

Grade: 4 Unit: 4	Numbers and Operations-Fractions	12 Weeks
Progression		
3rd Grade	Students used number lines to locate unit fractions, and used fraction bars, fraction strips, and area models to recognize and generate equivalent fractions and to compare fractions.	
4th Grade	Students will learn to compare fractions with different numerators and different denominators. Students will focus on extending their understanding of equivalent fractions, using visual models and by generating equivalent fractions with denominators such as 5, 10, 12, and 100. Students use models to build foundational understanding of the effect of multiplying or dividing the numerator and denominator by the same number to generate an equivalent fraction.	
5th Grade	Students will extend their knowledge of equivalent fractions to add, subtract, and compare fractions with unlike denominators. Understanding equivalent fractions provides the basis for developing understanding of ratios and proportional thinking in 6 th grade.	

STUDENT LEARNING GOALS

Mathematics Standards (Appendices A & B)

4.NF.A.1: Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.A.2: Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

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

- a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- 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.
- c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

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

- a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
- 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, $n \times (a/b) = (n \times a)/b$.)*
- c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

4.NF.C.5: Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.

4.NF.C.6: Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

4.NF.C.7: Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

MP1: Make sense of problems and persevere in solving them.

MP6: Attend to Precision

Interdisciplinary Standards		Key Vocabulary	
Technology Integration (Appendix C)	21st Century Skills (Appendix D)	Decimal Decimal Fraction Denominator Equivalent Fractions	Mixed Number Numerator Product
IS1. Information Strategies IS2. Information Use	TCS1. Use of Information TCS5. Problem Solving		

<p>Enduring Understandings</p> <ul style="list-style-type: none"> • I can understand how two fractions are equivalent. • I can compare fractions, with same denominators and different numerators, with different denominators and same numerators, and by using benchmark fractions. • I can add and subtract fractions with like denominators. • I can use fractions models, number lines, and equations to represent word problems. • I can add and subtract mixed numbers with like denominators. • I can multiply a fraction with a numerator greater than one by a whole number. • I can solve word problems that involve multiplying a fraction by a whole number. • I can rewrite fractions with 10 in the denominator as equivalent fractions with 100 in the denominator. • I can convert decimals into fractions, and fractions into decimals with denominators of 10 or 100. • I can compare two decimals up to hundredths, using the $>$, $<$, and $=$ symbols. 	<p>Essential Questions</p> <ul style="list-style-type: none"> • How can I use strategies to compare fractions and determine equivalency? • How can I add and subtract fractions and mixed numbers with like denominators? • What does it mean to multiply a fraction by a whole number? • How can I rewrite fractions with a denominator of 10 as an equivalent fraction with a denominator of 100? • How do decimals relate to fractions? • How can I compare two decimals up to hundredths?
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Assessment Plan

<p>Summative Assessment(s)/Performance Based Assessments including 21st Century Learning</p> <p>RCC Interim Assessment, Student p. 204-205 RCC Performance Task, Student p. 125 RCC Performance Task, Student p. 141 RCC Performance Task, Student p. 167 RCC Performance Task, Student p. 206</p>	<p>Formative and Diagnostic Assessment(s)</p> <p>STAR Math Assessment (Fall) RCC Embedded Tasks and Assessments</p>
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Learning Plan Components

Text	<p>Ready Common Core Mathematics Instruction 4, 2014, Curriculum Associates, ISBN: 978-0-7609-8637-0</p>
Print	<p>Ready Common Core Mathematics Teacher Resource Book 4, 2014, Curriculum Associates, ISBN: 978-0-7609-8644-8</p>
Electronic	<p>www.teacher-toolbox.com www.stratfordmath.wikispaces.com www.xtramath.org North Carolina Dept. of Instruction; http://maccss.ncdpi.wikispaces.net/Fourth+Grade Common Core Worksheets; http://www.commoncoresheets.com/ Illustrative Math; http://www.illustrativemathematics.org/ Teaching Channel website; http://learnzillion.com</p>

