

# Connecting Whole Number Operations Addition & Subtraction of Mixed Numbers; Multiplicative Comparison

4<sup>th</sup> Grade Unit 3



Unit Planning Team:

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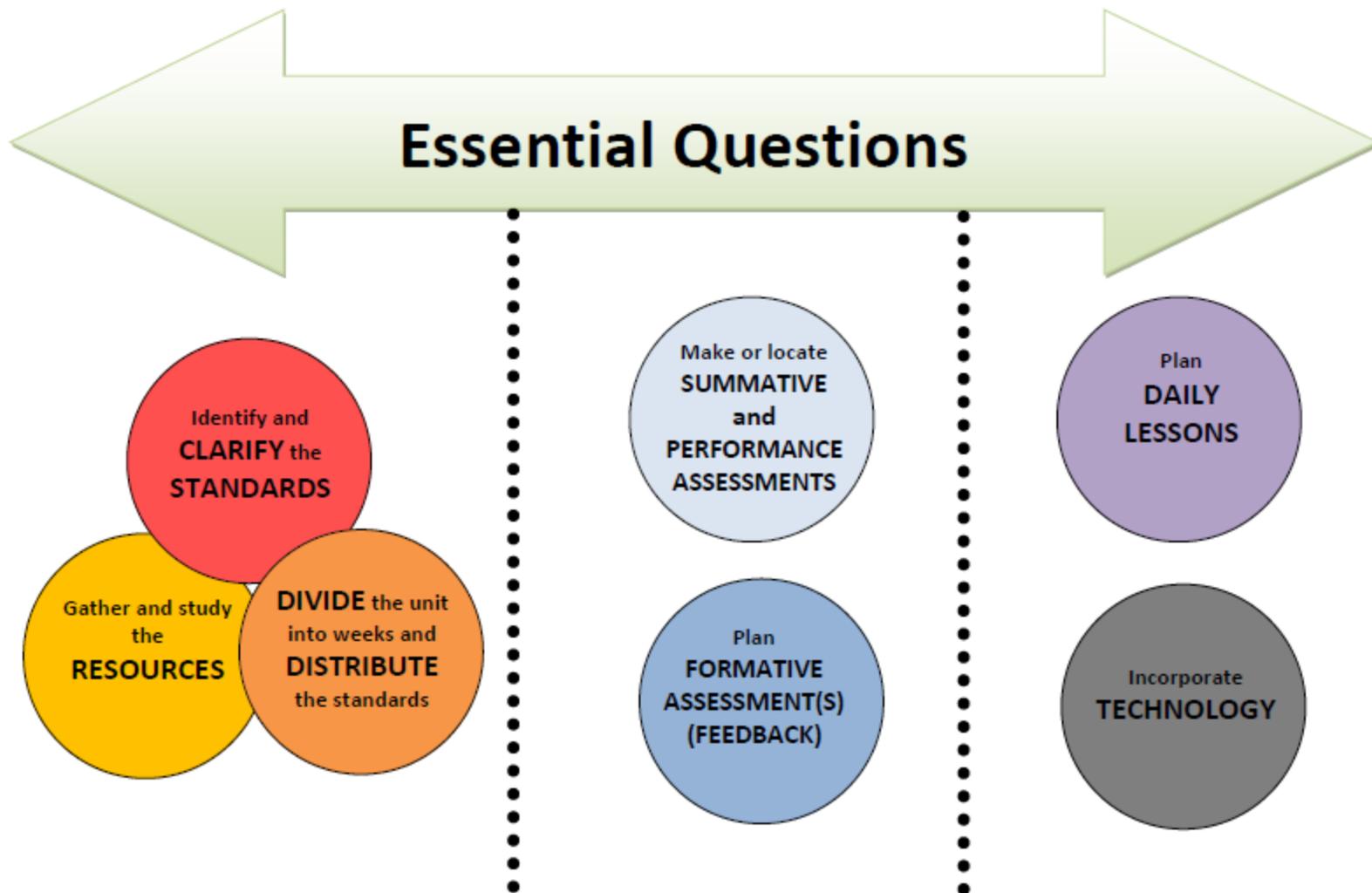
# Connecting Whole Number Operations Addition & Subtraction of Mixed Numbers; Multiplicative Comparison

