

Unit Title: “Bits and Pieces II”

Course: Middle School Mathematics

Subject Area: Mathematics

Time Frame: 20 days

Standards

Middle School Mathematics Standards	Sunshine State Standards Benchmarks	NCEE New Standards
<p>The student will:</p> <p>6.1 Estimate sums and differences of fractions and decimals.</p> <p>6.2 Add and subtract fractions.</p> <p>6.3 Use area to model multiplication of fractions.</p> <p>6.4 Add, subtract, multiply, and divide with decimals.</p>	<p>MA.A.3.3.1 The student understands and explain the effects of addition, subtraction, multiplication, and division on whole numbers, fractions, including mixed numbers, and decimals, including the inverse relationships of positive and negative numbers.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none">• Knows the effects of the four basic operations on whole numbers, fractions, mixed numbers, and decimals.• Uses models or pictures to show the effects of addition, subtraction, multiplication, and division, on whole numbers, decimals, fractions, and mixed numbers.• Knows and applies the commutative, associative, and distributive properties in the addition and multiplication of rational numbers.• Uses concrete models and real-world examples to explore the inverse	<p>The student:</p> <p>M1a Consistently and accurately adds, subtracts, multiplies, and divides rational numbers using appropriate methods.</p> <p>M6a Computes accurately with arithmetic operations on rational numbers.</p> <p>M6b Knows and uses the correct order of operations for arithmetic computations.</p> <p>M6h Sets up and solves equations symbolically and graphically.</p>

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	<p>relationships of positive and negative numbers.</p> <p>MA.A.3.3.2 The student selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none"> • Knows the appropriate operations to solve real-world problems involving whole numbers, decimals, and fractions. • Solves real-world problems involving whole numbers, fractions, decimals, and common percents using one or two-step problems. • Applies order of operations when solving problems. • Knows proportional relationships and describes such relationships in words, tables, or graphs. <p>MA.A.3.3.3 The student adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and</p>	

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	<p>calculators.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none"> • Solves one- or two-step real-world problems involving whole numbers and decimals using appropriate methods of computation. • Justifies the choice of method for calculations, such as mental computation, concrete materials, algorithms, or calculators. 	

Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Student will understand</p> <ul style="list-style-type: none"> Algorithms for computation of rational numbers results from ideas and strategies generated from working with basic concepts of fractions, decimals, and percents. 	<ul style="list-style-type: none"> In what kind of situations are percents, rather than specific quantities, sufficient information? How is percent like a comparison? How are percents like fractions and decimals? How are they different? What kind of models can be developed to show computation with fractions and decimals? What algorithms can be developed from these models? How does the concept of multiplication of whole numbers extend to multiplication of fractions? To multiplication of numbers in decimal form? How can estimation skills and algorithm skills reinforce one another? 	<p>Students will know</p> <ul style="list-style-type: none"> Key terms (e.g., decimal, denominator, equivalent fractions, fraction, numerator, percent). <p>Students will be able to</p> <ul style="list-style-type: none"> Perform computations involving percents. Perform mathematical operations with fractions. Perform mathematical operations with decimals. Develop and apply algorithms for performing calculations with fractions, decimals, and percents.

Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> Using Percents Typical situations of discounts, taxes, and tips help students think about taking a percent of a number. More About Percents Students are asked to think about percents in situations in which the number of objects is greater than or fewer than 100. Students use percents to help construct and make sense of circle graphs. Estimating with fractions and decimals 	<p>Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test</p>	<p>Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.</p>

<p>Students play two games in which they use benchmarks to help them estimate sums of fractions and decimals.</p> <ul style="list-style-type: none">• Adding and Subtracting Fractions Students are prepared for figuring out the algorithms for adding and subtracting with fractions. Students will <i>invent</i> ways of adding fractions that the teacher and the class can help make more explicit and efficient.• Finding areas and Other Products The area model is used to help students make sense of multiplication of fractions. Students are focused on developing algorithms for multiplying fractions.• Computing with decimals A game and real-world situations are present for students to experience computing with decimals. Students are challenged to make sense of the decimal points and its role in addition and multiplication.		
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