



<b>T</b> 1 M 1 1 4		
Task Model 1a	or subtraction fraction problem.	
Response Type:		
Equation/Numeric	Stimulus Guidelines:	
DOK Level 1	<ul> <li>The student is presented with either an addition or subtraction fraction equation with a box for an unknown number</li> </ul>	
<b>4.NF.B.3</b> Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ .	<ul> <li>In addition problems, the unknown will be the sum.</li> <li>In subtraction problems, the unknown will be the difference.</li> <li>Item difficulty can be adjusted via these example methods:</li> </ul>	
<b>Evidence Required:</b> 1. The student adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole.	• The location of the unknown in the equation (on the left or right side of the equal sign) • How "friendly" the numbers are to work with • Using mixed numbers that have to be broken into parts prior to doing an operation (e.g., $1\frac{2}{5} - \frac{4}{5} = \frac{5}{5} + \frac{2}{5} - \frac{4}{5} = \frac{7}{5} - \frac{4}{5} = \frac{3}{5}$ )	
Tools: None	<ul> <li>TM1a</li> <li>Stimulus: The student is presented with a fraction addition or subtraction equation with a box to represent an unknown result.</li> <li>Example Stem 1: Enter the unknown number that makes the equation true.</li> </ul>	
	$\frac{1}{8} + \frac{4}{8} = \Box$	
	<b>Example Stem 2:</b> Enter the unknown number that makes the equation true.	
	$\Box = \frac{4}{8} - \frac{1}{8}$	
	<b>Rubric:</b> (1 point) The student shows understanding of addition and subtraction of fractions by entering the correct sum or $5^{-3}$	
	difference of two fractions with like denominators (e.g., $\frac{3}{8}$ ; $\frac{5}{8}$ ).	
	Response Type: Equation/Numeric	





Task Model 1b	<b>Prompt Features:</b> The student is prompted to solve an addition	
	or subtraction fraction problem.	
Response Type:		
Equation/Numeric	Stimulus Guidelines:	
	<ul> <li>The student is presented with either an addition or</li> </ul>	
DOK Level 2	subtraction fraction equation with a box for an unknown	
	number.	
4.NF.B.3	• In addition problems, the unknown will be an addend.	
Understand a fraction <i>a/b</i>	<ul> <li>In subtraction problems, the unknown will be the minuted on subtrack and</li> </ul>	
with $a > 1$ as a sum of	minuena or subtranena.	
	• Item difficulty can be adjusted via these example mothods:	
Evidence Required:	The location of the unknown in the equation	
1 The student adds and	<ul> <li>In addition problems, the first or second</li> </ul>	
subtracts fractions with	addend	
like denominators by	<ul> <li>In subtraction problems, the minuend or</li> </ul>	
ioining and separating	subtrahend	
parts referring to the	$\circ$ The location of the result in the equation (on the	
same whole.	left or right side of the equal sign)	
	<ul> <li>How "friendly" the numbers are to work with</li> </ul>	
Tools: None	<ul> <li>Using mixed numbers that have to be broken into</li> </ul>	
I COIS. NOTE	parts prior to doing an operation (e.g., $1\frac{2}{5} - \frac{4}{5} = \frac{5}{5} +$	
	$\frac{2}{2} - \frac{4}{2} = \frac{7}{2} - \frac{4}{2} = \frac{3}{2}$	
	5 5 5 5 5 <b>′</b>	
	TM1b	
	Stimulus: The student is presented with a fraction addition or	
	subtraction equation with a box for an unknown number.	
	<b>Example Stem 1:</b> Enter the unknown number that makes the	
	equation true.	
	7 4	
	$\left  \frac{1}{2} - \Box \right  = \frac{1}{2}$	
	5 5	
	Example Stem 2: Enter the unknown number that makes the	
	equation true.	
	$\frac{4}{-} = \Box + \frac{2}{-}$	
	5 5	
	<b>Rubric:</b> (1 point) The student shows understanding of addition	
	and subtraction of fractions by entering the correct sum or	
	difference of two fractions with like denominators (e.g., $\frac{3}{2}$ .	
	<b>Response Type:</b> Equation/Numeric	



