse run in 3 seconds?

- Underline important information.
- Is there information you will not use? If so, cross out the information.



Name \_\_\_\_\_

## Solve Multistep Problems Using Equations

**Essential Question** How can you represent and solve multistep problems using equations?

**COMMON CORE STANDARD** CC.4.OA.3

Use the four operations with whole numbers to solve problems.



Crismari's computer has 3 memory cards with 64 gigabytes of space each and 2 memory cards with 16 gigabytes of space each. The files on her computer use 78 gigabytes of space. How much memory does her computer have left?

- Underline the important information.

Name \_\_\_\_\_

## Multiply by Tens

**Essential Question** What strategies can you use to multiply by tens?

**COMMON CORE STANDARD** CC.4.NBT.5

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

### UNLOCK the Problem **REAL WORLD**

Animation for a computer-drawn cartoon requires about 20 frames per second. How many frames would need to be drawn for a 30-second cartoon?



- The phrase "20 frames per second" means 20 frames are needed for each second of animation. How does this help you know what operation to use?

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#### Remember

The Associative Property states that you can group factors in different ways and get the same product. Use parentheses to group the factors you multiply first.

- Compare the number of zeros in each factor to the number of zeros in the product. What do you notice?

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Name \_\_\_\_\_

**Estimate Products****Essential Question** What strategies can you use to estimate products?**COMMON CORE STANDARD** CC.4.NBT.5

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


**UNLOCK the Problem**

**REAL WORLD**

The Smith family opens the door of their refrigerator 32 times in one day. There are 31 days in May. About how many times is it opened in May?

- Underline any information you will need.



- On average, a refrigerator door is opened 38 times each day. About how many fewer times in May is the Smith family's refrigerator door opened than the average refrigerator door?

**Show your work.**

Name \_\_\_\_\_

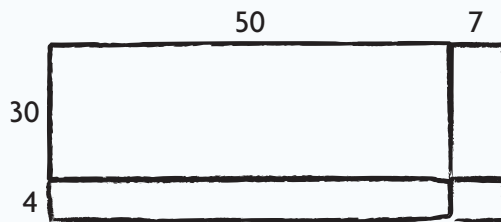
**Multiply Using Partial Products****Essential Question** How can you use place value and partial products to multiply 2-digit numbers?**COMMON CORE STANDARD** CC.4.NBT.5

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



**CONNECT** You know how to break apart a model to find partial products. How can you use what you know to find and record a product?

**Multiply.**  $34 \times 57$  **Estimate.**  $30 \times 60 =$  \_\_\_\_\_



Name \_\_\_\_\_

**Choose a Multiplication Method****Essential Question** How can you find and record products of two 2-digit numbers?**COMMON CORE STANDARD** CC.4.NBT.5

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


**UNLOCK the Problem**

**REAL WORLD**

Did you know using math can help prevent you from getting a sunburn?

The time it takes to burn without sunscreen multiplied by the SPF, or sun protection factor, is the time you can stay in the sun safely with sunscreen.

If today's UV index is 8, Erin will burn in 15 minutes without sunscreen. If Erin puts on lotion with an SPF of 25, how long will she be protected?

- Underline the sentence that tells you how to find the answer.
- Circle the numbers you need to use. What operation will you use?



▲ Sunscreen helps to prevent sunburn.



Name \_\_\_\_\_

**Problem Solving • Multiply 2-Digit Numbers**

**COMMON CORE STANDARD** CC.4.OA.3

Use the four operations with whole numbers to solve problems.

**Essential Question** How can you use the strategy *draw a diagram* to solve multistep multiplication problems?

**UNLOCK the Problem** REAL WORLD

During the 2010 Great Backyard Bird Count, an average of 42 bald eagles were counted in each of 20 locations throughout Alaska. In 2009, an average of 32 bald eagles were counted in each of 26 locations throughout Alaska. Based on this data, how many more bald eagles were counted in 2010 than in 2009?



Use the graphic organizer to help you solve the problem.

<b>Read the Problem</b>	<b>Solve the Problem</b>
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

Name \_\_\_\_\_

**Estimate Quotients Using Multiples****Essential Question** How can you use multiples to estimate quotients?**COMMON CORE STANDARD** CC.4.NBT.6

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



The bakery made 110 pumpkin muffins. They will be packed in boxes with 8 muffins in each box. About how many boxes will there be?

You can use multiples to estimate.

A **multiple** of a number is the product of a number and a counting number. 1, 2, 3, 4, and so on, are counting numbers.

**Try This!**

List the next 8 multiples of 10.

