

Claim 1: Concepts and Procedures

Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

Content Domain: **Numbers and Operations - Fractions**

Target F [m]: Develop understanding of fractions as numbers. (DOK 1, 2)

Some of these tasks should assess conceptual understanding of unit fractions and other fractions as detailed in 3.NF.A.1 and 3.NF.A.2¹. Other tasks for this cluster should involve equivalence of fractions as detailed in 3.NF.A.3. Tasks should attempt to cover the range of expectations in the standard, such as understanding, recognizing, generating, and expressing, although explanations and justifications may also be assessed under Claim #3.

The cluster heading refers to understanding fractions as numbers. To assess whether students have met this goal, tasks for this target should include fractions greater than 1 as well as fractions less than or equal to 1; and tasks should not handle fractions differently based on whether they are greater than, less than, or equal to 1. Fractions equal to whole numbers (such as $3/1$) should also commonly appear in these tasks. Two equal fractions may be referred to as equal, without need for the term “equivalent” (e.g., “which fraction equals 3?”), and fractions may be referred to simply as numbers (e.g., “which number is greatest?” with fractions among the answer choices).

¹ Note that area models, strip diagram models, and number line models of a/b are all essentially special cases of the core fraction concept as defined in 3.NF.A.1: namely, a parts when a whole is partitioned into b equal parts. In the case of a number line, the “whole” in question is the interval from 0 to 1.

Standards:
3.NF.A, 3.NF.A.1,
3.NF.A.2, 3.NF.A.3

3.NF.A Develop understanding of fractions as numbers.

3.NF.A.1 Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a part of size $1/b$.

3.NF.A.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.

3.NF.A.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.
Related Below-Grade and Above-Grade Standards for Purposes of Planning for Vertical Scaling: 2.G.A, 2.G.A.3 4.NF.A, 4.NF.A.1, 4.NF.A.2, 4.NF.B, 4.NF.B.3, 4.NF.B.4	<p>Related Grade 2 Standards</p> <p>2.G.A Reason with shapes and their attributes.</p> <p>2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the wholes as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.</p> <p>Related Grade 4 Standards</p> <p>4.NF.A Extend understanding of fraction equivalence and ordering.</p> <p>4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.</p> <p>4.NF.A.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 $1/2$. 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.</p> <p>4.NF.B Build fractions from unit fractions.</p> <p>4.NF.B.3 Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.</p> <p>4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.</p>
DOK Levels:	1, 2

Achievement Level Descriptors:	
RANGE Achievement Level Descriptor (Range ALD) Target F: Develop understanding of fractions as numbers.	Level 1 Students should be able to identify a fraction as a number and identify a fraction on a number line when the increments are equal to the denominator.
	Level 2 Students should be able to understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; recognize simple equivalent fractions; express whole numbers as fractions; and recognize that comparisons are valid only when the two fractions refer to the same whole.
	Level 3 Students should be able to understand a fraction a/b as the quantity formed by a parts of size $1/b$; represent a fraction on a number line with partitioning; generate simple equivalent fractions and recognize when they are equal to whole numbers; and compare two fractions with the same numerator or the same denominator by reasoning about their size.
	Level 4 Students should be able to explain why two fractions are equivalent and approximate the location of a fraction on a number line with no partitioning.
Evidence Required:	<ol style="list-style-type: none"> 1. The student identifies a fraction $1/b$ as 1 part of a whole that is partitioned into b equal parts, and a fraction a/b as the quantity formed by a parts of size $1/b$ using a model. For this evidence statement, a/b may be greater than, less than, or equal to 1. 2. The student identifies and represents fractions on a number line using the interval 0-1 as the whole with or without partitioning. 3. The student identifies two fractions as equal if they are the same size or the same point on a number line. 4. The student generates simple equal fractions using a visual fraction model. 5. The student expresses whole numbers as fractions and recognizes fractions equal to whole numbers. 6. The student compares two fractions with the same numerator or the same denominator using the symbols $<$, $=$, $>$.
Allowable Response Types:	Multiple Choice, single correct response; Multiple Choice, multiple correct responses; Equation/Numeric; Hot Spot; Drag and Drop; Matching Tables; Graphing
Allowable Stimulus Materials:	visual fraction models, number lines, equations, area models, strip diagram models
Construct-Relevant Vocabulary:	equal, denominator, numerator, less than, greater than, number line
Allowable Tools:	None
Target Specific Attributes:	Fractions in 3rd grade are limited to denominators of 2, 3, 4, 6, and 8. In fraction comparisons, all fractions must have the same numerator or denominator. Unit fractions are 1 part of the whole (e.g., $1/3$, $1/2$, $1/6$).
Non-Targeted Constructs:	None