	item specification		Assessment consolition
Task Model 2a	<b>Prompt Feature:</b> The expression that represent	ne student is prompte	ed to select an
Response Type:	sum of fractions with the same denominator.		
Matching Tables	Stimulus Guidalina		
DOK Level 2	The table will	contain addition exp	ressions with two or
	more fraction	s each that have the	same denominator.
4.NF.B.3	<ul> <li>Item difficulty</li> </ul>	/ can be adjusted via	these example
with $a > 1$ as a sum of	• Preser	nting a proper fraction	n, improper fraction, or
fraction 1/b.	mixed	number as the given	fraction
Evidence Deguived	<ul> <li>Decorr</li> </ul>	posing the given frac	ction into a greater or
2. The student expresses		ng the addends in the	e expression by value
an equivalent form of a	or not	(e.g., putting it as a	middle or end term
fraction or mixed number	instead	d of the initial term ir	n the expression)
sum of fractions with the			
same denominator.	TM2a		
Tools: None	Stimulus: The stude	ent is presented with	a fraction and three
TOUS. None	place of a fraction wi	ith like denominator.	i i may be used m
	<b>Example Stem:</b> Dec	cide whether each ex	pression is equal to
	$1 - \frac{1}{8}$ . Click in the table	e to respond.	
		5	5
		Equal to $1\frac{3}{8}$	Not Equal to $1\frac{3}{8}$
	$1 + \frac{5}{2}$		
	8		
	$\frac{8}{8} + \frac{3}{8} + \frac{2}{8}$		
	$1 + \frac{3}{8} + \frac{1}{8} + \frac{2}{8}$		
	<b>Rubric:</b> (1 point) Th expressions as either (e.g., Equal, Equal, N	e student correctly id r equal or not equal t Not Equal).	lentifies all three o the given fraction



Task Model 2bPrompt Features: The student is prompted to enter two different ways to decompose a fraction into a sum of fractions with the same denominator.Response Type: Drag and DropPrompt Features: The student is prompted to enter two different ways to decompose a fraction into a sum of fractions with the same denominator.DOK Level 2Stimulus Guidelines: • Item difficulty can be adjusted via these example methods: • The number of addends that the given fraction is decomposed into • The number of numerators the student must provideEvidence Required: 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.TM2b Stimulus: The student is presented with two equations representing the decomposition of a fraction or mixed number.Tools: None Accessibility Note: $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8} + \frac{\Box}{8}$ $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8} + \frac{\Box}{8}$			
Response Type: Drag and Dropwith the same denominator.DOK Level 2with the same denominator. <b>4.NF.B.3</b> Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ .Stimulus Guidelines: • The number of addends that the given fraction is decomposed into • The number of numerators the student must provideEvidence Required: 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.TM2b Stimulus: The student is presented with two equations representing the decomposition of a fraction or mixed number.Tools: None $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$ $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$ $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$ Accessibility Note: $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$ $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$ $\frac{7}{8} = \frac{\Box}{8} + \frac{\Box}{8}$	Task Model 2b	<b>Prompt Features:</b> The student is prompted to enter two different ways to decompose a fraction into a sum of fractions	
