

GRADE 4 UNIT 3 – PROPERTIES OF OPERATIONS WITH MULTI-DIGIT ARITHMETIC/ ADD & SUBTRACT FRACTIONS

<p>Established Goals: Standards</p> <p>Number Operations – Fractions</p> <p>4.NF.3a,b Decompose a fraction into a sum of fractions with the same denominator in more than one way; record the decomposition as an equation and justify with a visual fraction model</p> <p>4.NF.3c Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction.</p> <p>4.NF.3d 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.</p> <p>4.NF.4a,b Decompose a fraction into a sum of fractions with the same denominator in more than one way; record the decomposition as an equation and justify with a visual fraction model.</p> <p>4.NF.4c Solve 1-step word problems</p>	Transfer	
	<i>Students will be able to:</i>	
	Compare fractions using a variety of strategies for various situations. Demonstrate a variety of ways to decompose Fractions with common denominators Solve real world addition and subtraction problems involving fractions. Apply understanding of units within measurement.	
	Meaning	
	ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
<p>Addition and subtraction of fractions relates to joining and separating referring to the same whole</p> <p>Fractions a/b with $a > 1$ as a sum of fractions $1/b$</p> <p>Relative sizes of measurement units within one system</p> <p>Patterns help make generalizations about numbers and numbers sequence</p>	<p>How does a pattern or rule affect the value of a number?</p> <p>Why are common denominators required and in which operations are they needed?</p> <p>How can models be used in understanding addition and subtraction of fractions and mixed numbers?</p> <p>What are customary and metric units for measuring length, capacity, and weight/mass, and</p>	

involving multiplication of a fraction by a whole number		how are they applied to real world situations?
<p>Measurement & Data</p> <p>4.MD.1 Express measurement comparisons within a single system of measurement and record in a two-column chart within a single system of measurement; e.g., know that 1 ft. is 12 times as long as 1 in.</p> <p>Operations & Algebraic Thinking</p> <p>4.OA.3 Compose equations from information supplied in word problems using letters to represent unknowns and solve the word problems with addition and subtraction.</p> <p>Number & Base Ten</p> <p>4.NBT.4 Add and subtract two multi-digit whole numbers using the standard algorithm fluently (with speed and accuracy) without a calculator.</p> <p>Math Practice Standards</p> <p>1.Make sense of problems and persevere</p>	Acquisition	
	KNOWLEDGE	SKILLS
	<p><i>Students will know how to...</i></p> <p>Fractions on a number line and the size of a fractional piece in a visual representation can be compared and ordered</p> <p>Parts of a fractions strategies to add and subtract fractions</p> <p>Fractions can be decomposed</p> <p>How to add & subtract two multi-digit numbers using a standard algorithm.</p> <p>Measurement equivalents</p>	<p><i>Students will be skilled at...</i></p> <p>Compare fractions with like and unlike numerators and denominators.</p> <p>Recognize benchmark fractions.</p> <p>Order fractions by using fraction equivalents</p> <p>Decompose a fraction into a sum of fractions with the same denominator</p> <p>Add and subtract mixed numbers with like denominators</p> <p>Solve Real World problems involving fractions</p> <p>Convert Measurement Equivalents</p> <p>Add and Subtract two multi-digit numbers using a standard algorithm</p>

<p>in solving them</p> <p>3. Construct viable arguments and critique the reasoning of others</p> <p>4. Model with mathematics</p> <p>5. Use appropriate tools strategically</p>		
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Vocabulary	Instruction and Pacing	
benchmark fraction, compare, pairs, equivalent fractions, order, decompose, model, sum, numerator, denominator, join, mixed number, improper fraction, model, relate, simplify, solve, efficient, strategy, Convert, Measurement, Metric, Standard Unit	Addition of Fractions	1 ½ Weeks
	Subtraction of Fractions	1 ½ Weeks
	Multiplying Fractions	2 Weeks
	Measurement Comparisons	1 Week
	Fluency Standards – Add & Subtraction of Whole Numbers	Entire Unit
	Solve Add/Sub Word problems utilizing letters to represent unknowns	Entire Unit