4<sup>th</sup> Grade Unit 3

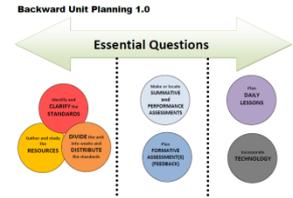


The main focus of third quarter involves the introduction of **multiplicative comparisons**. In third grade, students studied multiplication as equal groups, arrays, and area; in fourth grade, students extend this understanding using multiplicative comparisons. They will use their understanding of multiplicative comparison to solve problems involving measurement and conversions from a larger unit to a smaller unit. Students continue to work with all four operations using whole numbers. They will extend multiplication to multiplying two two-digit numbers and division up to a four-digit dividend by a one-digit divisor. Students continue to develop strategies using their base-ten understanding along with meanings and properties of operations, to compute with whole numbers. Students build on their work from second quarter to add and subtract fractions with like denominators, as well as multiply fractions by a whole number. They extend this knowledge to include adding and subtracting mixed numbers with like denominators. Contexts for problem-solving that support the major work of this quarter include solving whole number multi-step problems and real-world scenarios with simple fractions, as well as measurement conversions.

# Backward Unit Planning 1.0



# Essential Questions



## 3<sup>rd</sup> Quarter (p. 1 of 2) Connecting Whole Number Operations to Addition & Subtraction of Mixed Numbers and Multiplicative Comparison

The main focus of third quarter involves the introduction of multiplicative comparisons. In Third grade, students studied multiplication as equal groups, arrays, and area; in fourth grade, students extend this understanding using multiplicative comparisons. They will use their understanding of multiplicative comparison to solve problems involving measurement and conversions from a larger unit to a smaller unit. Students continue to work with all four operations using whole numbers. They will extend multiplication to multiplying two two-digit numbers and division up to a four-digit dividend by a one-digit divisor. Students continue to develop strategies using their base-ten understanding along with meanings and properties of operations, to compute with whole numbers. Students build on their work from second quarter to add and subtract fractions with like denominators, as well as multiply fractions by a whole number. They extend this knowledge to include adding and subtracting mixed numbers with like denominators. Contexts for problem-solving that support the major work of this quarter include solving whole number multi-step problems and real-world scenarios with simple fractions, as well as measurement conversions.

### Essential Questions:

*How do I use comparisons to reason about size and quantity?*

*How can I use what I know about whole numbers to help me understand fraction operations?*

Operations and Algebraic Thinking	
Use the four operations with whole numbers to solve problems.	
4.OA.1	Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
4.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.
4.OA.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.
Generate and analyze patterns.	
4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
Number and Operations in Base Ten	
<i>(expectations in this domain are limited to whole numbers less than or equal to 1,000,000)</i>	
Use place value understanding and properties of operations to perform multi-digit arithmetic.	
4.NBT.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
4.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
4.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

## New Essential Questions:

*How do I use comparisons to reason about size and quantity?*

*How can I use what I know about whole numbers to help me understand fraction operations?*

## Operations and Algebraic Thinking

Use the four operations with whole numbers to solve problems.

**4.OA.1** Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as 5 times as many as 7 and 7 times as many as 5. Represent verbal statements or problems as multiplication equations.

**4.OA.2** Multiply or divide to solve word problems involving multiplicative comparison, e.g., by drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

**4.OA.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies.

Generate and analyze patterns.

