

Core Content

Cluster Title: Develop understanding of fractions as numbers.

Standard 2: Understand a fraction as a number on the number line; represent fractions on a number line diagram.

- a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.
- b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

MASTERY Patterns of Reasoning:**Conceptual:**

- Students will understand the properties of a unit whole.
- Students will understand that fraction is a part of a whole.
- Students will understand that a fraction is divided into equal parts.
- Students will understand that a fraction as a number on the number line.

Procedural:

- Students can identify fractions on a number line.
- Students can place fractions on a number line.
- Students can show a fraction on a number line by marking off equal lengths from 0 to 1.
- Students can divide a number line between 0 and 1 into equal parts and define the unit fraction.

Representational:

- Students can represent a fraction on a number line diagram by marking off lengths from 0.

Code: 3NF2

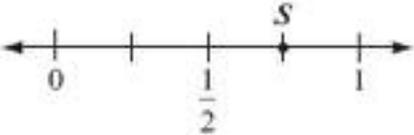
(Note: Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.)

Supports for Teachers

Critical Background Knowledge	
<p>Conceptual: Students will understand the words <i>halves</i>, <i>thirds</i>, <i>half of</i>, <i>a third of</i> (for the denominators identified in grade three domain), and describe the whole as two halves, three thirds, four fourths, etc. Students will show understanding of placement of numbers on a number line.</p> <p>Procedural: Students can partition circles and rectangles into two, three, four, six or eight equal shares, and describe the shares using the words <i>halves</i>, <i>thirds</i>, <i>half of</i>, <i>a third of</i>, etc., and describe the whole as two halves, three thirds, or four fourths. Students can place a number on a number line. Students can divide a region or set of objects into fractions.</p> <p>Representational: Students can model fractions with area or sets of objects.</p>	
Academic Vocabulary and Notation	
<p>halves ($1/2$), thirds ($1/3$), fourths ($1/4$), sixths ($1/6$), eighths ($1/8$), fraction, numerator, denominator, equivalent fractions, equal parts</p>	
Instructional Strategies Used	Resources Used
<p>Use a strip of paper as a number line. Label 0 on the left and 1 on the right. Then fold the paper number lines into various fractional pieces. Fold one strip in half, the next in thirds, the next in fourths, etc. Label the fractional parts on each strip.</p> <p>Give the student a number line labeled 0-1 and have them draw various fractional parts.</p>	<p>Murphy, Stuart. <i>Jump Kangaroo Jump (MathStart 3)</i>. HarperCollins, 1999.</p> <p>http://www.bgfl.org/bgfl/custom/resources_ftp/client_f tp/ks2/maths/fractions/level4.htm</p>

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<p>Use adding machine tape to measure classroom objects and divide into fractional pieces (e.g., show $\frac{1}{2}$ of the length of my desk, filing cabinet, door, white board, etc.). Label 0-1 as a number line on the adding machine tape.</p> <p>Use rulers.</p>	
Assessment Tasks Used	
<p>Skill-Based Task: Show $\frac{1}{4}$ on a number line.</p> <p>Show $\frac{3}{8}$ on a number line.</p> <p>Name the fraction shown on the number line.</p> 	<p>Problem Task: Solve the following problems:</p> <p>You have a piece of licorice. You need to cut it into three equal parts to share with your friends. On a number line, show where you would cut it and label to show what fraction of the licorice each person would get.</p> <p>An inchworm reached its full size of an inch by growing a $\frac{1}{4}$ of an inch each month. On the number line, draw the inchworm after three months.</p>

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