10, 20, \_\_\_\_\_

List the next 7 multiples of 100.

100, 200, \_\_\_\_\_

Name \_\_\_\_\_

## Interpret the Remainder

**Essential Question** How can you use remainders in division problems?

**COMMON CORE STANDARD** CC.4.OA.3

Use the four operations with whole numbers to solve problems.

### UNLOCK the Problem REAL WORLD

Magda has some leftover wallpaper 73 inches long. She wants to cut it into 8 pieces to use around the photos in her scrapbook. Each piece will have equal length. How long will each piece be?

When you solve a division problem with a remainder, the way you interpret the remainder depends on the situation and the question.



#### Remember

You can use multiples, counters, or draw a quick picture to divide.

### Try This!

Jim made 32 ounces of soup for 5 people. How many ounces will each person get?

Name \_\_\_\_\_

## Divide Tens, Hundreds, and Thousands

**Essential Question** How can you divide numbers through thousands by whole numbers through 10?

**COMMON CORE STANDARDS** CC.4.NBT.6

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



Dustin is packing apples in gift boxes. Each gift box holds 4 apples. How many boxes can Dustin pack with 120 apples?



- **Explain** how to use a basic fact and place value to divide  $4,000 \div 5$ .

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Name \_\_\_\_\_

**Estimate Quotients Using Compatible Numbers****COMMON CORE STANDARD** CC.4.NBT.6**Essential Question** How can you use compatible numbers to estimate quotients?

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



A horse's heart beats 132 times in 3 minutes.  
About how many times does it beat in 1 minute?

You can use compatible numbers to estimate quotients.

**Compatible numbers** are numbers that are easy to compute mentally.

- Will a horse's heart beat more or fewer than 132 times in 1 minute?  
\_\_\_\_\_
- What operation will you use to solve the problem?  
\_\_\_\_\_

Name \_\_\_\_\_

## Divide Using Partial Quotients

**Essential Question** How can you use partial quotients to divide by 1-digit divisors?

**COMMON CORE STANDARD** CC.4.NBT.6

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



At camp, there are 5 players on each lacrosse team. If there are 125 people on lacrosse teams, how many teams are there?

- Underline what you are asked to find.
  - Circle what you need to use.
  - What operation can you use to find the number of teams?
- \_\_\_\_\_



Name \_\_\_\_\_

**Problem Solving • Multistep Division Problems**

**Essential Question** How can you use the strategy *draw a diagram* to solve multistep division problems?

**COMMON CORE STANDARDS** CC.4.OA.3

Use the four operations with whole numbers to solve problems.

**UNLOCK the Problem** REAL WORLD

Lucia and her dad will prepare corn for a community picnic. There are 3 bags of corn. Each bag holds 32 ears of corn. When the corn is cooked, they want to divide the corn equally among 8 serving plates. How many ears of corn should they put on each of 8 serving plates?



<b>Read the Problem</b>	<b>Solve the Problem</b>
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

1. How many ears of corn should go on each plate? \_\_\_\_\_

2. How can you check your answer? \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

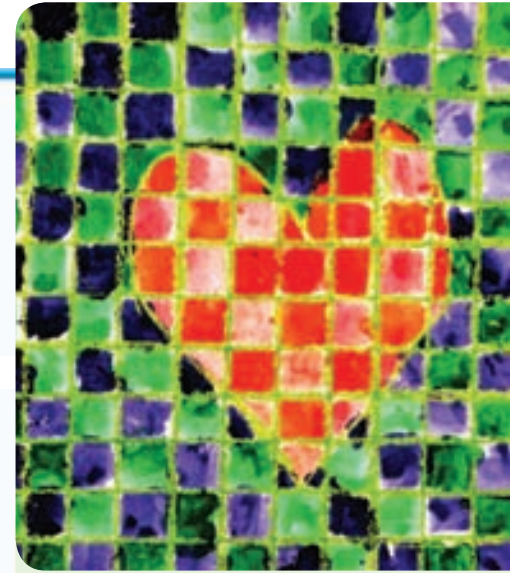
## Factors and Divisibility

**Essential Question** How can you tell whether one number is a factor of another number?

**COMMON CORE STANDARD** CC.4.OA.4  
Gain familiarity with factors and multiples.

**UNLOCK the Problem** REAL WORLD

Students in Carlo’s art class painted 32 square tiles for a mosaic. They will arrange the tiles to make a rectangle. Can the rectangle have 32 tiles arranged into 3 equal rows, without gaps or overlaps?



▲ Mosaics are decorative patterns made with pieces of glass or other materials.