Stimulus Guidelines:DOK Level 2 <b>4.NF.B.3</b> Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ . <b>Evidence Required:</b> 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator. <b>Tools:</b> None $\frac{7}{8} = \frac{10}{8} + \frac{10}{8} + \frac{10}{8}$ $\frac{7}{8} = \frac{10}{8} + \frac{10}{8} + \frac{10}{8} + \frac{10}{8} + \frac{10}{8} + \frac{10}{8} + \frac{10}{8}$	Response Type: Drag and Drop	with the same denominator.	
<ul> <li>DOK Level 2</li> <li>Item difficulty can be adjusted via these example methods:         <ul> <li>The number of addends that the given fraction is decomposed into</li> <li>The number of numerators the student must provide</li> </ul> </li> <li>Evidence Required:         <ul> <li>The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.</li> </ul> </li> <li>Tools: None         <ul> <li>Tools: None</li> <li>Table Tools: None</li> <li>Tabl</li></ul></li></ul>		Stimulus Guidelines:	
<b>4.NF.B.3</b> Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ . $\circ$ The number of addends that the given fraction is 	DOK Level 2	<ul> <li>Item difficulty can be adjusted via these example methods:</li> </ul>	
Evidence Required: 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.TM2b Stimulus: The student is presented with two equations representing the decomposition of a fraction or mixed number.Tools: None $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ Accessibility Note: $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$	<b>4.NF.B.3</b> Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ .	<ul> <li>The number of addends that the given fraction is decomposed into</li> <li>The number of numerators the student must provide</li> </ul>	
Evidence Required: 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.TM2b Stimulus: The student is presented with two equations representing the decomposition of a fraction or mixed number.Tools: None $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ Accessibility Note: $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$		provide	
Tools: None $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ Accessibility Note: $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$	<b>Evidence Required:</b> 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.	<ul> <li>TM2b</li> <li>Stimulus: The student is presented with two equations representing the decomposition of a fraction or mixed number.</li> <li>Example Stem: Drag numbers to the numerators of the fractions to show two different correct equations.</li> </ul>	
Accessibility Note:	Tools: None	$\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{7}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$	
-	Accessibility Note:		
Drag and Drop items are not currently able to be Brailled. Minimize the number of items <b>Rubric:</b> (1 point) The student correctly completes the equations	Drag and Drop items are not currently able to be Brailled. Minimize the number of items	<b>Rubric:</b> (1 point) The student correctly completes the equations provided (e.g., 2, 1, 4 and 4, 3, 0).	
developed to this TM. Response Type: Drag and Drop	developed to this TM.	Response Type: Drag and Drop	







