

Core Content

Cluster Title: Understand decimal notation for fractions, and compare decimal fractions.

Standard 6: Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

MASTERY Patterns of Reasoning:

Conceptual:

Students will understand that decimals are special types of fractions that can be written with a denominator that is equal to 10 or 100 (at this grade level).

Students will understand that decimals represent parts of a whole.

Students will understand that decimals can be decomposed using expanded form (e.g., $0.32 = 0.3 + 0.02 = \frac{3}{10} + \frac{2}{100}$).

Students will understand that the number of digits to the right of the decimal point indicates the number of zeros in the denominator, so that $0.70 = \frac{70}{100}$.

Procedural:

Students can read decimals in word form and write decimals in word form.

Students can write decimals using digits and write the equivalent fraction.

Students can place decimals on a number line using background knowledge of fractions as a guide for placement.

Representational:

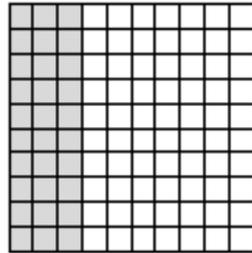
Students can use models such as 10 x 10 grids or base ten blocks to represent decimals.

Students can use place value charts to display decimals.

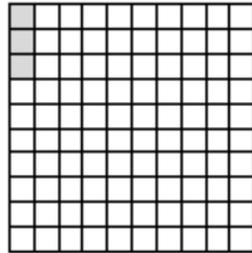
Supports for Teachers

Critical Background Knowledge	
<p>Conceptual: Students will understand that the value of each place is ten times the value of the place to its immediate right. Students will understand that fractions represent parts of a whole. Students will understand that fractions have many names in the form of equivalent fractions (e.g., $\frac{3}{4} = \frac{6}{8} = \frac{75}{100}$ or $\frac{3}{10} = \frac{30}{100}$).</p> <p>Procedural: Students can place unit fractions on a number line. Students can form equivalent fractions. Students can write whole numbers using digits, words, and expanded form.</p> <p>Representational: Students can use place value charts, illustrations or manipulatives to represent whole numbers.</p>	
Academic Vocabulary and Notation	
<p>tenths, hundredths, expanded form, decimal, equivalent fraction, decompose</p>	
Instructional Strategies Used	Resources Used
<ol style="list-style-type: none"> 1. Link to students’ background knowledge of place value where the value of each place is ten times the value of the place to its immediate right in order to extend the pattern to decimal place value. 2. When comparing two decimals, remind students that, as in comparing two fractions, the decimals need to refer to the same whole. Allow students to use visual models to compare two decimals. They can shade in a representation of each decimal on a 10 x 10 grid. The 10 x 10 grid is defined as one whole. The decimal must relate to the whole. 	

For example:



0.3



0.03

3. Call out decimals to the class. Have students write the decimal using digits and words. Then have them convert the decimal to its equivalent fraction.
4. Create a number line using a length of rope or string. Make sure the length spans 3 to 5 feet. The line begins at zero and ends at 1. Write unit fractions on index cards and pass out to students. Ask students to place the unit fractions on the length of rope and explain how they know each is in the correct place. Discuss how decimals relate to fractions. Supply students with index cards with decimals or equivalent decimal fractions on them. Follow the same procedure, placing the cards on the length of rope with an explanation.

Assessment Tasks Used

Skill-Based Task:

Give a length of adding machine tape to each student. The tape covers only the span of 0-1. Offer a variety of decimals and decimal fraction to place on their individual number line.

Problem Task:

Supply the students with a decimal fraction such as 67/100. Have them write a letter using pictures, numbers, and words to a student from a different class, explaining how to convert to a decimal.