- **Explain** how you can tell if 4 is a factor of 30.

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Name \_\_\_\_\_

**Problem Solving • Common Factors**

**Essential Question** How can you use the *make a list* strategy to solve problems with common factors?

**COMMON CORE STANDARD** CC.4.OA.4  
Gain familiarity with factors and multiples

**UNLOCK the Problem** REAL WORLD

Chuck has a coin collection with 30 pennies, 24 quarters, and 36 nickels. He wants to arrange the coins into rows. Each row will have the same number of coins, and all the coins in a row will be the same. How many coins can he put in each row?



<b>Read the Problem</b>	<b>Solve the Problem</b>
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

Name \_\_\_\_\_

**Factors and Multiples****COMMON CORE STANDARD** CC.4.OA.4

Gain familiarity with factors and multiples.

**Essential Question** How are factors and multiples related?**UNLOCK the Problem****REAL WORLD**

Toy animals are sold in sets of 3, 5, 10, and 12. Mason wants to make a display with 3 animals in each row. Which sets could he buy, if he wants to display all of the animals?

The product of two numbers is a multiple of each number. Factors and multiples are related.

$$\begin{array}{ccccccc} 3 & \times & 4 & = & 12 \\ \uparrow & & \uparrow & & \uparrow \\ \text{factor} & & \text{factor} & & \text{multiple of 3} \\ & & & & \text{multiple of 4} \end{array}$$

- How many animals will be in each row?  
\_\_\_\_\_
- How many animals are sold in each set?  
\_\_\_\_\_



Name \_\_\_\_\_

## Number Patterns

**Essential Question** How can you make and describe patterns?

**COMMON CORE STANDARD** CC.4.OA.5

Generate and analyze patterns.



Daryl is making a pattern for a quilt. The pattern shows 40 squares. Every fourth square is blue. How many blue squares are in the pattern?

A **pattern** is an ordered set of numbers or objects. Each number or object in the pattern is called a **term**.

**Materials** ■ color pencils

- Underline what you are asked to find.
- Circle what you need to use.

1. What patterns do you see in the arrangement of the blue squares?

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2. What patterns do you see in the numbers of the blue squares?

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Name \_\_\_\_\_

**Generate Equivalent Fractions****Essential Question** How can you use multiplication to find equivalent fractions?**COMMON CORE STANDARD** CC.4.NF.1

Extend understanding of fraction equivalence and ordering.



Patty needs  $\frac{3}{4}$  cup of dish soap to make homemade bubble solution. Her measuring cup is divided into eighths. What fraction of the measuring cup should Patty fill with dish soap?

- Is an eighth-size part of a measuring cup bigger or smaller than a fourth-size part?
- 



- **Explain** why 6 eighth-size parts is the same amount as 3 fourth-size parts.
-

Name \_\_\_\_\_

**Problem Solving • Find Equivalent Fractions**

**Essential Question** How can you use the strategy *make a table* to solve problems using equivalent fractions?

**COMMON CORE STANDARD** CC.4.NF.1

Extend understanding of fraction equivalence and ordering.



Anaya is planting a flower garden. The garden will have no more than 12 equal sections.  $\frac{3}{4}$  of the garden will have daisies. What other fractions could represent the part of the garden that will have daisies?



**Read the Problem**

**What do I need to find?**

**What information do I need to use?**

**How will I use the information?**

**Solve the Problem**

- What other fractions could represent the part of the garden that will have daisies? **Explain.** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

**Compare Fractions****Essential Question** How can you compare fractions?**COMMON CORE STANDARD** CC.4.NF.2

Extend understanding of fraction equivalence and ordering.

 **UNLOCK the Problem**  **REAL WORLD**

Every year, Avery's school has a fair. This year,  $\frac{3}{8}$  of the booths had face painting and  $\frac{1}{4}$  of the booths had sand art. Were there more booths with face painting or sand art?



Name \_\_\_\_\_

**Compare and Order Fractions****Essential Question** How can you order fractions?**COMMON CORE STANDARD** CC.4.NF.2

Extend understanding of fraction equivalence and ordering.



Jody has equal-size bins for the recycling center. She filled  $\frac{3}{5}$  of a bin with plastics,  $\frac{1}{12}$  of a bin with paper, and  $\frac{9}{10}$  of a bin with glass. Which bin is the most full?

- Underline what you need to find.
- Circle the fractions you will compare.