**4.OA.5** Generate a number or shape pattern that follows a given rule. Identify apparent patterns that were not explicit in the rule itself. *For example, given the rule "add 3," generate terms in the resulting sequence and observe that the terms increase by a constant difference of 3. Explain informally why the numbers will continue to increase in this way.*

## Number and Operations in Base Ten

*(expectations in this domain are limited to whole numbers less than or equal to 100,000)*

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

**4.NBT.4** Fluently add and subtract multi-digit whole numbers using the standard algorithm.

**4.NBT.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

**4.NBT.6** Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

## Clarifications of Reoccurring Standards

4.OA.3

Ongoing throughout the year; Include division with remainders; Equations need to include letters standing for unknown quantities; Connect to problems types that involve comparison

4.NBT.4

Continued maintenance with addition and subtraction; Small group instruction for students who struggle; Work with base ten and counting within base ten; Students should be working toward a standard algorithm by the end of the year; Use problem types involving additive comparison

4.NBT.5

4 x 1 and 2 x 2; Illustrate through equations, rectangular arrays, and area models based on place value and properties of operations

4.NBT.6

Up to 4 divided by 1; inverse of 4.NBT.5

Backward Unit Planning 1.0



Identify and  
CLARIFY the  
STANDARDS

## Number and Operations - Fractions

(expectations in this domain are limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100)

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

4.NF.3	Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ .
	<p><b>b.</b> Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.  <i>Examples: <math>3/8 = 1/8 + 1/8 + 1/8</math>; <math>3/8 = 1/8 + 2/8</math>; <math>2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8</math>.</i></p>
	<p><b>c.</b> Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with and/or by using properties of operations and the relationship between addition and subtraction.</p>

4.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
	<p><b>b.</b> Understand a multiple of <math>a/b</math> as a multiple of <math>1/b</math>, and use this understanding to multiply a fraction by a whole number. <i>For example, use a visual fraction model to express <math>3 \times (2/5)</math> as <math>6 \times (1/5)</math>, recognizing this product as <math>6/5</math>. (In general, <math>n \times (a/b) = (n \times a)/b</math>.)</i></p> <p><b>c.</b> Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models. <i>For example, if each person at a party will eat <math>3/8</math> of a pound of roast beef, how many pounds of roast beef will be needed? Between what two whole numbers will the answer be?</i></p>

Understand decimal notation for fractions, and compare decimal fractions.

4.NF.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add and subtract fractions with denominators 10 and 100. <i>For example, express <math>3/10</math> as <math>30/100</math>, and add <math>3/10 + 4/10 = 30/100 + 40/100 = 70/100 = 7/10</math>.</i>
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## Measurement and Data

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

4.MD.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; L, mL. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. <i>For example, know that 1 ft is 12 times as long as 1 in. Express the length of a room in feet by measuring it in inches and recording the results in a table. ...</i>
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4.MD.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number lines, tape diagrams, and area models.
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Quarterly Expectation: Problems posed should involve measurement quantities with fractions and conversions.

4.MD.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i>
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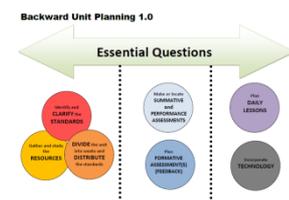
## Clarifications of Reoccurring Standards

4.NF.3	Part “a” has dropped off and “c” has been added (+/- mixed numbers); Involves flexibility and decomposing fractions different ways; All work involves like denominators
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4.NF.1/4.NF.2	Fraction equivalence and comparison are not in the pacing for this quarter, but will need to be continued as you work with fractions
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4.NF.4	“a” has dropped off; “b” deals with the distributive and associative properties-fraction by a whole number; “c” pertains to multiple groups problems
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4.MD.2	Involves all four operations; bring in conversions and fractions to solve within measurement contexts; Measurement scale refers to number lines
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Identify and CLARIFY the STANDARDS

## Operations and Algebraic Thinking

Use the four operations with whole numbers to solve problems.

4.OA.1	Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison drawings and equations with a symbol for the unknown number to represent distinguishing multiplicative comparison from additive comparison.
4.OA.3	Solve multistep word problems posed with whole numbers and having whole the four operations, including problems in which remainders must be interpreted problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies.

Generate and analyze patterns.