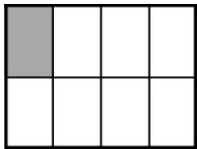
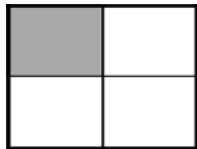
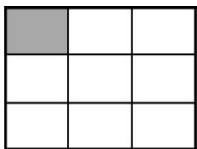
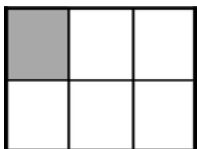
Accessibility Guidance:	<p>Item writers should consider the following Language and Visual Element/Design guidelines² when developing items.</p> <p>Language Key Considerations:</p> <ul style="list-style-type: none"> • Use simple, clear, and easy-to-understand language needed to assess the construct or aid in the understanding of the context • Avoid sentences with multiple clauses • Use vocabulary that is at or below grade level • Avoid ambiguous or obscure words, idioms, jargon, unusual names and references <p>Visual Elements/Design Key Considerations:</p> <ul style="list-style-type: none"> • Include visual elements only if the graphic is needed to assess the construct or it aids in the understanding of the context • Use the simplest graphic possible with the greatest degree of contrast, and include clear, concise labels where necessary • Avoid crowding of details and graphics <p>Items are selected for a student's test according to the blueprint, which selects items based on Claims and targets, not task models. As such, careful consideration is given to making sure fully accessible items are available to cover the content of every Claim and target, even if some item formats are not fully accessible using current technology.³</p>
Development Notes:	None

² For more information, refer to the General Accessibility Guidelines at:

<http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/Guidelines/AccessibilityandAccommodations/GeneralAccessibilityGuidelines.pdf>

³ For more information about student accessibility resources and policies, refer to

http://www.smarterbalanced.org/wordpress/wp-content/uploads/2014/08/SmarterBalanced_Guidelines.pdf

<p>Task Model 1</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 1</p> <p>3.NF.A.1 Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.</p> <p>Evidence Required: 1. The student represents a fraction $\frac{1}{b}$ as 1 part of a whole that is partitioned into b equal parts, and a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$ using a model. For this evidence statement, $\frac{a}{b}$ may be greater than, less than, or equal to 1.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to select the fraction represented by the model or the model represented by the fraction.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Denominators are limited to 2, 3, 4, 6 and 8. Area models are polygons or circles. Follow any stated guidelines on allowable number ranges. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Unit fraction model partitioned into equal sized parts corresponding to the denominator; one part is shaded representing the unit fraction. $\frac{a}{b}$ fraction models partitioned into equal parts representing the denominator; parts are shaded to represent an $\frac{a}{b}$ fraction. Models with the shaded areas switched should not be included as distractors (e.g., $\frac{7}{8}$ are shaded instead of $\frac{1}{8}$). <p>TM1 Stimulus: The student is presented with a fraction in the form of $\frac{a}{b}$.</p> <p>Example Stem 1: Which model shows $\frac{1}{8}$ of the whole figure shaded?</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>A. </p> </div> <div style="text-align: center;"> <p>C. </p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>B. </p> </div> <div style="text-align: center;"> <p>D. </p> </div> </div>
---	--