Task Model 2d	<b>Prompt Features:</b> The student is prompted to express the sum of unit fractions with the same denominator as a fraction or
Response Type:	mixed number.
Equation/Numeric	
	Stimulus Guidelines:
DOK Level 2	• All addends in the expression are unit fractions.
4 NE D 2	<ul> <li>Item difficulty can be adjusted via this example method:</li> </ul>
4.NF.B.3	<ul> <li>Number of addends in the expression</li> </ul>
Understand a fraction <i>a/b</i>	
with $a > 1$ as a sum of	
fraction 1/b.	TM2d
	Stimulus: The student is presented with an expression
Evidence Required:	representing the decomposition of a fraction into unit fractions.
2. The student expresses	
an equivalent form of a	<b>Example Stem:</b> Enter the fraction that is equivalent to the
fraction or mixed number	expression: $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
by considering each as a	
sum of fractions with the	
same denominator.	
	<b>Rubric:</b> (1 point) The student enters the correct fraction (e.g.,
Tools: None	$(\frac{3}{8}).$
	Deenenge Trunes Equation ///umania
	<b>Response Type:</b> Equation/Numeric



lask Model 3a	<b>Prompt Features:</b> The student is prompted to solve a
	contextual problem involving the addition and subtraction of
Response Type:	fractions.
Equation/Numeric	
	Stimulus Guidelines:
DOK Level 1	<ul> <li>The wording of the item provides a clue to the type of</li> </ul>
	operation needed to solve the problem (e.g., item may
4.NF.B.3	use words like "combine," "separate," "altogether,"
Understand a fraction a/b	"more than," "less than," etc.).
with $a > 1$ as a sum of	• Items may reflect Add To/Take From, Put Together/Take
fraction $1/b$ .	Apart, or Compare situations (refer to Operations and
,	Algebraic Thinking Progression document, Table 1, pg.
Evidence Required:	7).
3 The student solves	• Item difficulty can be adjusted via this example method:
contextual problems	<ul> <li>Using mixed numbers that have to be broken into</li> </ul>
involving addition and	
subtraction of fractions	parts prior to doing an operation (e.g., $1 =$
referring to the same	$\frac{5}{2} + \frac{2}{2} - \frac{4}{2} = \frac{7}{2} - \frac{4}{2} = \frac{3}{2}$
whole and having like	5 5 5 5 5 5 5'
denominators by using	
visual fraction models	ТМЗа
and equations to	Stimulus: The student is presented with a contextual problem
represent the problem	involving the addition or subtraction of fractions referring to the
represent the problem.	same whole and having like denominators.
Tools: Nono	
IOUIS. NOTE	<b>Example Stem 1</b> : John has $\frac{5}{2}$ of a liter of juice Jill has $\frac{3}{2}$ of a
	liter of juice. How many liters of juice do John and Jill have
	together? Enter the number.
	7 2
	<b>Example Stem 2:</b> Eric has $\frac{1}{8}$ of a pound of nuts. Jill has $\frac{1}{8}$ of a
	pound of nuts. How many more pounds of nuts does Eric have
	than Jill? Enter the number.
	<b>Rubric:</b> (1 point) The student enters the correct fraction (e.g.
	$^{8}$ or $^{4}$ or $1^{2}$ or $1^{1}$ , $^{5}$
	$\frac{1}{6}$ $\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{3}$ $\frac{1}{8}$
	Response Type: Equation/Numeric



Task Model 3b	<b>Prompt Features:</b> The student is prompted to solve a
	contextual problem involving the addition and subtraction of
Response Type: Equation / Numeric	
Equation/ Numeric	Stimulus Guidelines:
DOK Level 2	• The wording of the item does not provide a clue to the
DOR LEVEL 2	type of operation needed to solve the problem (e.g. item
4.NF.B.3	does not use words such as "combines," "altogether,"
Understand a fraction <i>a/b</i>	etc.).
with a > 1 as a sum of	• Items may reflect Add To/Take From, Put Together/Take
fraction 1/b.	Apart, or Compare situations (refer to Operations and
	Algebraic Thinking Progression document, Table 1, pg.
Evidence Required:	7).
3. The student solves	• Item difficulty can be adjusted via this example method:
contextual problems	<ul> <li>using mixed numbers that have to be broken into</li> </ul>
involving addition and	parts prior to doing an operation (e.g., $1\frac{2}{r}-\frac{4}{r}=$
subtraction of fractions	5 + 2 + 4 - 7 + 4 - 3
whole and baying like	$\frac{1}{5} + \frac{1}{5} - \frac{1}{5} - \frac{1}{5} - \frac{1}{5} - \frac{1}{5}$
denominators by using	
visual fraction models	TM3b
and equations to	<b>Stimulus:</b> The student is presented with a contextual problem
represent the problem.	same whole and having like denominators
Tools: None	<b>Example Stem 1:</b> lack has $2^{\frac{3}{2}}$ feet of rone. Together, lack and
	Diane have $4\frac{1}{4}$ feet of rope. How many feet of rope does Diane
	have? Enter your answer in the response box.
	<b>Example Stem 2:</b> A baker has $3\frac{3}{4}$ cups of sugar. She has
	$2^{\frac{1}{2}}$ more cups of sugar than cups of flour. How many cups of
	4 Hour doos cho hove? Enter your answer in the response hov
	nour does she have? Enter your answer in the response box.
	<b>Rubric:</b> (1 point) The student enters the correct fraction
	$(e_0 \ 1^2 \ 1^2)$
	Response Type: Equation/Numeric



