

Core Content

Cluster Title: Extend understanding of fraction equivalence and ordering.

Standard 2: 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 $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

MASTERY Patterns of Reasoning:

Note: Expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

Conceptual:

Students will understand that fractions represent a single quantity that can be compared.

Students will understand benchmark fractions ($\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{4}$).

Students will understand that fractions can be compared by attending to either numerators, denominators, or benchmark fractions.

Procedural:

Students can identify how fractional pairs can be changed to have equivalent denominators to determine $>$, $=$, $<$.

Students can identify how fractional pairs can be changed to have equivalent numerators to determine $>$, $=$, $<$.

Students can use benchmark fractions to determine $>$, $=$, $<$ of various fraction pairs.

Representational:

Students can change fractional pairs using area model, number lines, set models, pattern blocks and other manipulatives or pictorial representations in order to compare two fractions.

Supports for Teachers

Critical Background Knowledge**Conceptual:**

Students will understand fractions as equal parts of a whole.

Students will understand that the larger the denominator, the smaller the size of the unit.

Students will understand that numerators name the portion out of the whole being considered.

<p>Students will understand comparisons of fractions are only valid when they refer to the same size whole. Students will understand equivalence in fractions. Students will understand the symbols $>$, $=$, $<$.</p> <p>Procedural: Students can place benchmark fractions on a number line. Students can identify simple equivalent fractions.</p> <p>Representational: Students can use models, manipulative and pictures to construct simple fractions and their equivalents (e.g., $1/2 = 2/4$, $4/6 = 2/3$).</p>		
<p>Academic Vocabulary and Notation</p> <p>benchmark fractions (thirds, halves, fourths), numerator, denominator, $>$, $=$, $<$, equivalent fractions</p>		
<p>Instructional Strategies Used</p> <p>Use pattern blocks to solve the following problems:</p> <ol style="list-style-type: none"> 1. If a red trapezoid is one whole, which block shows $1/3$? 2. If the blue rhombus is $1/3$, which block shows one whole? 3. If the red trapezoid is one whole, which block shows $2/3$? <p>Use a variety of models such as fraction strips, Cuisenaire rods, number lines, etc. to represent and compare fractions of a common whole.</p> <p>Use individual shapes or objects to create sets that can be used to match fractional parts. Emphasize that comparisons cannot happen unless the fractions are part of the same whole.</p>		<p>Resources Used</p> <p>National Library of Virtual Manipulatives—comparing fractions: http://nlvm.usu.edu/en/nav/frames_asid_159_g_2_t_1.html?from=category_g_2_t_1.html</p> <p>NCTM illuminations—comparing fractions, eggsactly with fractions lessons 4, 5, and 6. http://illuminations.nctm.org/LessonDetail.aspx?id=U112</p>

<p>Demonstrate finding common numerators using small fractions such as $\frac{3}{4}$ and $\frac{2}{3}$. Multiply the first fraction by $\frac{2}{2}$ and the second fraction by $\frac{3}{3}$ to get two new fractions $\frac{6}{8}$ and $\frac{6}{9}$ that can be compared. Ask the students to tell you why this procedure works.</p>	
Assessment Tasks Used	
<p>Skill-Based Task: Compare two fractions with different denominators and numerators to determine whether one is $>$, $=$, $<$ to the other and explain how you arrived at your answer.</p> <p>Mario has $\frac{3}{5}$ of a candy bar. Tisha has $\frac{2}{3}$ of the same kind of candy bar. Who has more? Why?</p>	<p>Problem Task: I made a beaded necklace that was $\frac{2}{6}$ blue, $\frac{3}{5}$ green and the rest was white. Did the necklace have more blue or green beads? Explain your answer two ways (using a benchmark number, common numerators, or common denominators). Justify your answer.</p>