Task Model 1

Response Type:
Multiple Choice,
single correct
response

DOK Level 1**3.NF.A.1**

Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

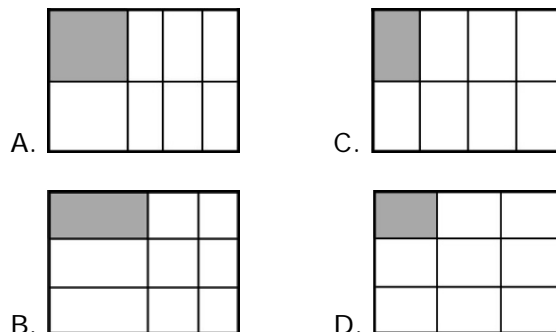
Evidence Required:

1. The student represents a fraction $\frac{1}{b}$ as 1 part of a whole that is partitioned into b equal parts, and a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$ using a model. For this evidence statement, $\frac{a}{b}$ may be greater than, less than, or equal to 1.

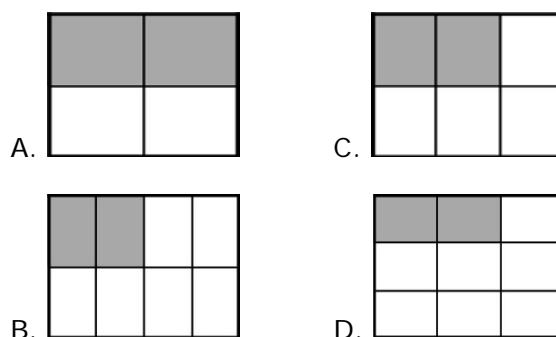
Tools: None

TM1 (continued)

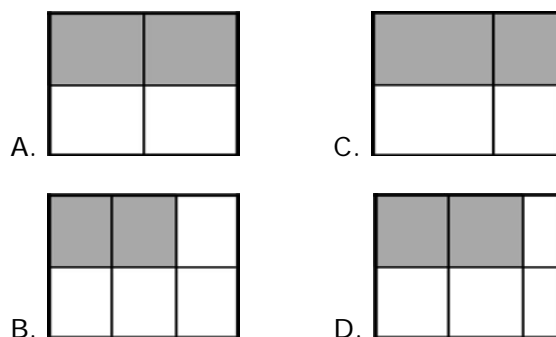
Example Stem 2: Which model shows $\frac{1}{8}$ of the whole figure shaded?



Example Stem 3: Which model shows $\frac{2}{6}$ of the whole figure shaded?

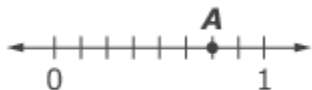


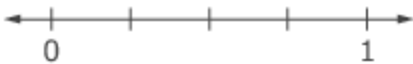
Example Stem 4: Which model shows $\frac{2}{6}$ of the whole figure shaded?




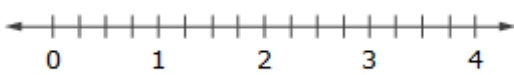
Rubric: (1 point) The student selects the correct model (e.g., A; C; C; B).

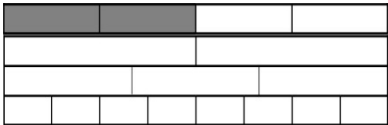
Response Type: Multiple Choice, single correct response

<p>Task Model 2a</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 2</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>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.</p> <p>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.</p> <p>Evidence Required: 2. The student identifies and represents fractions on a number line using the interval 0–1 as the whole, with or without partitioning.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to identify the numerical fraction represented by a given point on a number line.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Denominators are limited to 2, 3, 4, 6 and 8. • Follow any stated guidelines on allowable number ranges. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ◦ Identify a fraction represented by a labeled point on a number line; number line is from 0–1 and divided into increments. ◦ Identify a fraction represented by a labeled point on a number line; number line is from 0–1 and not divided into increments. <p>TM2a Stimulus: The student is presented with a fractional number line where a fraction is designated by a point on the number line.</p> <p>Example Stem:</p> <div data-bbox="527 919 836 1008" data-label="Figure">  </div> <p>Enter the fraction located at point A on the number line.</p> <p>Rubric: (1 point) The student enters the fraction that is located at the point on the number line (e.g., $\frac{6}{8}$).</p> <p>Response Type: Equation/Numeric</p>
--	---