Task Model 3c	<b>Prompt Features:</b> The student is prompted to manipulate a model representing the addition or subtraction of fractions.
Response Type:	
Hot Spot	Stimulus Guidelines:
	<ul> <li>Items may reflect Add To/Take From, Put</li> </ul>
DOK Level 1	Together/Take Apart, or Compare situations (refer to Operations and Algebraic Thinking Progression
4 NF B 3	document Table 1 ng 7)
Understand a fraction	Itom difficulty can be adjusted via this example
	• Item unifically can be aujusted via this example
a/b with $a > 1$ as a sum	method:
of fraction 1/b.	<ul> <li>Using mixed numbers that have to be broken</li> </ul>
	into parts prior to doing an operation (e.g.,
Evidence Required:	$1\frac{2}{2}-\frac{4}{2}=\frac{5}{2}+\frac{2}{2}-\frac{4}{2}=\frac{7}{2}-\frac{4}{2}=\frac{3}{2}$
3. The student solves	5 5 5 5 5 5 5 5 5 5
contextual problems	
involving addition and	TM3c
subtraction of fractions	<b>Stimulus:</b> The student is presented with a contextual problem
	involving the addition or subtraction of fractions
referring to the same	
whole and having like	
denominators by using	Example Stop 1. Michael este
visual fraction models	<b>Example Stem 1:</b> Michael eats — of a bar of chocolate. Lift
and equations to	5
represent the problem.	eats $-\frac{3}{2}$ of a bar of chocolate.
	6
Tools: None	
Accessibility Note: Hot	roprocents and har of chacolate
Spot items are not	
currently able to be	And the second s
Brailled Minimize the	<b>Part A.</b> Shada the model to show how many hars of chocolate
Dialileu. Minimize the	Michael and Evin ant together
number of items	Michael and Erni eat together.
developed to this TM.	
	Part B: Click on the total number of bars of chocolate Michael
	and Erin eat together.
	Dort A.
	Pall A:
	Amountained Amountained
	Annundannunk Annundannunk
	Part B: 9 13 1 13
	12 1 <u>6</u> 6 1 <u>12</u>





Task Model 3c	TM3c (continued)
Response Type: Hot SpotDOK Level 14.NF.3Understand a fraction $a/b$ with $a > 1$ as a sum of fraction $1/b$ .	Rubric: Part A: (1 point) The student builds a model that correctly represents a fraction addition or subtraction problem (e.g., $1\frac{3}{6}$ ). Part B: (1 point) The student selects the correct number (e.g., $1\frac{3}{6}$ ). Response Type: Hot Spot
<b>Evidence Required:</b> 3. The student solves contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem. <b>Tools:</b> None	<ul> <li>Example Stem 2: Michael and Erin have 2 bars of chocolate.</li> <li>Together they eat 1<sup>1</sup>/<sub>6</sub> bars of chocolate.</li> <li>represents one bar of chocolate</li> <li>Part A: Shade the model to show the amount of chocolate they did not eat.</li> <li>Part B: Click on the fraction that shows the amount of chocolate they did not eat.</li> </ul>
Accessibility Note: Hot Spot items are not currently able to be Brailled. Minimize the number of items developed to this TM.	Part A:       Image: Constraint of the second
	<b>Rubric:</b> <b>Part A:</b> (1 point) The student builds a model that correctly represents a fraction addition or subtraction problem (e.g., $\frac{5}{6}$ ). <b>Part B:</b> (1 point) The student selects the correct number (e.g., $\frac{5}{6}$ ). <b>Response Type:</b> Hot Spot



Task Model 3d	<b>Prompt Features:</b> The student is prompted to solve a contextual problem involving the addition and subtraction of
Response Type: Equation / Numeric	fractions.
	Stimulus Guidelines: same as TM3a,b,c
<b>4.NF.B.3</b> Understand a fraction <i>a/b</i> with <i>a</i> > 1 as a sum of fraction <i>1/b</i> .	<b>TM3d</b> <b>Stimulus:</b> The student is presented with a model of a contextual problem involving the addition or subtraction of fractions.
<b>Evidence Required:</b> 3. The student solves contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem.	Example stem: José has $1\frac{1}{4}$ cups of a sports drink. He gives $\frac{3}{4}$ cup of his drink to his sister. How much sports drink, in cups, does José has left? 1 $2$ $0$ $1$ $2$ Cups of Sports Drink
Tools: None Version 3 Update: Added new TM3d.	<b>Rubric:</b> (1 point) The student enters the correct amount (e.g., $\frac{2}{4}$ or $\frac{1}{2}$ or equivalent). <b>Response Type:</b> Equation/Numeric



