

## GRADE 5 UNIT 3 – OPERATIONS WITH MULTI-DIGIT WHOLE NUMBERS, DECIMALS AND FRACTIONS

<p><b>Established Goals:</b></p>		
<p><b>5.NBT.1</b> Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.</p> <p><b>5.NBT.7</b> Add, subtract, multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, the properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.</p>	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> <li>Describe the place value of numeral digits relative to both the place to the right and the place to the left (decimal to hundredths and whole numbers to billions).</li> <li>Add, subtract, multiply, and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; and, explain the reasoning used.</li> <li>Convert standard measurement units within the same system (e.g., centimeters to meters) to solve multi-step problems).</li> <li>Add and subtract fractions (including mixed numbers) with unlike denominators.</li> <li>Solve word problems involving adding or subtracting fractions including unlike denominators, and determine if the answer to the word problem is reasonable, using estimations with benchmark fractions.</li> <li>Interpret a fraction as a division of the numerator by the denominator; solve word problems where division of whole numbers leads to fractional or mixed number answers.</li> <li>Multiply multi-digit whole numbers using the standard algorithm.</li> </ul>	
<b>Meaning</b>		
<p><b>5.MD.1</b> Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</p> <p><b>5.NF.1</b> Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, <math>2/3 + 5/4 = 8/12 +</math></p>	<p style="text-align: center;"><b>ENDURING UNDERSTANDING</b></p> <ul style="list-style-type: none"> <li>Relate whole numbers with fractions</li> <li>Generate and model equivalent fractions</li> <li>Explain equivalence of fractions</li> <li>Interpret and show fractions on the number line</li> <li>Interpret addition of fractions</li> <li>Interpret subtractions of fractions</li> <li>Add mix numbers with like denominators</li> <li>Subtract mixed numbers with like denominators</li> <li>Solve word problems involving addition/subtraction of fractions with like denominators</li> <li>Multiply a fraction by a whole</li> </ul>	<p style="text-align: center;"><b>ESSENTIAL QUESTIONS</b></p> <ul style="list-style-type: none"> <li>How can you relate whole numbers with fractions?</li> <li>How can you generate and model equivalent fractions?</li> <li>What are the steps for adding fractions with like denominators?</li> <li>What are the steps for subtracting fractions with like denominators?</li> <li>How do you add mixed numbers with like denominators?</li> <li>What are the steps to solve word problems involving adding and subtraction of fractions with like denominators?</li> <li>How do you multiply a fraction with a whole number?</li> </ul>

<p>15/12 = 23/12.</p> <p><b>5.NF.2</b> Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result <math>2/5 + 1/2 = 3/7</math>, by observing that <math>3/7 &lt; 1/2</math></p> <p><b>5.NF.3</b> Interpret a fraction as division of the numerator by the denominator (<math>a/b = a \div b</math>). Solve word problems involving the division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g. by using visual fraction models or equations to represent the problem.</p> <p><b>5.NBT.5</b> Fluently multiply multi-digit whole numbers using the standard algorithm.</p>	<p>number</p> <ul style="list-style-type: none"> <li>Solve word problems involving multiplication of a fraction by a whole number</li> </ul>	
	<b>Acquisition</b>	
	KNOWLEDGE	SKILLS
	<i>Students will know how to...</i>	<i>Students will be skilled at...</i>
<ul style="list-style-type: none"> <li>Interpret and add fractions using a number line.</li> <li>Explain how to estimate fractional amounts of objects.</li> <li>Use models and computational procedures to add fractions with like denominators.</li> <li>Use models and computational procedures to subtract fractions with like denominators.</li> <li>Find equivalent fractions with the LCD to add/sub fractions with unlike denominators and give the answer in simplest form.</li> <li>Draw a picture and write an equivalent equation to write the problem.</li> <li>Estimate sums and differences of fractions and mixed numbers by rounding to the nearest whole number.</li> <li>Use models and computational procedures to add mixed numbers.</li> <li>Multiply a fraction by a whole number.</li> <li>Give the product of two fractions</li> </ul>	<ul style="list-style-type: none"> <li>Using a number line to add fractions.</li> <li>Finding the LCD of fractions and add/subtract fractions with unlike denominators.</li> <li>Using models and pictures to show understanding of add/sub equivalent equations</li> <li>Using estimation of sums/differences to round mixed numbers</li> <li>Multiplying a whole number by a fraction.</li> </ul>	

Vocabulary	Instruction and Pacing	
benchmark fraction	<b>Adding/Subtracting Fractions</b>	<b>2 weeks</b>
	<b>Adding/Subtracting Mixed Numbers</b>	<b>2 weeks</b>

least common denominator mixed number numerator denominator	<b>Multiplying Decimals</b>	<b>2 weeks</b>
	<b>Place Value Relationships</b>	<b>1 week</b>
	<b>Multiplication</b>	<b>1 week</b>
<b>Resources</b>		
Common Core Standards, New Jersey Model Curriculum Envisions Math Program Suggested Topics <ul style="list-style-type: none"> <li>• Topic : 9 Adding and Subtracting Fractions</li> <li>• Topic 10 Adding and Subtracting Mixed Numbers</li> <li>• Topic 11 Multiplying and Dividing Fractions and Mixed Numbers</li> </ul>		
<b>Differentiation and Accommodations</b>		
Provide graphic organizers Manipulatives Provide additional examples and opportunities for additional problems for repetition Provide tutoring opportunities Provide retesting opportunities after remediation (up to teacher and district discretion) Teach for mastery not test Teaching concepts in different modalities Adjust pace and homework assignments		
<b>ELL Modifications</b>		
<ul style="list-style-type: none"> <li>•</li> </ul>		
<b>21<sup>st</sup> Century Skills</b>	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy	
<b>Instructional Strategies</b>	Fairfield Township School 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: <ul style="list-style-type: none"> <li>• Communicating with students</li> <li>• Using questioning and discussion techniques</li> <li>• Engaging students in learning</li> <li>• Using assessment in instruction</li> <li>• Demonstrating Flexibility and Responsiveness</li> </ul>	
<b>Interdisciplinary Connections</b>	Science, Technology, ELA	
<b>Common Misconceptions</b>		<b>Proper Conceptions</b>
Students often mix models when adding, subtracting or		Division will be used in cross multiplication. Therefore, the number will be

comparing fractions. Students will use a circle for thirds and a rectangle for fourths when comparing fractions with thirds and fourths. Remind students that the representations need to be from the same whole models with the same shape and size.

Students may believe that multiplication always results in a larger number. Using models when multiplying with fractions will enable students to see that the results will be smaller.

Additionally, students may believe that division always results in a smaller number. Using models when dividing with fractions will enable students to see that the results will be larger.

smaller.

Multiplication is the opposite of division, so keep, change, and flip the numbers to get the answer.

### Performance Task

Jared and Elise were playing a video game and trying to get all of the treasure. Jared got  $\frac{1}{3}$  of the treasure. Elise got  $\frac{5}{9}$  of the treasure.

- Together Jared and Elise got what fraction of the treasure?
- What fraction of the treasure is left?
- Who got more of the treasure so far, Jared or Elise? How much more?

### Rubric

1 point for each correct bullet

## ASSESSMENTS

### Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

### Suggested Summative Assessment

Grade level developed Unit/Envisions Topic Tests