4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent pattern that were not explicit in the rule itself. <i>For example, given the rule “add number 1, generate terms in the resulting sequence and observe that the terms alternate between odd and even numbers. Explain informally why the numbers will continue this way.</i>
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## Number and Operations in Base Ten

(expectations in this domain are limited to whole numbers less than or equal to 1000)

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

4.NBT.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
4.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations; explain the calculation by using equations, rectangular arrays, and/or area models.
4.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

## Clarifications of New Standards

4.OA.1

“as much as” and “times as many” vocabulary from progressions; moving from equal groups in previous grades to multiplicative comparison (connects to 4.NBT.1 standard of 10xs as many with place value); Use Problem Types Chart

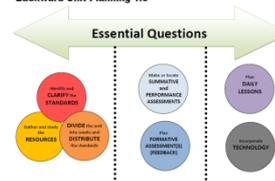
4.OA.2

Multiplication and division word problems that involve multiplicative comparison; Distinguish multiplicative from additive comparison when beginning work with comparison this quarter

4.OA.5

Involves number and shape patterns; Number patterns can connect to additive and multiplicative comparison, making sure to address the rule when working with patterns

Backward Unit Planning 1.0



Identify and  
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STANDARDS

## Number and Operations - Fractions

*(expectations in this domain are limited to fractions with denominators 2,3,4,5,6,8,10,12, and 100)*

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

**4.NF.3** Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .

**b.** Decompose a fraction into a sum of fractions with the same denominator in more than one way, record decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.  
*Examples:  $3/8 = 1/8 + 1/8 + 1/8$ ;  $3/8 = 1/8 + 2/8$ ;  $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$ .*

**c.** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an and/or by using properties of operations and the relationship between addition and subtraction.

**d.** Solve word problems involving addition and subtraction of fractions referring to the same whole and denominators, e.g., by using visual fraction models and equations to represent the problem.

**4.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

**b.** Understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . (In general, use  $a/b$ .)*

**c.** Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models. *For example, if each person at a party will eat  $3/8$  of a pound of roast beef, how many pounds of roast beef will be needed? Between what two whole numbers does the answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

**4.NF.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add and subtract fractions with respective denominators 10 and 100. *For example, express  $3/10$  as  $30/100$ , and add  $3/10 + 4/100$ .*

## Measurement and Data

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

**4.MD.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a room in feet, knowing the length in inches, and vice versa. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

**4.MD.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing a measurement in terms of a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number lines, tape diagrams, and measurement scales.

*Quarterly Expectation: Problems posed should involve measurement quantities with fractions and conversions.*

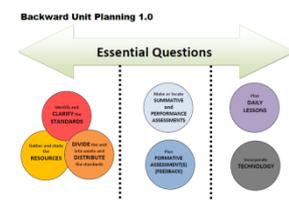
**4.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

## Clarifications of New Standards

**4.NF.5** Refer to Chapter 7 in the ECM book; ties to 4.NF.1 with equivalent fractions; could tie into money using pennies and dimes; can tie into multiplicative comparisons with converting between tenths and hundredths; Use base-ten blocks and equal sharing to reinforce this idea

**4.MD.1** Conversions; Idea- Use a two column table to show conversions connecting to 4.OA.5; Metric and customary units; Ties into multiplicative comparison when converting

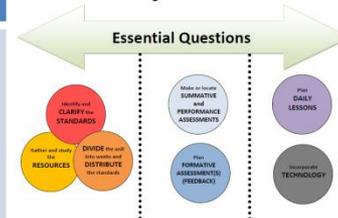
**4.MD.3** Area and perimeter formula in real world problems; Could have missing side lengths; Rich Lehrer area measure resource