Task Model 4a	<b>Prompt Features:</b> The student is prompted to enter the value
	of an unknown number in a fraction multiplication equation.
Response Type:	
Equation/Numeric	Stimulus Guidelines:
	• Item difficulty can be adjusted via this example method:
DOK Level 1	• The product is a whole number or a fraction.
Apply and extend	TM4a
previous understandings	<b>Stimulus:</b> The student is presented with a multiplication
of multiplication to	equation of the form $\pi = a \times \frac{1}{2}$
multiply a fraction by a	$a = a \times \frac{b}{b}$
whole number.	Example Stem: Enter the unknown number that makes the
	equation true
Evidence Required:	
4. The student	_ 1
fraction a/b is a multiple	$\Box = 4 \times \frac{12}{12}$
of 1/h.	
	<b>Rubric:</b> (1 point) The student identifies the equivalent fraction
Tools: None	or whole number which will make the equation true (e.g., $\frac{1}{12}$ ).
	Response Type: Equation/Numeric



Task Model 4b	<b>Prompt Features:</b> The student is prompted to enter the value of an unknown number in a fraction multiplication equation.
Response Type: Equation/Numeric DOK Level 2 4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	<ul> <li>Stimulus Guidelines:</li> <li>The unknown number is one of the factors.</li> <li>Item difficulty can be adjusted via these example methods: <ul> <li>The product is a whole number or a fraction.</li> <li>The whole number factor (a) is replaced with a box (□).</li> <li>The fractional factor (<sup>1</sup>/<sub>b</sub>) is replaced with a box (□).</li> </ul> </li> </ul>
Evidence Required: 4. The student understands that a fraction <i>a/b</i> is a multiple of 1/ <i>b</i> . Tools: None	<b>TM4b</b> <b>Stimulus:</b> The student is presented with a multiplication equation of the form $\frac{a}{b} = a \times \frac{1}{b}$ with an unknown value. <b>Example Stem:</b> Enter the unknown number that makes the equation true. $\frac{4}{12} = \Box \times \frac{1}{12}$ <b>Rubric:</b> (1 point) The student identifies the equivalent fraction or whole number which will make the equation true (e.g., 4). <b>Perpendent Type:</b> Equation (Numeric
	<b>Response Type:</b> Equation/Numeric



Task Model 4c	Prompt Feature	es: The student is	prompted to identify	
	expressions that are equivalent to an expression of the form			
Response Types: Matching Tables	$c \times \frac{a}{b}$ .			
DOK Level 2	<ul><li>Stimulus Guidelines:</li><li>Fractions presented in stem should have a denominator</li></ul>			
<b>4.NF.4</b> Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	<ul> <li>of 2, 3, 4, 5, 6, 8, 10, 12, or 100.</li> <li>Item difficulty may be adjusted via these example methods: <ul> <li>Use of fractions with denominators that are multiples of 2, 3, 4, 5, 6, 8, 10, 12, or 100</li> <li>Use of an expression in the numerator or denominator</li> </ul> </li> </ul>			
Evidence Required: 4. The student understands that a fraction <i>a/b</i> is a multiple of 1/ <i>b</i> .	<b>TM4c</b> <b>Stimulus:</b> The student is presented with a fraction multiplication expression of the form $c \times \frac{a}{b}$ .			
Tools: None	<b>Example Stem 1:</b> Decide whether each expression is equal to $5 \times \frac{2}{4}$ . Click in the table to respond.			
		Equal to $5 \times \frac{2}{4}$	Not Equal to $5 \times \frac{2}{4}$	
	$2 \times \frac{1}{20}$			
	$4 \times \frac{2}{5}$			
	$10 \times \frac{1}{4}$			
	<b>Example Stem 2:</b> Decide whether each expression is equal to $5 \times \frac{2}{4}$ . Click in the table to respond.			
		Equal to $5 \times \frac{2}{4}$	Not Equal to $5 \times \frac{2}{4}$	
	$2 \times \frac{1}{20}$			
	$2 \times \frac{5}{4}$			
	$\frac{5 \times 2}{10}$			
	<b>Rubric:</b> (1 point) The student correctly identifies the expressions as Equal or Not Equal (e.g., Not Equal, Not Equal, Equal; Not Equal, Equal, Not Equal).			
	Response Type	: Matching Tables		