- Compare the distance between  $\frac{3}{5}$  and 0 and the distance between  $\frac{9}{10}$  and 0. What can you conclude about the relationship between  $\frac{3}{5}$  and  $\frac{9}{10}$ ? **Explain.**

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Name \_\_\_\_\_

**Add Fractions Using Models****Essential Question** How can you add fractions with like denominators using models?**COMMON CORE STANDARD** CC.4.NF.3d

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



Ms. Clark made a loaf of bread. She used  $\frac{1}{8}$  of the bread for a snack and  $\frac{5}{8}$  of the bread for lunch. How much did she use for a snack and lunch?



Name \_\_\_\_\_

**Subtract Fractions Using Models****Essential Question** How can you subtract fractions with like denominators using models?**COMMON CORE STANDARD** CC.4.NF.3d

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



A rover needs to travel  $\frac{5}{8}$  mile to reach its destination. It has already traveled  $\frac{3}{8}$  mile. How much farther does the rover need to travel?



Name \_\_\_\_\_

**Rename Fractions and Mixed Numbers**

**Essential Question** How can you rename mixed numbers as fractions greater than 1 and rename fractions greater than 1 as mixed numbers?

**COMMON CORE STANDARD** CC.4.NF.3b

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



Mr. Fox has  $2\frac{3}{6}$  loaves of corn bread. Each loaf was cut into  $\frac{1}{6}$ -size pieces. If he has 14 people over for dinner, is there enough bread for each person to have 1 piece?

A **mixed number** is a number represented by a whole number and a fraction. You can write a mixed number as a fraction.

- What is the size of 1 piece of bread relative to the whole?

- How much bread does Mr. Fox need for 14 people?

Name \_\_\_\_\_

**Add and Subtract Mixed Numbers****Essential Question** How can you add and subtract mixed numbers with like denominators?**COMMON CORE STANDARD** CC.4.NF.3c

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



After a party, there were  $1\frac{4}{6}$  quesadillas left on one tray and  $2\frac{3}{6}$  quesadillas left on another tray. How much of the quesadillas were left?

- What operation will you use?

- Is the sum of the fractional parts of the mixed numbers greater than 1?

Alejandro had  $3\frac{4}{6}$  quesadillas. His family ate  $2\frac{3}{6}$  of the quesadillas. How many quesadillas are left?



Name \_\_\_\_\_

## Subtraction with Renaming

**Essential Question** How can you rename a mixed number to help you subtract?

**COMMON CORE STANDARD** CC.4.NF.3c

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

### UNLOCK the Problem REAL WORLD

Bruce, Chandler, and Chase go bike riding on weekends. On one weekend, Chase rode his bike for 3 hours, Chandler rode her bike for  $2\frac{1}{4}$  hours, and Bruce rode his bike for  $1\frac{3}{4}$  hours. How much longer did Chandler ride her bike than Bruce did?

- Which operation will you use?

\_\_\_\_\_

- In the problem, circle the numbers that you need to use to find a solution.



1. If you have 1 fourth-size part, can you take away 3 fourth-size parts? **Explain.**

\_\_\_\_\_

2. If you have 1 whole and 1 fourth-size part, can you take away 3 fourth-size parts? **Explain.**

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

**Fractions and Properties of Addition**

**Essential Question** How can you add fractions with like denominators using the properties of addition?

**COMMON CORE STANDARD** CC.4.NF.3c

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

**CONNECT** The Associative and Commutative Properties of Addition can help you group and order addends to find sums mentally. You can use mental math to combine fractions that have a sum of 1.

- The Commutative Property of Addition states that when the order of two addends is changed, the sum is the same. For example,  $4 + 5 = 5 + 4$ .
- The Associative Property of Addition states that when the grouping of addends is changed, the sum is the same. For example,  $(5 + 8) + 4 = 5 + (8 + 4)$ .



**UNLOCK the Problem** REAL WORLD

The map shows four lighthouses in the Florida Keys and their distances apart in miles. The Dry Tortugas Lighthouse is the farthest west, and the Alligator Reef Lighthouse is the farthest east.

What is the distance from the Dry Tortugas Lighthouse to the Alligator Reef Lighthouse, traveling between the four lighthouses?



Name \_\_\_\_\_

**Problem Solving • Multistep Fraction**

**Problems**

**Essential Question** How can you use the strategy *act it out* to solve multistep problems with fractions?

**COMMON CORE STANDARD** CC.4.NF.3d

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

 **UNLOCK the Problem**  **REAL WORLD**

A gift shop sells walnuts in  $\frac{3}{4}$ -pound bags. Ann will buy some bags of walnuts and repackage them into 1-pound bags. What is the least number of  $\frac{3}{4}$ -pound bags Ann could buy, if she wants to fill each 1-pound bag, without leftovers?