<p>Task Model 2b</p> <p>Response Type: Graphing</p> <p>DOK Level 2</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>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.</p> <p>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.</p> <p>Evidence Required: 2. The student identifies and represents fractions on a number line using the interval 0–1 as the whole, with or without partitioning.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to use the Add Point tool to place a given fraction on a number line.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Denominators are limited to 2, 3, 4, 6 and 8. • Follow any stated guidelines on allowable number ranges. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ◦ Identify the location of a fraction on a number line; number line is from 0–1 and is either divided into increments or not divided into increments. ◦ Identify a fraction on a number line; number line begins at 0 and extends to a whole number past 1 and is divided into increments. <p>TM2b Stimulus: The student is presented with a fractional number line.</p> <p>Example Stem: Use the Add Point tool to place a point on the number line where $\frac{2}{4}$ should be located.</p>  <p>Rubric: (1 point) The student places a point at the correct location on the number line (e.g., $\frac{2}{4}$ is placed halfway between 0 and 1).</p> <p>Response Type: Graphing</p> <p>Accessibility Note: Graphing items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>
---	---

<p>Task Model 2c</p> <p>Response Type: Drag and Drop</p> <p>DOK Level 2</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>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.</p> <p>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.</p> <p>Evidence Required: 2. The student identifies and represents fractions on a number line using the interval 0–1 as the whole, with or without partitioning.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to drag one or more fractions to the correct location on a number line.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> The student is prompted to drag one or more fractions to the correct location on a number line. Denominators are limited to 2, 3, 4, 6 and 8. Follow any stated guidelines on allowable number ranges. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Drag a fraction to its correct location on a number line; number line is from 0–1 and not divided into increments. Identify a fraction represented by a labeled point on a number line; number line begins at 0 and extends to a whole number past 1 and is divided into increments. <p>TM2c Stimulus: The student is presented with a number line and two or more fractions in the form $\frac{a}{b}$.</p> <p>Example Stem 1: Drag each fraction to the number line, as close to the exact location as possible.</p> <div data-bbox="527 1050 941 1113" data-label="Figure">  </div> <div data-bbox="519 1144 584 1218" data-label="Equation-Block"> $\frac{3}{8} \quad \frac{1}{8}$ </div> <p>Rubric: (2 points) The student places both fractions at the correct location on the number line (e.g., $\frac{1}{8}$ and $\frac{3}{8}$ are placed at their approximate location). A tolerance of \pm half of the unit fraction is acceptable for scoring (e.g., $\pm \frac{1}{16}$ because $\frac{1}{8}$ is the unit). (1 point) The student places one fraction within the interval of tolerance for its correct location AND places the other fraction on the correct side (less than or greater than) of the correctly placed fraction. The same tolerance level as the 2-point rubric is allowed for determining the correct location.</p> <p>Response Type: Drag and Drop</p> <p>Accessibility Note: Drag and drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>
---	---

<p>Task Model 2c</p> <p>Response Type: Drag and Drop</p> <p>DOK Level 2</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>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.</p> <p>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.</p> <p>Evidence Required: 2. The student identifies and represents fractions on a number line using the interval 0–1 as the whole, with or without partitioning.</p> <p>Tools: None</p>	<p>TM2c (continued)</p> <p>Example Stem 2: Place each fraction on the number line, as close to its exact location as possible.</p>  <p>$\frac{2}{2}$ $\frac{1}{4}$ $\frac{4}{1}$ $\frac{2}{4}$</p> <p>Rubric: (2 points) The student places all fractions at the correct location on the number line (e.g., $\frac{2}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{4}{1}$ are placed at their approximate location). A tolerance of \pm half of the unit fraction is acceptable for scoring (e.g., $\pm \frac{1}{8}$ for fourths).</p> <p>(1 point) The student places three out of four fractions at the correct location, within the interval of tolerance, AND places the other fraction on the correct side (less than or greater than) of the correctly placed fractions.</p> <p>Response Type: Drag and Drop</p> <p>Source: Illustrative Mathematics (3.NF.A.2a) http://www.illustrativemathematics.org/illustrations/173</p> <p>Accessibility Note: Drag and drop items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>
--	---