Identify and CLARIFY the STANDARDS

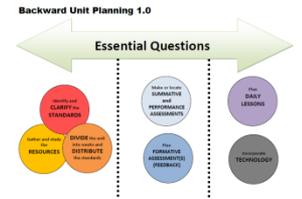
Week	Standards	Explanation/Clarification
1	<p><b>Focus</b>  <b>4.OA.1 / 4.OA.2</b>  <b>4.NF.4</b></p> <p><b>Connection</b>  <b>4.NBT.1 (not actually paced for this quarter)</b></p> <p><b>Continuous</b>  <b>4.NBT.5/4.NBT.6</b>  <b>4.OA.3</b></p>	<p>Understanding the difference between multiplicative and additive comparison  Relating multiplicative comparison to the relationship to base ten (4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents 10xs what it represents in the place to its right)</p> <p>Continue to develop strategies based on place value and properties of operations</p>
2	<p><b>Focus</b>  <b>4.OA.1 / 4.OA.2</b>  <b>4.NF.4</b></p> <p><b>Connection</b>  <b>4.NBT.1 (not actually paced for this quarter)</b></p> <p><b>Continuous</b>  <b>4.NBT.5/4.NBT.6</b>  <b>4.OA.3</b></p>	<p>Continue with same focus as week 1</p>
3	<p><b>Focus</b>  <b>4.MD1/4.MD.2</b>  <b>4.OA.5</b></p> <p><b>Connection</b>  <b>4.OA.1/4.OA.2</b></p> <p><b>Continuous</b>  <b>4.NBT.4/4.NBT.5/4NBT.6</b>  <b>4.OA.3</b></p>	<p>Use understanding of multiplicative comparisons in the context of problems involving measurement conversions... connect to 4.OA.5 in working with the patterns that evolve from measurement conversions</p>

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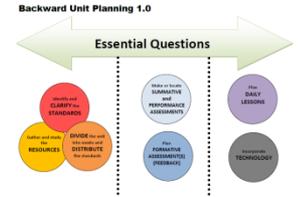
**DIVIDE** the unit into weeks and **DISTRIBUTE** the standards

Week	Standards	Explanation/Clarification
4	<p><b>Focus</b>  <b>4.MD1/4.MD.2</b>  <b>4.OA.5</b></p> <p><b>Connection</b>  <b>4.OA.1/4.OA.2</b></p> <p><b>Continuous</b>  <b>4.NBT.4/4.NBT.5/4NBT.6</b>  <b>4.OA.3</b></p>	<p>Continue work from week 3</p> <p>4.OA.5- extend pattern work to other shape and number patterns with rules</p>
5	<p><b>Focus</b>  <b>4.NF.5</b>  <b>4.MD.1</b></p> <p><b>Connection</b>  <b>4.OA1/4.OA.2</b></p> <p><b>Continuous</b>  <b>4.NBT.1 (not in this quarter pacing)</b>  <b>4.NBT.4/4.NBT.5/4.NBT.6</b>  <b>4.OA.3</b></p>	<p>In order to understand the multiplicative relationship between <math>3/10</math> and <math>30/100</math> (4.NF.5), you must understand the multiplicative nature of our base ten system (4.NBT.1)... 1 is ten times as much as <math>1/10</math> and <math>1/10</math> is ten times as much as <math>1/100</math></p> <p>This understanding can connect to 4.MD.1 when converting in the metric system</p>
6	<p><b>Focus</b>  <b>4.NF.5</b>  <b>4.MD.1</b></p> <p><b>Connection</b>  <b>4.OA.1/4.OA.2</b></p> <p><b>Continuous</b>  <b>4.NBT.1 (not in this quarter pacing)</b>  <b>4.NBT.4/4.NBT.5/4.NBT.6</b>  <b>4.OA.3</b></p>	<p>Same as week 5</p>