Week 1-2	Students will: <ul style="list-style-type: none"> • Understand the value of a fraction. • Understand how a fraction model represents a fraction. • Understand how two fractions are equivalent. • Understand how different models can represent the same value. 		
Lessons	Tasks / Activities	Worksheets	Technology
RCC Lesson 13: Understand Equivalent Fractions Teacher pages: 132-139 Student pages: 119-125 Differentiated pages: 139	(From RCC Teacher Book and supplemental) Hands-On (p.133,135) Visual Model: 134 Differentiated pages: 139 SFTE p. 516A &516B	RCC Student pages: 119-125 SF 9-6 (R P E PS) <u>CC</u> Partitioning and Labeling Number Line Fractions (Review) <u>CC</u> Fraction Location on a Number Line (Review) <u>CC</u> Reducing Fractions <u>CC</u> Finding Equivalent Fractions (Missing Number) <u>CC</u> Finding Equivalent Fractions (Visual) <u>CC</u> Equivalent Fraction Patterns	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction)
Week 3	Students will: <ul style="list-style-type: none"> • Use symbols (>, <, =) to compare fractions with the same denominator and different numerators. • Recognize that fractions with different denominators and the same numerators represent different values. • Use benchmark fractions to compare fractions. • Recognize that you can only compare two fractions when both refer to the same whole. 		
Lessons	Tasks / Activities	Worksheets	Technology
RCC Lesson 14:	(From RCC Teacher Book and supplemental) Hands-On (p. 142,145,149) Visual Model: 143 Differentiated pages: 149 NC Fraction Tangrams Task	RCC Student pages: 126 – 135 SF9-8 (R P E PS) SF 9-9 (R P E PS) <u>CC</u> Comparing Fractions Relative Size <u>CC</u> Determining Fractions Relative to One Half <u>CC</u> Comparing Fractions Less, More, or Equal to 1/2	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction) Video (3:17) http://learnzillion.com/lessons/1321 (Compare fractions to a benchmark of one half using number lines)

Week 4	Students will: <ul style="list-style-type: none"> • Understand addition as joining parts. • Understand subtraction as separating parts. • Extend their understanding of addition and subtraction of whole numbers to addition and subtraction of fractions. • Use fraction models to add and subtract fractions with like denominators. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 15:</u>	(From RCC Teacher Book and supplemental) Hands-On (p.154) Differentiated pages: 157 SF 9-3 NC Design of Fractions Task	RCC Student pages:136 - 141	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction) Video (4:47) http://learnzillion.com/lessons/2696 (Represent fractions as the sum of unit fractions using pictures)
Week 5	Students will: <ul style="list-style-type: none"> • Add fractions with like denominators. • Subtract fractions with like denominators. • Use fraction models, number lines, and equations to represent word problems. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 16:</u>	From RCC Teacher Book and supplemental) Hands-On (p. 160,164,167) Differentiated pages: 167 NC Fraction Relay Race Task	RCC Student pages: 142 – 151 SF 10-4 (R P E PS) CC Adding to One Whole	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction) Video (4:44) http://learnzillion.com/lessons/2971 (Represent a fraction as the sum of unit fractions using number line)

Week 6	Students will: <ul style="list-style-type: none"> • Join unit fractions (same denominator) by adding. • Separate fractions (same denominator) by subtracting. • Break apart fractions with a numerator greater than 1 into smaller parts. • Write a decomposed fraction using an equation. • Add and subtract mixed numbers with like denominators. • Determine whether to use addition or subtraction when solving word problems involving fractions. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 17:</u>	(From RCC Teacher Book and supplemental) Hands-On (p. 169,177) Differentiated pages: 177 NC Race to One Task NC Fraction Buckets Task NC Fraction Chain Task NC Kendall's Candy Company Task	RCC Student pages: 152 – 161 SF 10-2 (R P E PS) <u>CC</u> Mixed Fractions with Same Denominator <u>CC</u> Word Problems Same Denominator <u>CC</u> Adding Parts of a Whole <u>CC</u> Adding Fractions Numeric & Visual <u>CC</u> Adding Mixed Fraction (Visual)	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction)
Week 7	Students will: <ul style="list-style-type: none"> • Multiply a unit fraction (numerator of 1) by a whole number. • Multiply a fraction with a numerator greater than one by a whole number. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 18:</u>	(From RCC Teacher Book and supplemental) Differentiated pages: 185 GA Fraction Pie Game Practice Task GA Area Models Construction Task	RCC Student pages: 162 – 167 <u>CC</u> Multiplying Fractions by a Whole Number (Visual) <u>CC</u> Multiplying Fractions by a Whole Number <u>CC</u> Multiplying Unit Fractions with Number line <u>CC</u> Multiplying Fractions & Whole Numbers	Teacher Toolbox (1 Tutorial) *Video (5:22) http://learnzillion.com/lessons/3066 (Solve problems involving multiplying a fraction and a whole number by converting a whole number into a fraction) *Video (4:00) http://learnzillion.com/lessons/2938 (Use a number line for multiplication of fractions and whole numbers) *Video (4:32) http://learnzillion.com/lessons/2927 (Estimate products in multiplication of whole numbers and fractions) *Video (4:19) http://learnzillion.com/lessons/3076 (Use repeated addition for multiplication of fractions and whole numbers)