<b>Read the Problem</b>	<b>Solve the Problem</b>
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

Name \_\_\_\_\_

## Multiples of Unit Fractions

**Essential Question** How can you write a fraction as a product of a whole number and a unit fraction?

**COMMON CORE STANDARD** CC.4.NF.4a

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



At a pizza party, each pizza was cut into 6 equal slices. At the end of the party, there was  $\frac{5}{6}$  of a pizza left. Roberta put each of the leftover slices in its own freezer bag. How many bags did she use? What part of a pizza did she put in each bag?

• How many slices of pizza were eaten?

\_\_\_\_\_

• What fraction of the pizza is 1 slice?

\_\_\_\_\_



### Remember

You can use multiplication to show repeated addition.

$3 \times 4$  means  $4 + 4 + 4$ .

$4 \times 2$  means  $2 + 2 + 2 + 2$ .

• **Explain** how you can write  $\frac{3}{2}$  as the product of a whole number and a unit fraction.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Name \_\_\_\_\_

**Multiples of Fractions**

**Essential Question** How can you write a product of a whole number and a fraction as a product of a whole number and a unit fraction?

**COMMON CORE STANDARD** CC.4.NF.4b

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



Jen is making 4 pans of baked ziti. For each pan, she needs  $\frac{2}{3}$  cup cheese. Her measuring cup can scoop  $\frac{1}{3}$  cup of cheese. How many scoops of cheese does she need for the 4 pans?



- **What if** Jen decides to make 10 pans of ziti? **Describe** the number of scoops of cheese she would need.

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Name \_\_\_\_\_

**Problem Solving • Comparison**

**Problems with Fractions**

**Essential Question** How can you use the strategy *draw a diagram* to solve comparison problems with fractions?

**COMMON CORE STANDARD** CC.4.NF.4c

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.



The deepest part of the Grand Canyon is about  $1\frac{1}{6}$  miles deep. The deepest part of the ocean is located in the Mariana Trench, in the Pacific Ocean. The deepest part of the ocean is almost 6 times as deep as the deepest part of the Grand Canyon. About how deep is the deepest part of the ocean?



Read the Problem	Solve the Problem
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

Name \_\_\_\_\_

## Relate Tenths and Decimals

**Essential Question** How can you record tenths as fractions and decimals?

**COMMON CORE STANDARD** CC.4.NF.6

Understand decimal notation for fractions, and compare decimal fractions.



Ty is reading a book about metamorphic rocks. He has read  $\frac{7}{10}$  of the book. What decimal describes the part of the book Ty has read?

A **decimal** is a number with one or more digits to the right of the **decimal point**. You can write tenths and hundredths as fractions or decimals.



- How can you write 0.1 as a fraction? **Explain.**

Name \_\_\_\_\_

**Equivalent Fractions and Decimals****Essential Question** How can you record tenths and hundredths as fractions and decimals?**COMMON CORE STANDARD** CC.4.NF.5

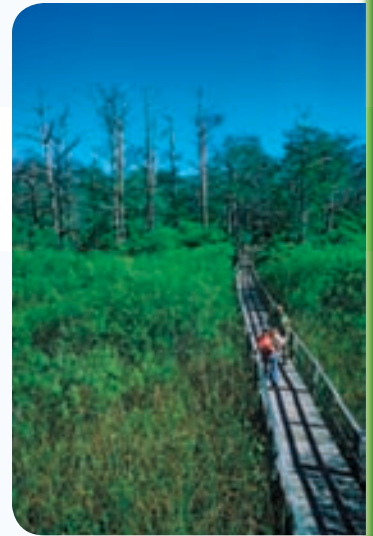
Understand decimal notation for fractions, and compare decimal fractions.



Daniel spent a day hiking through a wildlife preserve. During the first hour of the hike, he drank  $\frac{6}{10}$  liter of water. How many hundredths of a liter did he drink?

- Underline what you need to find.
- How can you represent hundredths?

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Name \_\_\_\_\_

**Problem Solving • Money**

**Essential Question** How can you use the strategy *act it out* to solve problems that use money?

**COMMON CORE STANDARD** CC.4.MD.2

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**UNLOCK the Problem** REAL WORLD

Together, Marnie and Serena have \$1.20. They want to share the money equally. How much money will each girl get?



Use the graphic organizer to solve the problem.

Read the Problem	Solve the Problem
<p><b>What do I need to find?</b></p>	
<p><b>What information do I need to use?</b></p>	
<p><b>How will I use the information?</b></p>	

- **Describe** another way you could act out the problem with coins.

