

## Core Content

<b>Cluster Title: Use equivalent fractions as a strategy to add and subtract fractions.</b>
<b>Standard 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, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$ . (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$ .)
<b>MASTERY Patterns of Reasoning:</b>
<p><b>Conceptual:</b>                  Students will recognize that fractions with unlike denominators cannot be added or subtracted.                  Students will recognize when one or both fractions in may need to be converted to equivalent fractions with like denominators.</p> <p><b>Procedural:</b>                  Students can convert fractions to equivalent fractions with like denominators as needed.                  Students can find the sum or difference of fractions with like denominators.                  Students can convert sums and differences to equivalent fractions as appropriate. (Note: Not all fractions need to be converted to lowest terms to be considered correct. The form of the fraction will be dependent upon the problem being asked.)</p> <p><b>Representational:</b>                  Students can create concrete and pictorial models to illustrate addition and subtraction of fractions with unlike denominators and equivalent fractions.                  Students can connect models, including set models, area models, and linear models, to numerical representations.</p>

## Supports for Teachers

<b>Critical Background Knowledge</b>
<p><b>Conceptual:</b>                  Students will understand a proper fraction as a fraction less than 1.                  Students will understand an improper fraction as a fraction greater than 1.                  Students will understand mixed numbers as a whole number and a fraction or whole numbers and parts of a whole.                  Students will understand and recognize equivalent fractions.                  Students will understand that all addition and subtraction of fractions requires like denominators.</p>

<p><b>Procedural:</b>                  Students can demonstrate how to generate equivalent fractions.                  Students can rename improper fractions and mixed numbers.                  Students can add and subtract fractions and mixed numbers with like denominators.</p> <p><b>Representational:</b>                  Students can represent fractions with models, including set models, area models, and linear models, and connect them to numerical representations.                  Students can represent equivalent fractions with models and connect them to numerical representations.</p>	
<p><b>Academic Vocabulary and Notation</b>                  proper fraction, improper fraction, mixed numbers, numerator, denominator, like denominator, unlike denominator, common denominators, equivalent fractions, number lines, fraction bar, sum, difference</p>	
<p><b>Instructional Strategies Used</b></p> <ol style="list-style-type: none"> <li>Using a variety of manipulatives (e.g., fraction strips, area models, pattern blocks, number lines), model converting pieces to equivalent fractions. Connect manipulative models with numerical representations.</li> <li>Help children to transition to a pictorial representation from the manipulatives to show how fractions are converted to equivalent forms.</li> <li>Teach the algorithm for converting fractions to like denominators.</li> <li>Use models to find sums or differences of fractions with unlike denominators by converting to like denominators.</li> <li>Using the concept of multiples, rewrite fractions in equivalent form to find common denominators.</li> <li>Use a multiplication table to find equivalent fractions.</li> </ol>	<p><b>Resources Used</b></p> <p>National Library of Virtual Manipulatives:  <a href="http://nlvm.usu.edu/en/nav/frames_a_sid_106_g_3_t_1.html?from=grade_g_3.html">http://nlvm.usu.edu/en/nav/frames_a_sid_106_g_3_t_1.html?from=grade_g_3.html</a></p> <p><a href="http://visualfractions.com/AddUnlike/addunlike.html">http://visualfractions.com/AddUnlike/addunlike.html</a></p> <p>Extensions:  <a href="http://www.k-5mathteachingresources.com/supportfiles/magicsquaresadditionfractions.pdf">http://www.k-5mathteachingresources.com/supportfiles/magicsquaresadditionfractions.pdf</a></p> <p>Equivalent Fractions:  <a href="http://illuminations.nctm.org/ActivityDetail.aspx?ID=80">http://illuminations.nctm.org/ActivityDetail.aspx?ID=80</a></p>

		<p>Fraction Game:  <a href="http://illuminations.nctm.org/ActivityDetail.aspx?ID=18">http://illuminations.nctm.org/ActivityDetail.aspx?ID=18</a></p>
Assessment Tasks Used		
<p><b>Skill-Based Task:</b></p> $3\frac{3}{12} - \frac{1}{6} = 3\frac{3}{12} - \frac{2}{12} = 3\frac{1}{12}$	<p><b>Problem Task:</b></p> <p>There is one quart of chocolate milk in the refrigerator. Michael drinks 1/2 of the quart. Nancy drinks 1/3 of the quart. How much chocolate milk did Michael and Nancy drink altogether? How much of the original quart is left?</p> <p>John brought a pizza to a party. His friend Sally also brought a pizza to the party. At the end of the party, John had 1/4 of his pizza left. Sally had 3/8 of her pizza left. How much pizza was left at the end of the party? How much pizza was eaten?</p>	