

<b>Grade: 4</b> <b>Subject:</b> Mathematics	<b>Unit 9: Fractions</b>
<b>Big Idea/Rationale:</b>	<ul style="list-style-type: none"> <li>• This unit builds upon the concept of fractions. The activities in this unit help students gain a conceptual and practical understanding of the parts of fractions, relationship between fractions, and operations with fractions. Students are expected to apply their understanding of fractions to numeric calculations and real world problem solving situations, including comparisons, unit pricing and probability.</li> </ul>
<b>Enduring Understanding (Mastery Objective):</b>	<p>Students will understand that:</p> <ul style="list-style-type: none"> <li>• A fraction describes the division of a whole region into equal parts and can be interpreted in more than one way.</li> <li>• The same fractional amount can be represented by an infinite set of different but equivalent fractions.</li> <li>• Fractional amount greater than 1 can be represented using a whole number and a fraction.</li> <li>• To add or subtract fractions with like denominators, add or subtract the numerators and write the sum over the common denominators.</li> <li>• To add with unlike denominators, change to an equivalent fractions with denominators.</li> <li>• Multiplying a fraction and a whole number is commutative. Multiply the numerator by the whole number and make that product the “new” numerator</li> </ul>
<b>Essential Questions (Instructional Objective):</b>	<ul style="list-style-type: none"> <li>• How can you name and show parts of a region?</li> <li>• How can you estimate?</li> <li>• How can you find two fractions that name the same part of a whole?</li> <li>• How can you name whole regions and part of regions?</li> <li>• How can you compare and order?</li> <li>• How can you add and subtract fractions with like denominators?</li> <li>• How can you add and subtract fractions with unlike denominators?</li> <li>• How can you multiply fractions by whole numbers?</li> <li>• How can you simplify fractions?</li> </ul>
<b>Content (Subject Matter &amp; Learning Objectives):</b>	<ul style="list-style-type: none"> <li>• Recognize real-world uses of fractions.</li> <li>• Understand the functions of numerators and denominators.</li> <li>• Find pairs of like fractions with a sum of 1.</li> <li>• Understand that the size of the denominator tells the number of equal parts in 1 whole.</li> <li>• Compare unit and non-unit fractions.</li> <li>• Understand that the size of a fraction depends on the size of the whole.</li> <li>• Identify the characteristics of circles.</li> <li>• Relate the diameter and circumference of circles.</li> <li>• Identify fractional parts of a circle.</li> </ul>

	<ul style="list-style-type: none"> <li>• Interpret the meaning of fractional parts of a circle graph.</li> <li>• Understand addition and subtraction of fractions with like denominators.</li> <li>• Understand mixed numbers and improper fractions.</li> <li>• Convert between improper fractions and mixed numbers.</li> <li>• Understand addition and subtraction with improper fractions and mixed numbers.</li> <li>• Review fractions.</li> <li>• Understand how to find equivalent fractions.</li> <li>• Learn to simplify a fraction by dividing the numerator and denominator by the same number.</li> <li>• Understand how to find a common denominator of two fractions. Add fractions with unlike denominators.</li> <li>• Understand how to compare, add, and subtract fractions with unlike denominators.</li> <li>• Consolidate understanding of comparing, adding, and subtracting fractions with like denominators.</li> <li>• Understand the meaning of probability and how to determine the probability of a given outcome.</li> <li>• Understand how probability relates to fractions.</li> <li>• Display data in a line plot and describe its shape.</li> <li>• Identify the median, mode, and range of line plot data.</li> <li>• Understand multiplication of whole numbers and fractions.</li> <li>• Understand how to find fractions of whole numbers.</li> <li>• Understand multiplication comparisons.</li> <li>• Use whole number and fraction language to write and say comparisons.</li> <li>• Understand the number-line for fractions.</li> <li>• Review understanding of fractions.</li> <li>• Solve a variety of problems using mathematical concepts and skills.</li> </ul>
<p><b>Standards</b></p>	<ul style="list-style-type: none"> <li>• <b>4.NF.A.1:</b> Explain why a fraction <math>a/b</math> is equivalent to a fraction <math>(n \times a)/(n \times b)</math> 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.</li> <li>• <b>4.NF.A.2:</b> 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 <math>\frac{1}{2}</math>. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols <math>&gt;</math>, <math>=</math>, <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.</li> <li>• <b>4.NF.B.3:</b> Understand a fraction <math>a/b</math> with <math>a &gt; 1</math> as a sum of fractions <math>1/b</math>.</li> <li>• <b>4.NF.B.3.A:</b> Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</li> <li>• <b>4.NF.B.3.B:</b> Decompose a fraction into a sum of fractions with the same</li> </ul>

	<p>denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.</p> <ul style="list-style-type: none"> <li>• <b>4.NF.B.3.C:</b> 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.</li> <li>• <b>4.NF.B.3.D:</b> Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using fraction models, and equations to represent the problem.</li> <li>• <b>4.NF.B.4.A:</b> Understand a fraction <math>a/b</math> as a multiple of <math>1/b</math>.</li> <li>• <b>4.NF.B.4.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.</li> <li>• <b>4.NF.B.4.C:</b> 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.</li> <li>• <b>4.MD.A.2:</b> 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 measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</li> <li>• <b>4.MD.B.4:</b> Make a line plot to display a data set of measurements in fractions of a unit (<math>1/2, 1/4, 1/8</math>). Solve problems involving addition and subtraction of fractions by using information presented in line plots.</li> <li>• <b>Mathematical Practices</b></li> </ul>
<p><b>Materials and Resources</b></p>	<ul style="list-style-type: none"> <li>• Math Expressions, Student Journals, Manipulatives, Math themed literature, BrainPop, IXL Mathematics</li> </ul>