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Name \_\_\_\_\_

**Add Fractional Parts of 10 and 100****Essential Question** How can you add fractions when the denominators are 10 or 100?**COMMON CORE STANDARD** CC.4.NF.5

Understand decimal notation for fractions, and compare decimal fractions.



The fourth grade classes are painting designs on tile squares to make a mural. Mrs. Kirk's class painted  $\frac{3}{10}$  of the mural. Mr. Becker's class painted  $\frac{21}{100}$  of the mural. What part of the mural is painted?

**Try This!** Find  $\frac{4}{100} + \frac{1}{10}$ .**A** Write  $\frac{1}{10}$  as  $\frac{10}{100}$ .**B** Add.

$$\frac{\square}{100} + \frac{10}{100} = \frac{\square}{100}$$

Name \_\_\_\_\_

**Problem Solving • Shape Patterns**

**Essential Question** How can you use the strategy *act it out* to solve pattern problems?

**COMMON CORE STANDARD** CC.4.OA.5  
Generate and analyze patterns.



You can find patterns in fabric, pottery, rugs, and wall coverings. You can see patterns in shape, size, position, color, or number of figures.

Sofia will use the pattern below to make a wallpaper border. What might be the next three figures in the pattern?



Use the graphic organizer below to solve the problem.

**Read the Problem**

**What do I need to find?**

**What information do I need to use?**

**How will I use the information?**

**Solve the Problem**

Name \_\_\_\_\_

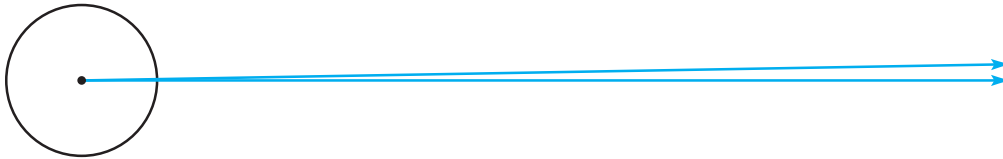
## Degrees

**Essential Question** How are degrees related to fractional parts of a circle?

**COMMON CORE STANDARDS** CC.4.MD.5a, CC.4.MD.5b

Geometric measurement: understand concepts of angle and measure angles.

**CONNECT** You can use what you know about angles and fractional parts of a circle to understand angle measurement. Angles are measured in units called **degrees**. Think of a circle divided into 360 equal parts. An angle that turns through  $\frac{1}{360}$  of the circle measures 1 degree.



### UNLOCK the Problem REAL WORLD

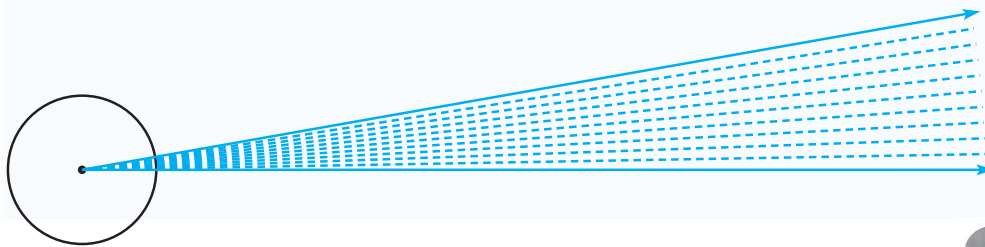
The angle between two spokes on the bicycle wheel turns through  $\frac{10}{360}$  of a circle. What is the measure of the angle between the spokes?

- What part of an angle does a spoke represent?

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▲ The Penny Farthing bicycle was built in the 1800s.



Name \_\_\_\_\_

**Problem Solving • Unknown Angle Measures**

**Essential Question** How can you use the strategy *draw a diagram* to solve angle measurement problems?

**COMMON CORE STANDARD** CC.4.MD.7

Geometric measurement: understand concepts of angle and measure angles.

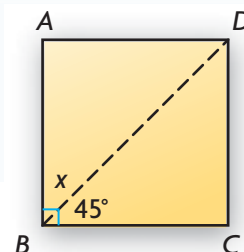


**UNLOCK the Problem**

**REAL WORLD**



Mr. Tran is cutting a piece of kitchen tile as shown at the right. He needs tiles with  $45^\circ$  angles to make a design. After the cut, what is the angle measure of the part left over? Can Mr. Tran use both pieces in the design?



Use the graphic organizer below to solve the problem.