**DIVIDE** the unit into weeks and **DISTRIBUTE** the standards

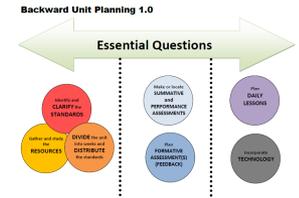
Week	Standards	Explanation/Clarification
7	<p><b>Focus</b> 4.NF.3/4.NF.4</p> <p><b>Continuous</b> 4.NBT.4/4.NBT.5/4NBT.6 4.OA.3 4.OA.1/4.OA.2</p>	<p>4.NF.3 could be used to push additive comparison with fractional amounts; mixed numbers have been added to this quarter; subtraction of fractions should be a focus, if it hasn't been yet</p> <p>4.NF.4 relates to multiplicative comparison as in <math>\frac{3}{4}</math> is the same as 3 times as much as <math>\frac{1}{4}</math>; should also focus on multiple groups problems as in <math>\frac{3}{4}</math> is the same as 3 groups of <math>\frac{1}{4}</math></p>
8	<p><b>Focus</b> 4.NF.3/4.NF.4</p> <p><b>Continuous</b> 4.NBT.4/4.NBT.5/4NBT.6 4.OA.3 4.OA.1/4.OA.2</p>	<p>Same as week 8</p>
9	<p><b>Focus</b> 4.MD.3</p> <p><b>Connection</b> 4.MD.2</p> <p><b>Continuous</b> 4.NBT.4/4.NBT.5/4NBT.6 4.OA.3</p>	<p>4.MD.3 is an application of the area and perimeter formulas for rectangles and assumes that students have had sufficient time exploring and building understanding of those formulas... if you feel that your students do not have this understanding, you may need to devote more time throughout the quarter to explore these ideas</p> <p>Comparison can be a context when comparing area and perimeter of different rectangles</p>



**DIVIDE** the unit  
into weeks and  
**DISTRIBUTE**  
the standards

# Suggested Weekly Posing of Problems:

*This is one way to think about clustering the standards. These ideas would be repeated each week.*



## Essential Questions

- 1) *How do I use comparisons to reason about size and quantity?*
- 2) *How can I use what I know about whole numbers to help me understand fraction operations?*

**1-2 days a week-** (4.NBT.4, 4.NF.3, 4.OA.3)

Focus on additive comparison problems to revisit whole number addition and subtraction (EQ 1) as well as adding and subtracting fractions (EQ 2). Include multi-step problems.

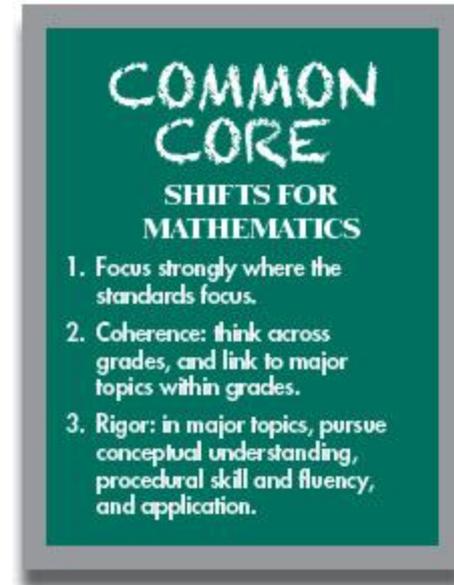
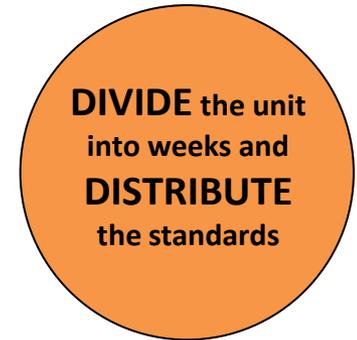
**2-3 days a week-** Focus on multiplicative comparison problems (EQ 1).

Connections should be made to base 10 understanding and measurement conversions. Pose multiplication of a fraction by a whole number.