<p>Task Model 3a</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>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.</p> <p>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.</p> <p>Evidence Required: 3. The student identifies two fractions as equal if they are the same size or at the same point on a number line.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to write or identify an equivalent fraction for the given model.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Follow any stated guidelines on allowable number ranges. Fractions are represented by area models, fraction strips, or number lines. Denominators are limited to 2, 3, 4, 6 and 8. Follow any stated guidelines on allowable number ranges. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Two fraction models that are polygons or circles where denominators are multiples of each other. One fraction model has part(s) shaded. Fraction strips with a shaded fraction on the top row. Two number lines where denominators are multiples of each other. One number line has a labeled point at a location. <p>TM3a Stimulus: The student is presented with a visual fraction model with a fraction shaded.</p> <p>Example Stem: Use the fraction strip model shown to help you with this problem.</p>  <p>Enter a fraction equal to $\frac{2}{4}$ that has a different denominator.</p> <p>Rubric: (1 point) The student enters an equivalent fraction (e.g., $\frac{1}{2}$ or $\frac{4}{8}$).</p> <p>Response Type: Equation/Numeric</p>
---	---

Task Model 3b

Response Type:
Multiple Choice,
multiple correct
responses

DOK Level 1**3.NF.A.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.

Evidence Required:

3. The student identifies two fractions as equal if they are the same size or at the same point on a number line.

Tools: None

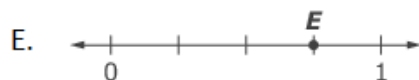
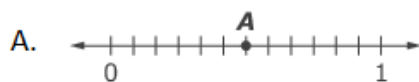
TM3b

Stimulus: The student is presented with a fractional number line with a point labeled on the number line.

Example Stem: Use this number line to answer the question that follows.



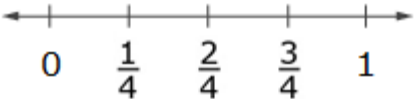
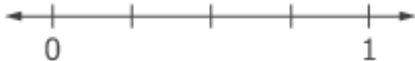
Choose **all** the number lines that show a fraction equal to the fraction shown by point P .



Rubric: (1 point) The student selects all number lines that show $\frac{1}{2}$ (e.g., A, B).

Response Type: Multiple Choice, multiple correct responses

<p>Task Model 4</p> <p>Response Type: Hot Spot</p> <p>DOK Level 2</p> <p>3.NF.A.3b Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>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.</p> <p>Evidence Required: 4. The student generates simple equivalent fractions using visual fraction models.</p> <p>Tools: None</p> <p>Accessibility Note: Hot spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.</p>	<p>Prompt Features: The student is prompted to generate an equivalent fraction based on a whole divided into sections.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none">Follow any stated guidelines on allowable number ranges.Fraction model is a polygon or circle.Denominators are limited to 2, 3, 4, 6 and 8.Item difficulty can be adjusted via these example methods:<ul style="list-style-type: none">Fraction models are divided into 4, 6, or 8 equal parts and students generate a fraction model equivalent to $\frac{1}{2}$.Fraction models are divided into 6 or 8 equal parts and students generate a fraction model equivalent to $\frac{1}{3}$ or $\frac{1}{4}$.Fraction models are divided into 6 or 8 equal parts and students generate a fraction model equivalent to $\frac{3}{4}$ or $\frac{2}{3}$.Fraction models are divided into 2, 3, or 4 equal parts and students generate a fraction model equivalent to $\frac{2}{4}$, $\frac{2}{6}$, $\frac{3}{6}$, $\frac{4}{6}$, $\frac{2}{8}$, $\frac{4}{8}$, or $\frac{6}{8}$. <p>TM4 Stimulus: The student is presented with a blank visual fraction model to generate an equivalent fraction.</p> <p>Example Stem: Use this model to solve the problem.</p> <table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table> <p>Click parts of the model to shade $\frac{2}{4}$ of the whole model.</p> <p>Rubric: (1 point) Student creates a fraction model equal to the given fraction (e.g., $\frac{4}{8}$).</p> <p>Response Type: Hot Spot</p>								

