

# Unit 5: Comparing Fractions and Understanding Decimal Notation

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| <b>Unit #:</b> | APSDO-00017492 | <b>Duration:</b> | 25.0 Day(s) | <b>Date(s)</b> |  |
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| <b>Grade(s)</b>   | 4   |  |  |  |  |
| <b>Subject(s)</b> | Mathematics   |  |  |  |  |

## Unit Focus

In this unit, students will make equivalent fractions and compare fractions with and without models. They will compare fractions with different numerators and denominators by using benchmark fractions or by creating fractions with common denominators. Students will use symbols (<, >, or =) to compare fractions, and decimals to tenths and hundredths. They will order fractions from least to greatest, add fractions with denominators of tenths and hundredths, and write fractions (tenths and hundredths) as decimals and vice versa. Students will identify and compare mixed numbers and/or decimals on a number line. They will add money (dollars and coins) and write the value as a decimal and a fraction. Students will solve word problems using equivalent fractions, decimals, and money. Primary instructional materials for this unit include On Core and Everyday Mathematics.

## Stage 1: Desired Results - Key Understandings

| Standard(s)  | Transfer  |
|--|---|
| <p><b>Common Core</b><br/><i>Mathematics: 4</i></p> <ul style="list-style-type: none"> <li>• 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> </ul> | <p><b>T1</b> (T10) Describe, classify, and compare objects/numbers and sets of objects/numbers.<br/> <b>T2</b> (T11) Use descriptions to clarify and/or solve problems.<br/> <b>T3</b> (T12) Compose and decompose numbers to establish relationships and perform operations.<br/> <b>T4</b> (T13) Move from one representation to another without changing the quantity.<br/> <b>T5</b> (T50) Based on an understanding of any problem, initiate a plan, execute it and evaluate the reasonableness of the solution.<br/> <b>T6</b> (T53) Articulate how mathematical concepts relate to one another in the context of a problem or in the theoretical sense.<br/> <b>T7</b> (T51) Examine alternate methods to accurately and efficiently solve problems.</p> |

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| <p><i>CCSS.MATH.CONTENT.4.NF.A.1</i></p> <ul style="list-style-type: none"> <li>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>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.</li> </ul> <p><i>CCSS.MATH.CONTENT.4.NF.A.2</i></p> <ul style="list-style-type: none"> <li>Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express <math>\frac{3}{10}</math> as <math>\frac{30}{100}</math>, and add <math>\frac{3}{10} + \frac{4}{100} = \frac{34}{100}</math>.</li> </ul> <p><i>CCSS.MATH.CONTENT.4.NF.C.5</i></p> <ul style="list-style-type: none"> <li>Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as <math>\frac{62}{100}</math>; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</li> </ul> <p><i>CCSS.MATH.CONTENT.4.NF.C.6</i></p> <ul style="list-style-type: none"> <li>Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual model. <i>CCSS.MATH.CONTENT.4.NF.C.7</i></li> </ul> | <p><b>T8</b> (T52) Use appropriate tools strategically to deepen understanding of mathematical concepts.</p>  |  |
|   | <b>Meaning</b>  |  |
|   | <b>Understanding(s)</b>   | <b>Essential Question(s)</b>   |
|   | <p><b>U1</b> (U100) Objects and sets of objects can be given numerical descriptions.<br/> <b>U2</b> (U101) When objects/numbers are combined, mathematical rules guarantee the resulting quantity.<br/> <b>U3</b> (U102) The value of a number is quantified by the placement of its digits.<br/> <b>U4</b> (U103) The same value can be represented in multiple ways.<br/> <b>U5</b> (U106) A limited set of symbols can be used to represent numerical descriptions and relationships.<br/> <b>U6</b> (U550) Attention to detail, such as specifying units of measure and labeling, leads to clarity in expressing mathematical information.<br/> <b>U7</b> (U502) Effective problem solvers identify and apply an appropriate model, tool, or strategy.<br/> <b>U8</b> (U562) Mastery of basic facts and rules maximizes conceptual and procedural fluency.<br/> <b>U9</b> (U560) Patterns and structures are characterized by consistent relationships.</p> | <p><b>Q1</b> (Q100) How do I describe this object/number or set of objects/numbers?<br/> <b>Q2</b> (Q101) How do I classify/compare objects or sets of objects?<br/> <b>Q3</b> (Q103) What is the value of this number/relationship and how can I represent it in different ways?<br/> <b>Q4</b> (Q550) Did I use clear language (symbols, labels, terms, units of measure and significant digits) to explain my reasoning to others?<br/> <b>Q5</b> (Q563) How does being fluent with basic facts and rules help me solve a complex problem?<br/> <b>Q6</b> (Q561) How does understanding the pattern/structure help me solve the problem?<br/> <b>Q7</b> (Q505) Is my answer correct? OR Does my solution make sense?<br/> <b>Q8</b> (Q501) What do I picture/visualize when I look at this problem?</p> |
|   | <b>Acquisition of Knowledge and Skill</b>   |  |
| <b>Knowledge</b>  | <b>Skill(s)</b>   |  |
|   | <p><b>S1</b></p> <p>Make an equivalent fraction and explain why the two fractions are equivalent with and without models</p> <p><b>S2</b></p>   |  |

Compare fractions with different numerators and denominators, either by using benchmark fractions ( $\frac{1}{2}$ ) or by creating fractions with common denominators

**S3**

Use symbols  $<$ ,  $>$ , or  $=$  to compare fractions with and without a visual model

**S4**

Solve word problems using equivalent fractions, decimals, and money

**S5**

Write fractions (tenths and hundredths) as decimals

**S6**

Add fractions with denominators of tenths and hundredths

**S7**

Rewrite decimals (tenths/hundredths) as fractions

**S8**

Use  $<$ ,  $>$ , or  $=$  to compare decimals (tenths and hundredths)

**S9**

Order fractions from least to greatest

**S10**

Identify and compare mixed numbers and/or a decimal on a number line

**S11**

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|  |  | Add dollars and coins and write the value of the money as a decimal and fraction in terms of dollars |
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