

## UNIT E Use unit fractions to compose and decompose fractions with models and symbols

Grade	Curriculum Expectations
1	<ul style="list-style-type: none"> <li>divide whole objects into parts and identify and describe, through investigation, equal-sized parts of the whole, using fractional names (e.g., halves; fourths or quarters).</li> </ul>
2	<ul style="list-style-type: none"> <li>determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts (e.g., a paper plate divided into fourths has larger parts than a paper plate divided into eighths) (Sample problem: Use paper squares to show which is bigger, one half of a square or one fourth of a square.).</li> </ul>
2	<ul style="list-style-type: none"> <li>regroup fractional parts into wholes, using concrete materials (e.g., combine nine fourths to form two wholes and one fourth);</li> </ul>
3	<ul style="list-style-type: none"> <li>divide whole objects and sets of objects into equal parts, and identify the parts using fractional names (e.g., one half; three thirds; two fourths or two quarters), without using numbers in standard fractional notation.</li> </ul>
4	<ul style="list-style-type: none"> <li>represent fractions using concrete materials, words, and standard fractional notation, and explain the meaning of the denominator as the number of the fractional parts of a whole or a set, and the numerator as the number of fractional parts being considered;</li> </ul>
4	<ul style="list-style-type: none"> <li>compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional parts (e.g., <math>\frac{4}{5}</math> is greater than <math>\frac{3}{5}</math> because there are more parts in <math>\frac{4}{5}</math>; <math>\frac{1}{4}</math> is greater than <math>\frac{1}{5}</math> because the size of the part is larger in <math>\frac{1}{4}</math>);</li> </ul>
4	<ul style="list-style-type: none"> <li>compare fractions to the benchmarks of 0, <math>\frac{1}{2}</math> and 1 (e.g., <math>\frac{1}{8}</math> is closer to 0 than <math>\frac{1}{2}</math>; <math>\frac{3}{5}</math> is more than <math>\frac{1}{2}</math>);</li> </ul>
4	<ul style="list-style-type: none"> <li>demonstrate and explain the relationship between equivalent fractions, using concrete materials (e.g., fraction circles, fraction strips, pattern blocks) and drawings;</li> </ul>
4	<ul style="list-style-type: none"> <li>count forward by halves, thirds, fourths, and tenths to beyond one whole, using concrete materials and number lines (e.g., use fraction circles to count fourths: "One fourth, two fourths, three fourths, four fourths, five fourths, six fourths, ...");</li> </ul>
4	<ul style="list-style-type: none"> <li>determine and explain, through investigation, the relationship between fractions (i.e., halves, fifths, tenths) and decimals to tenths, using a variety of tools (e.g., concrete materials, drawings, calculators) and strategies (e.g., decompose <math>\frac{2}{5}</math> into <math>\frac{4}{10}</math> by dividing each fifth into two equal parts to show that <math>\frac{2}{5}</math> can be represented as 0.4)</li> </ul>
5	<ul style="list-style-type: none"> <li>represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools (e.g., fraction circles, Cuisenaire rods, number lines) and using standard fractional notation;</li> </ul>
5	<ul style="list-style-type: none"> <li>demonstrate and explain the concept of equivalent fractions, using concrete materials (e.g., use fraction strips to show that <math>\frac{3}{4}</math> is equal to <math>\frac{9}{12}</math>);</li> </ul>

<b>5</b>	<ul style="list-style-type: none"> <li>determine and explain, through investigation using concrete materials, drawings, and calculators, the relationship between fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100) and their equivalent decimal forms (e.g., use a 10 x 10 grid to show that <math>\frac{2}{5} = \frac{40}{100}</math>, which can also be represented as 0.4).</li> </ul>
<b>6</b>	<ul style="list-style-type: none"> <li>represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation;</li> </ul>
<b>6</b>	<ul style="list-style-type: none"> <li>determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions, decimal numbers, and percents.</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>divide whole numbers by simple fractions and by decimal numbers to hundredths, using concrete materials;</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals;</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>add and subtract fractions with simple like and unlike denominators, using a variety of tools and algorithms;</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>demonstrate, using concrete materials, the relationship between the repeated addition of fractions and the multiplication of that fraction by a whole number;</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>determine, through investigation, the relationships among fractions, decimals, percents, and ratios;</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>represent, compare, and order rational numbers;</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>translate between equivalent forms of a number;</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution;</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>represent the multiplication and division of fractions, using a variety of tools and strategies;</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>solve problems involving addition, subtraction, multiplication, and division with simple fractions.</li> </ul>
<b>9D</b>	<ul style="list-style-type: none"> <li>simplify numerical expressions involving integers and rational numbers, with and without the use of technology;</li> </ul>
<b>9D</b>	<ul style="list-style-type: none"> <li>solve problems requiring the manipulation of expressions arising from applications of percent, ratio, rate, and proportion;</li> </ul>
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<b>9D</b>	<ul style="list-style-type: none"> <li>identify, through investigation, properties of the slopes of lines and line segments (e.g., direction, positive or negative rate of change, steepness, parallelism, perpendicularity), using graphing technology to facilitate investigations, where appropriate</li> </ul>
<b>9P</b>	<ul style="list-style-type: none"> <li>solve problems requiring the expression of percents, fractions, and decimals in their equivalent forms</li> </ul>