Go Math Chapter 6
Go Math Chapter 7
Common Core Standards, New Jersey Model Curriculum
People's Common Core
Prodigy Math Game - website prodigymath.com
SuperTeacherWorksheet.com
<http://www.aamatematicas.com/>

Differentiation and Accommodations

Provide graphic organizers
Provide additional examples and opportunities for additional problems for repetition
Teach for mastery not test
Teaching concepts in different modalities
Adjust pace and homework assignments

ELL Modifications

- Use kid friendly language to paraphrase key math terms for Unit 3- product, factors, benchmark fraction, compare, pairs, equivalent fractions, order, decompose, model, sum, numerator, denominator, join, mixed number, improper fraction, Convert, Measurement, Metric, Standard Unit
- Use visuals- fractions and units of measurements
- Use anchor chart for multiplication algorithm and expanded algorithm for multiplication, add & subtract fractions, multiplying fractions , benchmark fractions
- Students able to have math reference sheets
- Total physical response- students physically represent fractions on a class number line to add & subtract

<ul style="list-style-type: none"> • Sequence orally and in writing how to add & subtract, multiply fractions using models and manipulative using key, technical vocabulary in expanded sentences. • Teach prerequisite skills • Use manipulatives- to show multiplication, , add & subtract fractions, multiplying fractions • Use geoboards/graph paper to show expanded multi-digit multiplication algorithm • Act out word problem

21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy
Instructional Strategies	<p>Fairfield Township Schools recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:</p> <ul style="list-style-type: none"> • Communicating with students • Using questioning and discussion techniques • Engaging students in learning • Using assessment in instruction • Demonstrating Flexibility and Responsiveness
Interdisciplinary Connections	ELA, Science, and Technology

Common Misconceptions	Proper Conceptions
Students have difficulty choosing the correct operation in word problems	Rereading and Comprehending is a key strategy to problem solving
Segmenting shapes and pictures can show compare fractions	Depending on the size of the drawings, comparing may not be accurate
The larger the denominator the larger the fraction.	A large denominator indicates smaller parts
Fractions are not numbers	Fractions are numbers representing values less than one or parts of sets
If denominators are even they are equivalent fractions	Equivalent fractions can be found using number lines to compare values
Students confuse the greater and less than sign when comparing fractions	The same rules apply with the greater and less than sign when comparing fractions as whole numbers.
Students have difficulty finding fractions close to $\frac{1}{2}$ or $\frac{1}{4}$	Number lines help us to benchmark the value and size of the fractions
When adding and subtracting fractions, students add denominators	Visual models or number lines help to see you are adding the parts (numerator) only to the whole which remains the same (denominator)

Performance Task

Your class has just won first prize in your school's math competition. For the celebration treat, each student will be allowed to make one cup of trail mix to eat.

1 .Choose 3 ingredients from the list below.

Coconut, raisins, marshmallows, chocolate chips, cereal and peanuts.

Write a recipe for 1 cup of trail mix you would like for yourself. Use fractions, but do not use equal amounts, of any ingredients.

2. Write a recipe for a team of 5 students which would be 5 cups of trailmix, using all ingredients, but different amounts of each ingredient.

Only 1 ingredient may be a whole number.

Rubric

3 - point answer

Student accurately determines different fractional amounts needed for an individual recipe, adds/subtracts fractions correctly and reasonably determines the amount of snack mix needed for the whole class.

2 - point answer

Student displays understanding of determining different fractional amounts needed for an individual recipe, but needs assistance to reasonably determine the amount of snack mix needed for the whole class. Work may not be shown and pictures incomplete.

1 - point answer

Student shows limited understanding of fractional values. Needs assistance in computation and visual representation.

0-point answer

Student shows no understanding of fractional values.

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Suggested Summative Assessment

Grade level developed Unit/Go Math Unit Tests

State Unit Benchmark Assessment/Performance Task