**Read the Problem**

**What do I need to find?**

**What information do I need to use?**

**How will I use the information?**

**Solve the Problem**

Name \_\_\_\_\_

**Customary Units of Length****Essential Question** How can you use models to compare customary units of length?**COMMON CORE STANDARD** CC.4.MD.1

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**UNLOCK the Problem** REAL WORLD

You can use a ruler to measure length. A ruler that is 1 foot long shows 12 inches in 1 foot. A ruler that is 3 feet long is called a yardstick. There are 3 feet in 1 yard.



How does the size of a foot compare to the size of an inch?

**Materials** ■ 1-inch grid paper ■ scissors ■ tape



Name \_\_\_\_\_

**Metric Units of Mass and Liquid Volume****Essential Question** How can you use models to compare metric units of mass and liquid volume?**COMMON CORE STANDARDS** CC.4.MD.1, CC.4.MD.2

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.



Mass is the amount of matter in an object. Metric units of mass include kilograms (kg) and grams (g). Liters (L) and **milliliters** (mL) are metric units of liquid volume.

The charts show the relationship between these units.

Metric Units of Mass	Metric Units of Liquid Volume
1 kilogram (kg) = 1,000 grams (g)	1 liter (L) = 1,000 milliliters (mL)



Becky planted a flower garden full of bluebonnets. She used 9 kilograms of soil. How many grams of soil is that?

- Are kilograms larger or smaller than grams?  
\_\_\_\_\_
- Will the number of grams be greater than or less than the number of kilograms?  
\_\_\_\_\_
- What operation will you use to solve the problem?  
\_\_\_\_\_

Becky used 5 liters of water to water her bluebonnet garden. How many milliliters of water is that?

Name \_\_\_\_\_

**Problem Solving • Elapsed Time**

**Essential Question** How can you use the strategy *draw a diagram* to solve elapsed time problems?

**COMMON CORE STANDARD** CC.4.MD.2

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**UNLOCK the Problem** REAL WORLD

Dora and her brother Kyle spent 1 hour and 35 minutes doing yard work. Then they stopped for lunch at 1:20 P.M. At what time did they start doing yard work?



Use the graphic organizer to help you solve the problem.

**Read the Problem**

**What do I need to find?**

**What information do I need to use?**

**How will I use the information?**

**Solve the Problem**

- **What if** Dora and Kyle spent 50 minutes doing yard work and they stopped for lunch at 12:30 P.M.? What time would they have started doing yard work?

\_\_\_\_\_

Name \_\_\_\_\_

**Mixed Measures****Essential Question** How can you solve problems involving mixed measures?**COMMON CORE STANDARD** CC.4.MD.2

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.



Herman is building a picnic table for a new campground. The picnic table is 5 feet 10 inches long. How long is the picnic table in inches?

Herman built the picnic table in 2 days. The first day he worked for 3 hours 45 minutes. The second day he worked for 2 hours 10 minutes. How long did it take him to build the table?

- Is the mixed measure greater than or less than 6 feet?

- How many inches are in 1 foot?

- **What if** Herman worked an extra 5 minutes on the picnic table? How long would he have worked on the table then? **Explain.**

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Name \_\_\_\_\_

### Patterns in Measurement Units

**Essential Question** How can you use patterns to write number pairs for measurement units?

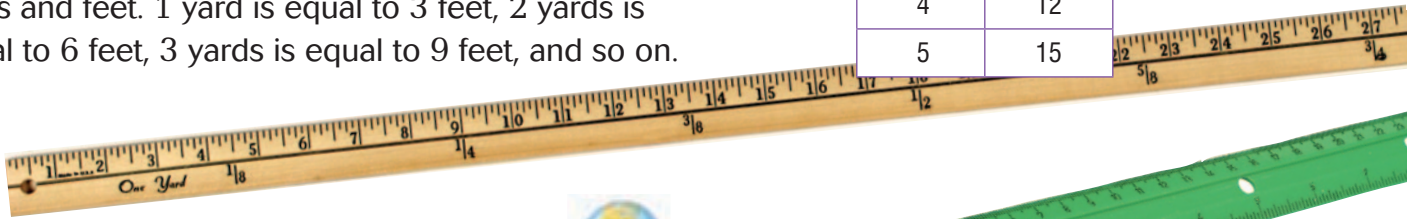
**CONNECT** The table at the right relates yards and feet. You can think of the numbers in the table as number pairs. 1 and 3, 2 and 6, 3 and 9, 4 and 12, and 5 and 15 are number pairs.

The number pairs show the relationship between yards and feet. 1 yard is equal to 3 feet, 2 yards is equal to 6 feet, 3 yards is equal to 9 feet, and so on.