(4.OA.1, 4.OA.2, 4.MD.1, 4.MD.2, 4.OA.5, 4.NBT.5, 4.NBT.6, 4.NF.5)

**1-2 days a week-** Compare rectangular areas (EQ 1)

(4.MD.3)





Planning Options

Lesson Resources

Technology Resources

Games and Activities

Literature Connections

Number Talks for Unit 3

Teacher Created Resources for Unit 3

Assessments

Intranet » K-5 Curriculum » 4th Grade Curriculum » Math » Curricular and Instructional Resources » U3: Connecting Whole Number Operations to Add/Sub of Mixed Numbers; Multiplicative Comparison » Lesson Resources

## Lesson Resources

### Connecting Whole Number Operations to Addition and Subtraction of Mixed Numbers

4.OA.3, 4.OA.5, 4.NBT.4, 4.NBT.5, 4.NBT.6, 4.NF.3, 4.NF.4, 4.MD.3



Multiplication and Division Problem Situations (4.NBT.5, NBT.6)

Multi-Step Word Problems (4.OA.3, 4.NBT.5, 4.NBT.6)

Multi-Step Word Problems (4.OA.3)

Adding and Subtracting Multi-Digit Numbers - Word Problems (4.NBT.4)

Mixed Number Word Problems (like denominators) (4.NF.3a)

Fraction Word Problems (like denominators) (4.NF.3d)

**Minilessons for Extending Multiplication and Division** This book contains minilessons that you can choose from as you consider the needs of your students and can be used throughout the year. These are more guided and explicit and were designed to be used at the start of your math instruction - lasting 10 to 15 minutes. See the overview (p.5-11) for further details.



**Extending Children's Mathematics: Fractions and Decimals** by Susan B. Empson and Linda Levi

**Equal Groups/Sharing Problems**

Chapter 1 p.3-28

Problems to Pose p.29-31

Instructional Guidelines for Equal Group

Problems p.32-35

**Multiple Groups Problems**

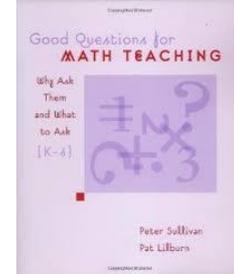
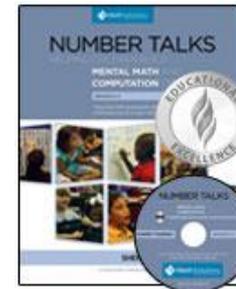
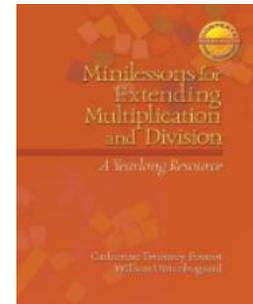
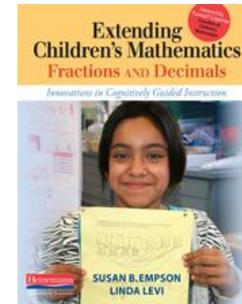
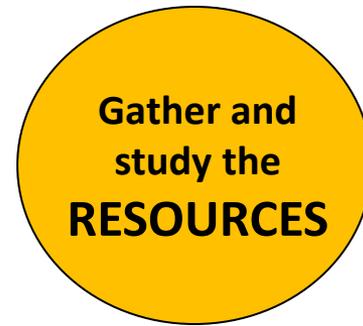
Chapter 3 p.48-64

Problems to Pose p.65-68

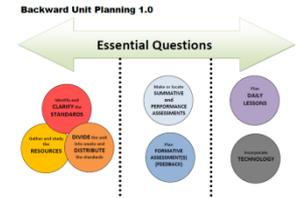
Instructional Guidelines for Multiple Group

Problems p.69-71

**Fractions as Area Models** Resource guide for using this book with unit concepts (4.NF.3, 4.NF.4)



# Options for Assessment – available online for Unit 3



## Essential Question 1

*How do I use comparisons to reason about size and quantity?  
(specifically 4.OA.1 and 4.OA.2)*

**Make or locate  
SUMMATIVE  
and  
PERFORMANCE  
ASSESSMENTS**



Ms. Morales has a bag of beads.

- She gives Elena 5 beads.
- She gives Damian 8 more beads than Elena.
- She gives Trish 4 times as many beads as Damian.

Ms. Morales then has 10 beads left in the bag.

Part A

How many beads did Damian and Trish each receive? Show or explain how you arrived at each answer.

