

Core Content

Cluster Title: Develop understanding of fractions as numbers.

Standard 3: Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

- a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
- b. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
- c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.
- d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

MASTERY Patterns of Reasoning:**Conceptual:**

Students will understand that a whole number can be expressed as a fraction.

Students will understand the definition of equivalence.

Students will understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

Students will understand simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$).

Students will understand that two fractions with the same numerator or the same denominator can be compared.

Students will understand that comparisons are valid only when the two fractions refer to the same whole.

Procedural:

Students can recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$).

Students can explain why the fractions are equivalent.

Students can compare fractions by reasoning about their size.

Students can express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

Students can compare two fractions with the same numerator or the same denominator.

Students can express the comparison of fractional models by using $<$, $>$, or $=$.

Students can recognize that comparisons are valid only when the two fractions refer to the same whole.

Students can explain verbally and in writing all of the procedures for this standard.

Code: 3NF3

(Note: Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)

Representational:

Students can model comparisons of fractions with manipulatives.
 Students can model equivalent fractions by using a visual fraction model.

Supports for Teachers

Critical Background Knowledge

Conceptual:

Students will understand the words *halves, thirds, half of, a third of, etc.*
 Students will understand numbers using $>$, $=$, and $<$ symbols to record the results of comparisons.

Procedural:

Students can partition regions into two, three, or four equal shares; describe the shares using the words *halves, thirds, half of, a third of, etc.*; and describe the whole as two halves, three thirds, four fourths.
 Students can compare numbers using $>$, $=$, and $<$ symbols to record the results of comparisons.
 Students can describe the whole as two halves, three thirds, four fourths, etc.

Representational:

Students can model the division of regions and sets of objects into fractional parts.

Academic Vocabulary and Notation

halves ($1/2$), thirds ($1/3$), fourths ($1/4$), sixths ($1/6$), eighths ($1/8$), fraction, numerator, denominator, equivalent, equivalent fractions, equal parts, compare

Instructional Strategies Used

Use fraction manipulatives to compare the size of different fractions of the same whole. Find equivalent fractions and label them.

Use manipulatives to show that it takes $6/6$, $4/4$, $3/3$, etc. to

Resources Used

Pallota, Jerry. *Hershey's Milk Chocolate Bar Fractions Book*. Cartwheel Books, 1999.

Pallotta, Jerry. *Apple Fractions*. Cartwheel Books, 2003.

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make a whole.
Use manipulatives such as rulers and pattern blocks with the same numerator or same denominator to compare the size of various fractions.

Murphy, Stuart. *Jump, Kangaroo, Jump (MathStart 3)*. HarperCollins, 1999.

Adler, David. *Fraction Fun*. Holiday House, 1997.

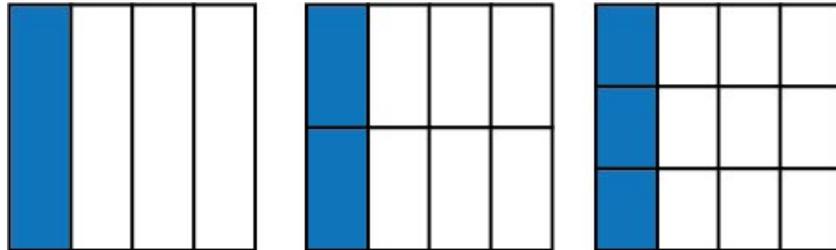
http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/fractions/level4.htm

<http://www.gamequarium.com/fractions.html>

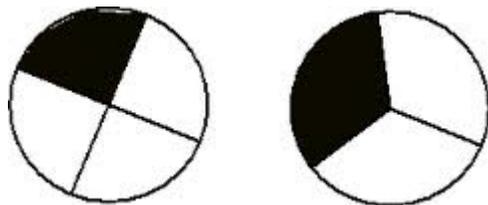
http://nlvm.usu.edu/en/nav/topic_t_1.html

Assessment Tasks Used

Skill-Based Task:



Write the equivalent fractions.



Write <, >, or =.

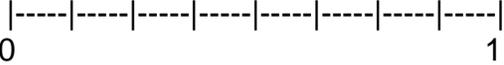
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Problem Task:

Jamie jumped $\frac{2}{4}$ of the length of the sidewalk. Find an equivalent fraction. Use a visual model to solve the problem. Explain your model.

My friend and I each ordered a medium pizza. I ate $\frac{1}{4}$ of my pizza. My friend ate $\frac{1}{3}$ of his pizza. Who ate more? How do you know?

(Note: Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)

<p>  </p> <p>Place the following fractions on number line above.</p> <p> $\frac{1}{2}, \frac{2}{4}, \frac{3}{4}, \frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{4}{8}, \frac{5}{8}, \frac{6}{8}, \frac{7}{8}, \frac{8}{8}$ </p> <p>Use your number line to answer these questions:</p> <p>What are two fractions equivalent to 1?</p> <p>What are two fractions equivalent to 1/2?</p>	
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