Week 8	Students will: <ul style="list-style-type: none"> Solve word problems that involve multiplying a fraction by a whole number. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 19:</u>	(From RCC Teacher Book and supplemental) Hands-On (p. 187,193) Visual Model: 189 Differentiated pages: 193 SF 9-5 Draw a Picture GA Birthday Cookout Construction Task Illustrative Math Sugar in Six Cans of Soda	RCC Student pages: 168 – 175 <u>CC Fraction Word Problems</u>	Teacher Toolbox (1 Tutorial) *Video (4:36) http://learnzillion.com/lessons/2845 (Solve word problems involving multiplying a fraction and a whole number using a fraction model) *Video (5:11) http://learnzillion.com/lessons/2832 (Solve problems involving a fraction and a whole number using a number line) Video (5:02) http://learnzillion.com/lessons/2493 (Solve problems involving a fraction and a whole number using repeated addition)
Week 9	Students will: <ul style="list-style-type: none"> Rewrite a fraction that has a denominator of 10 as an equivalent fraction with a denominator of 100. Rewrite a fraction that has a denominator of 100 as an equivalent fraction with a denominator of 10. Explain the relationship between tenths and hundredths. Add two fractions with denominators of 10 or 100. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 20:</u>	(From RCC Teacher Book and supplemental) Hands-On (p. 195,196, 201) Differentiated pages: 201 <u>Illustrative Math Tasks:</u> -Expanded Fractions and Decimals -Fraction Equivalence -Adding Tenths and Hundredths	RCC Student pages: 176 – 183 <u>CC Adding 10s and 100s</u>	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction) *Video (5:35) http://learnzillion.com/lessons/2975 (Add fractions with denominators 10 and 100) *Video (4:39) http://learnzillion.com/lessons/2841 (Use a number line to show how fractions with denominators 10 and 100 are equivalent) Video (4:37) http://learnzillion.com/lessons/2970 (Express a fraction with denominator 10 as an equivalent fraction with denominator 100)

Week 10	Students will: <ul style="list-style-type: none"> • Convert decimals into fractions, with denominators of 10 or 100. • Convert fractions into decimals, with denominators of 10 or 100. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 21:</u>	(From RCC Teacher Book and supplemental) Hands-On (p. 203, 207, 208, 211) Visual Model: 204 Differentiated pages: 211 SFTE p.624A & 624B GA Tasks: Flag Fractions Decimals Designs (Topics 1 & 2)	RCC Student pages: 184 – 193 SF 11-1: R P E SF 11-2: R P E PS SF Intervention: Decimals in Tenths Decimals in Hundredths Fractions Decimals & Number Line <u>CC</u> Fractions & Decimals <u>CC</u> Converting Fractions to 10s and 100s	Teacher Toolbox (1 Tool for Instruction) *Video (3:45) http://learnzillion.com/lessons/1424 (Convert decimals to fractions to the tenths place using number lines)
Week 11	Students will: <ul style="list-style-type: none"> • Compare two decimals up to hundredths, using the >, <, = symbols. 		
Lessons	Tasks / Activities	Worksheets	Technology
<u>RCC Lesson 22:</u>	(From RCC Teacher Book and supplemental) Hands-On (p. 213, 221) Visual Model: 215, 217 Differentiated pages: 221 SFTE p. 630A & 630B, p. 630 (Comparing and Ordering), p. 635 (Writing in Math #25 with Scoring Rubric GA: Double Number Line Decimals Illustrative Math: Using Place Value GA: Dismissal Duty Dilemma	RCC Student pages: 194 – 203 SF 11-3: R P E PS SF Intervention: Comparing and Ordering Decimals <u>CC</u> Determining Greatest or Least <u>CC</u> Number Sentences with Decimals	Teacher Toolbox (1 Tutorial, 1 Tool for Instruction) *Video (4:56) http://learnzillion.com/lessons/3217 (Compare two decimals to the hundredths place using fraction models)
Week 12	Students will: <ul style="list-style-type: none"> • Demonstrate mastery of unit objectives. 		
Summative Assessment		Performance Task	
RCC Unit 4 Interim Assessment -Student p. 204-205 -Scoring Guide (p. 223)		RCC Unit 4 Performance Task -Student p. 206 -Rubric (p. 225)	