Part B

How many beads were in Ms. Morales' bag before any beads were given to students?

beads

**Illustrative Mathematics**

### 4.OA Comparing Money Raised

Alignments to Content Standards

- Alignment: 4.OA.A.2

Tags

- *This task is not yet tagged.*

a. Helen raised \$12 for the food bank last year and she raised 6 times as much money this year. How much money did she raise this year?

b. Sandra raised \$15 for the PTA and Ni compared to Sandra?

c. Luis raised \$45 for the animal shelter, much money did Anthony raise?

**Illustrative Mathematics**

### 4.NBT.1 Threatened and Endangered

Alignments to Content Standards

- Alignment: 4.NBT.A.1
- Alignment: 4.OA.A.1

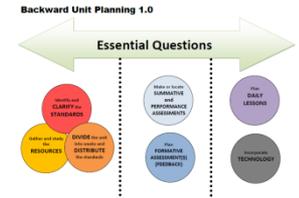
Tags

- *This task is not yet tagged.*

Maned wolves are a threatened species that live in South America. People estimate that there are about 24,000 of them living in the wild.



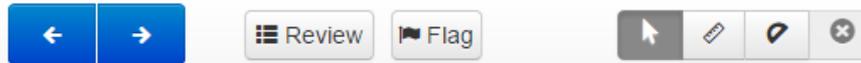
# Options for Assessment – available online for Unit 3



## Essential Question 1

*How do I use comparisons to reason about size and quantity?  
(specifically 4.MD.1 and 4.MD.2)*

Make or locate  
**SUMMATIVE**  
and  
**PERFORMANCE**  
**ASSESSMENTS**



GRADE 4 MATHEMATICS / SESSION 1 / 5 OF 36

The length of a desktop is 4 feet. How many inches is the length of the desktop?

Enter your answer in the box.

 inches

### Illustrative Mathematics

4.MD Who is the tallest?

#### Alignments to Content Standards

- Alignment: 4.MD.A.1

#### Tags

- This task is not yet tagged.

Mr. Liu asked the students in his fourth grade class to measure their heights. Here are some of the heights they recorded:

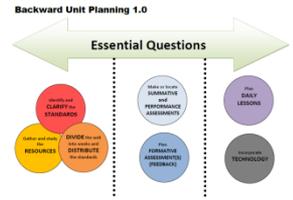
Student	Height
Sarah	50 inches
Jake	$4 \frac{1}{4}$ feet
Andy	$1 \frac{1}{2}$ yards
Emily	4 feet and 4 inches

List the four students from tallest to shortest.

# Options for Assessment – available online for Unit 3

## Essential Question 2

*How can I use what I know about whole numbers to help me understand fraction operations?*



Make or locate  
**SUMMATIVE**  
and  
**PERFORMANCE**  
**ASSESSMENTS**

← → Review Flag

GRADE 4 MATHEMATICS / SESSION 1 / 3 OF 36

Ryan makes 6 backpacks. He uses  $\frac{3}{4}$  yard of cloth to make each backpack. What is the total amount of cloth, in yards, Ryan uses to make all 6 backpacks?

Enter your answer in the space provided.

**PARCC**  
Partnership for Assessment of Readiness for College and Careers

### Illustrative Mathematics

Bookmark this task [See bookmarks.](#)

### 4.NF How Many Tenths and Hundredths?

#### Alignments to Content Standards

- Alignment: 4.NF.C.5
- Alignment: 4.NF.C.6

#### Tags

• This task is not yet tagged.

Finish the equations to make true statements. Write one number in each space.

- 1 tenth + 4 hundredths = \_\_\_\_\_ hundredths
- 4 hundredths + 1 tenth = \_\_\_\_\_ hundredths
- 5 tenths + 2 hundredths = \_\_\_\_\_ hundredths
- 5 hundredths + 2 tenths = \_\_\_\_\_ hundredths

# LESSONS AND RESOURCES ARE AVAILABLE ONLINE.

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