**COMMON CORE STANDARD** CC.4.MD.1

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Yards	Feet
1	3
2	6
3	9
4	12
5	15



### UNLOCK the Problem

REAL WORLD

Lillian made the table below to relate two units of time. What units of time does the pattern in the table show?

_____	_____
1	7
2	14
3	21
4	28
5	35

- **Describe** the relationship between the numbers in each pair.

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Name \_\_\_\_\_

**Area**

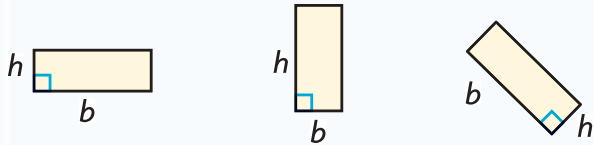
**Essential Question** How can you use a formula to find the area of a rectangle?

**COMMON CORE STANDARD** CC.4.MD.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

**UNLOCK the Problem** REAL WORLD

The **base,  $b$** , of a two-dimensional figure can be any side. The **height,  $h$** , is the measure of a perpendicular line segment from the base to the top of the figure.

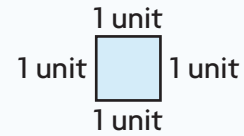


**Area** is the number of **square units** needed to cover a flat surface. A square unit is a square that is 1 unit long and 1 unit wide. To find the area of a figure, count the number of square units inside the figure.

How are the base, height, and area of a rectangle related?

**Remember**

Perpendicular lines and perpendicular line segments form right angles.



**Complete the table to find the area.**

Figure	Base	Height	Area

1. What relationship do you see among the base, height, and area?

\_\_\_\_\_

\_\_\_\_\_

2. Write a formula for the area of a rectangle. Use the letter  $A$  for area. Use the letter  $b$  for base. Use the letter  $h$  for height.

Formula: \_\_\_\_\_

Name \_\_\_\_\_

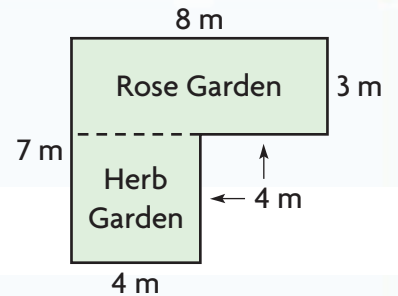
**Area of Combined Rectangles****Essential Question** How can you find the area of combined rectangles?**COMMON CORE STANDARD** CC.4.MD.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.



Jan is visiting a botanical garden with her family. The diagram shows two rectangular sections of the garden. What is the total area of the two sections?

**Materials** ■ grid paper





Name \_\_\_\_\_

### Find Unknown Measures

**Essential Question** How can you find an unknown measure of a rectangle given its area or perimeter?

**COMMON CORE STANDARD** CC.4.MD.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.



Tanisha is painting a mural that is in the shape of a rectangle. The mural covers an area of 54 square feet. The base of the mural measures 9 feet. What is its height?

- What do you need to find?  
\_\_\_\_\_
- What information do you know?  
\_\_\_\_\_

1. **What if** the mural were in the shape of a square with an area of 81 square feet? What would the height of the mural be? **Explain.**

\_\_\_\_\_

\_\_\_\_\_

2. **Explain** how you can find an unknown side length of any square, when given only the area of the square.

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Name \_\_\_\_\_

**Problem Solving • Find the Area**

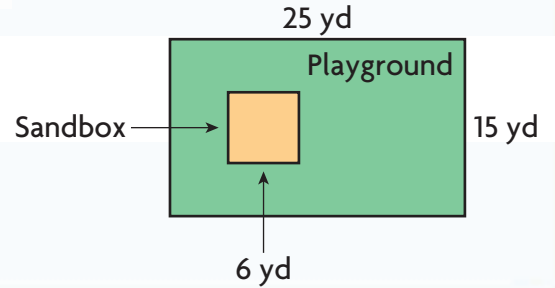
**Essential Question** How can you use the strategy *solve a simpler problem* to solve area problems?

**COMMON CORE STANDARD** CC.4.MD.3

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.



A landscaper is laying turf for a rectangular playground. The turf will cover the whole playground except for a square sandbox. The diagram shows the playground and sandbox. How many square yards of turf will the landscaper use?



Use the graphic organizer below to solve the problem.

<b>Read the Problem</b>	<b>Solve the Problem</b>
<b>What do I need to find?</b>	
<b>What information do I need to use?</b>	
<b>How will I use the information?</b>	