<p>Task Model 5</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>3.NF.A.3c Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>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.</i></p> <p>Evidence Required: 5. The student expresses whole numbers as fractions and recognizes fractions equal to whole numbers.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to enter either the numerator or denominator needed to complete a fraction equal to a whole number.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> Follow any stated guidelines on allowable number ranges. Denominators are 1, 2, 3, 4, 6, and 8. Denominator is equal to 1 when fraction is equal to a whole number that is greater than 1. Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> Represent a fraction as a whole number using fraction models such as number lines and rectangular figures. 0–1 number line with fraction increments either labeled or not labeled. Unknown numerator or denominator represented with a box that completes a fraction equal to a whole. <p>TM5a Stimulus: The student is presented with a visual fraction model with an equation using a whole number and a fraction. Either the numerator or the denominator is unknown and represented with a box.</p> <p>Example Stem 1: Use the number line to help you complete the equation.</p>  <p>$1 = \frac{\square}{4}$</p> <p>What numerator goes in the box (\square) to make the equation true?</p> <p>Example Stem 2: Use the number line to help you complete the equation.</p>  <p>$1 = \frac{\square}{4}$</p> <p>What numerator goes in the box (\square) to make the equation true?</p> <p>Rubric: (1 point) The student enters the correct value (e.g., 4; 4).</p> <p>Response Type: Equation/Numeric</p>
--	--

<p>Task Model 5</p> <p>Response Type: Equation/Numeric</p> <p>DOK Level 1</p> <p>3.NF.A.3c Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>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.</i></p> <p>Evidence Required: 5. The student expresses whole numbers as fractions and recognizes fractions equal to whole numbers.</p> <p>Tools: None</p>	<p>TM5a (continued)</p> <p>Example Stem 3: The fraction model shows $\frac{1}{8}$ of the whole figure shaded.</p> <table border="1" data-bbox="516 373 987 529"> <tr><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table> <p>What numerator goes in the box (<input type="text"/>) to make the equation true?</p> $\frac{\boxed{}}{8} = 1$ <p>TM5b Stimulus: The student is presented with an equation using a whole number and a fraction. Either the numerator or the denominator is unknown and represented with a box.</p> <p>Example Stem 1: What denominator goes in the box (<input type="text"/>) to make the equation true?</p> $2 = \frac{2}{\boxed{}}$ <p>Example Stem 2: What numerator goes in the box (<input type="text"/>) to make the equation true?</p> $\frac{\boxed{}}{1} = 2$ <p>TM5c Stimulus: The student is presented with an equation where 1 is written as a fraction and numeral. Either the numerator or the denominator of the fraction for 1 is represented with a box.</p> <p>Example Stem 1: What numerator goes in the box (<input type="text"/>) to make the equation true?</p> $\frac{\boxed{}}{2} = 1$ <p>Example Stem 2: What denominator goes in the box (<input type="text"/>) to make the equation true?</p> $1 = \frac{2}{\boxed{}}$ <p>Rubric: (1 point) The student enters the correct value (e.g., 8; 1; 2; 2; 2).</p> <p>Response Type: Equation/Numeric</p>								

<p>Task Model 6a</p> <p>Response Type: Matching Tables</p> <p>DOK Level 2</p> <p>3.NF.A.3d 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.</p> <p>Evidence Required: 6. The student compares two fractions with the same numerator or the same denominator using the symbols $<$, $=$, or $>$.</p> <p>Tools: None</p> <p>Version 3 Update: Changed TM5 from an equation/numeric response type to a matching table response type. Updated the stimulus and stem to match the new format.</p>	<p>Prompt Features: The student is prompted to compare fractions with either the same numerator or the same denominator by identifying the symbol needed to complete an inequality.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none">• Denominators are limited to 2, 3, 4, 6, and 8.• Follow any stated guidelines on allowable number ranges.• Item difficulty can be adjusted via these example methods:<ul style="list-style-type: none">◦ Select the symbol needed to compare two fractions with the same denominator.◦ Select the symbol needed to compare two fractions with the same numerator. <p>TM6a Stimulus: The student is presented with two pairs of fractions with the same numerators and/or same denominators and directed to compare them using ($<$, $>$, or $=$).</p> <p>Example Stem: Select the symbol ($<$, $>$, or $=$) that correctly compares each pair of numbers.</p> <table><tr><th></th><th>$<$</th><th>$>$</th><th>$=$</th></tr><tr><td>$\frac{5}{8} \square \frac{5}{6}$</td><td></td><td></td><td></td></tr><tr><td>$\frac{3}{6} \square \frac{3}{8}$</td><td></td><td></td><td></td></tr></table> <p>Rubric: (1 point) The student identifies the correct symbol to compare pairs of fractions (e.g., $<$, $>$).</p> <p>Response Type: Matching Tables</p>		$<$	$>$	$=$	$\frac{5}{8} \square \frac{5}{6}$				$\frac{3}{6} \square \frac{3}{8}$			
	$<$	$>$	$=$										
$\frac{5}{8} \square \frac{5}{6}$													
$\frac{3}{6} \square \frac{3}{8}$													

