

Unit 6

Decimal Fractions

Grade 4

Math

Description:

In unit 6, students find equivalent fractions to change fractions with a denominator of 10 to a denominator of 100. They recognize that decimal place value units are special fraction units: 0.7, 7 tenths, and $\frac{7}{10}$ are different ways to represent the same number. Students understand decimal places on the place value chart. They use their understanding to read and write decimal numbers to hundredths.

Students add and subtract tenths plus hundredths using models and visual representations. They add and subtract fractions with unlike units, for example, 3 tenths + 4 hundredths = 30 hundredths + 4 hundredths. They compare decimals using the symbols $>$, $<$ and $=$. Students apply their understanding of decimal fractions to solve measurement word problems.

Louisiana Student Standards for Mathematics (LSSM)

Number and Operations-Fractions	
Understand decimal notations for fractions, and compare decimal fractions.	
4.NF.C.5	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. <i>For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$.</i>
4.NF.C.6	Use decimal notation for fractions with denominators 10 or 100. <i>For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram; represent $\frac{62}{100}$ of a dollar as \$0.62.</i>
4.NF.C.7	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 $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.
Extend understanding of fraction equivalence and ordering.	
4.NF.1	Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ 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. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

4.NF.3c

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.
(Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

Measurement and Data

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit

4.MD.A.1

Know relative sizes of measurement units within one system of units including ft, in, km, m, cm; kg, g; lb., oz.; l, ml; hr., min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. (Conversions are limited to one-step conversions.) Record measurement equivalents in a two-column table. For example, know that 1 ft. is 12 times as long as 1 in. Express length of a 4 ft. snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),

4.MD.2

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving whole numbers and/or simple fractions (addition and subtraction of fractions with like denominators and multiplying a fraction times a fraction or a whole number), 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.

Enduring Understandings:

- Fractions can be expressed as decimals, and decimals can be expressed as fractions.
- Decimals can be represented visually and in written form.
- Decimals are a part of the base ten system.
- Comparisons of two decimals are only valid when the two decimals refer to the same whole

Essential Questions:

- What are the characteristics of a decimal fraction?
- How can I model decimals fractions using the base-ten and place value system?
- What patterns occur on a number line made up of decimal fractions?
- When we compare two decimals, how do we know which has a greater value?
- What is the relationship between fractions with denominators of 10 and denominators of 100?
- How can I represent a fraction with a denominator of 10 on a hundreds grid?

- How can I use what I know about decimal fractions to solve problems involving metric measurement?