<p>Task Model 6b</p> <p>Response Type: Multiple Choice, single correct response</p> <p>DOK Level 2</p> <p>3.NF.A.3d 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.</p> <p>Evidence Required: 6. The student compares two fractions with the same numerator or the same denominator using the symbols $<$, $=$, or $>$.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to compare fractions with either the same numerator or the same denominator by identifying the unknown numerator or denominator.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none"> • Denominators are limited to 2, 3, 4, 6, and 8. • Follow any stated guidelines on allowable number ranges. • Item difficulty can be adjusted via these example methods: <ul style="list-style-type: none"> ◦ Identify the unknown numerator or denominator needed to complete a comparison of two fractions with the same denominator. ◦ Identify the unknown numerator or denominator needed to complete a comparison of two fractions with the same numerator. <p>TM6b Stimulus: The student is presented with an incomplete comparison of two fractions using the symbols $<$ or $>$ where either the numerator or denominator is the unknown.</p> <p>Stem: Which number goes in the box to make the comparison true?</p> $\frac{5}{8} > \frac{\square}{8}$ <p>A. 3 B. 5 C. 7 D. 9</p> <p>Rubric: (1 point) The student selects the correct number (e.g., A).</p> <p>Response Type: Multiple Choice, single correct response</p>
---	---

<p>Task Model 6c</p> <p>Response Type: Matching Tables</p> <p>DOK Level 2</p> <p>3.NF.A.3d 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.</p> <p>Evidence Required: 6. The student compares two fractions with the same numerator or the same denominator using the symbols $<$, $=$, or $>$.</p> <p>Tools: None</p>	<p>Prompt Features: The student is prompted to compare fractions with either the same numerator or the same denominator by selecting true or false to show whether an inequality is true.</p> <p>Stimulus Guidelines:</p> <ul style="list-style-type: none">• Denominators are limited to 2, 3, 4, 6, and 8. Fractions may use any denominator that is a multiple of 2, 3, and/or 5 and less than or equal to 100.• Follow any stated guidelines on allowable number ranges.• Item difficulty can be adjusted via these example methods:<ul style="list-style-type: none">○ Select true or false to show whether a comparison of two fractions with the same denominator is true.○ Select true or false to show whether a comparison of two fractions with the same numerator is true. <p>TM6c Stimulus: The student is presented with two or three comparisons of two fractions using the symbols $<$, $>$, or $=$.</p> <p>Stem: Decide whether each comparison is true or false. Click True or False for each comparison.</p> <table><tr><th></th><th>True</th><th>False</th></tr><tr><td>$\frac{3}{4} < \frac{1}{4}$</td><td></td><td></td></tr><tr><td>$\frac{2}{4} < \frac{2}{3}$</td><td></td><td></td></tr></table> <p>Rubric: (1 point) The student answers correctly, identifying each as True or False (e.g., F, T).</p> <p>Response Type: Matching Tables</p>		True	False	$\frac{3}{4} < \frac{1}{4}$			$\frac{2}{4} < \frac{2}{3}$		
	True	False								
$\frac{3}{4} < \frac{1}{4}$										
$\frac{2}{4} < \frac{2}{3}$										