Task Model 5	<b>Prompt Features:</b> The student is prompted to write the correct product of a fraction and a whole number.		
Response Type: Equation/Numeric	Stimulus Guidelines:		
DOK Level 1	<ul> <li>All items have an unknown product (c × <sup>a</sup>/<sub>b</sub> = □).</li> <li>Items may present proper or improper fractions, but not</li> </ul>		
<b>4.NF.B.4</b> Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	<ul> <li>Mixed numbers.</li> <li>Item difficulty may be adjusted via these example methods:         <ul> <li>Unit fraction times a whole number, product is a whole number</li> <li>Unit fraction times a whole number, product is not a whole number</li> <li>Non-unit fraction times a whole number, product</li> </ul> </li> </ul>		
5. The student multiplies a fraction by a whole number.	<ul> <li>is a whole number</li> <li>Non-unit fraction times a whole number, product is not a whole number</li> </ul>		
Tools: None	<b>TM5</b> <b>Stimulus:</b> The student is presented with a fraction multiplication equation with an unknown product. <b>Example Stem:</b> Enter the unknown number that makes the equation true. $6 \times \frac{5}{8} = \Box$ <b>Public:</b> (1 point) The student multiplies a fraction and a whole		
	<b>Rubric:</b> (1 point) The student multiplies a fraction and a whole number and enters the correct product (e.g., $\frac{30}{8}$ or $3\frac{3}{8}$ or $3\frac{3}{4}$ or equivalent).		
	<b>Kesponse Type:</b> Equation/Numeric		

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Task Model 6a	<b>Prompt Features:</b> The student is prompted to solve contextual		
	problems involving the multiplication of a fraction by a whole		
Response Type:	number.		
Equation/Numeric			
DOK Loval 2			
DOR Level 2	• All items have an unknown product $(c \times \frac{1}{b} = \Box)$ .		
4.NF.B.4	<ul> <li>Items may present proper or improper fractions, but not mixed numbers.</li> </ul>		
previous understandings	<ul> <li>Item difficulty can be adjusted via these example methods:</li> </ul>		
of multiplication to multiply a fraction by a whole number	<ul> <li>Unit fraction times a whole number, product is a whole number</li> </ul>		
Fuidence Deguired	<ul> <li>Unit fraction times a whole number, product is not a whole number</li> </ul>		
6. The student solves	<ul> <li>Non-unit fraction times a whole number, product is a whole number</li> </ul>		
contextual problems involving the multiplication of a	<ul> <li>Non-unit fraction times a whole number, product is not a whole number</li> </ul>		
fraction by a whole number by using visual fraction models and equations to represent	<b>TM6a</b> <b>Stimulus:</b> The student is presented with a contextual problem involving the multiplication of a fraction by a whole number.		
the problem			
	<b>Example Stem:</b> A bottle holds $\frac{3}{r}$ liter of water. Sam needs 8		
Tools: None	bottles of water to fill his fish tank. How many liters of water does Sam need to fill the fish tank? Enter the number of liters.		
	24		
	<b>Rubric:</b> (1 point) The student enters the correct product (e.g., $\frac{24}{r}$		
	or $4\frac{4}{5}$ ).		
	Response Type: Equation/Numeric		



Task Model 6b	<b>Prompt Features:</b> The student is prompted to solve contextual problems involving the multiplication of a fraction by a whole		
Response Type:	number using visual fraction models to solve the problem.		
Hot Spot			
DOK Level 2	Stimulus guidennes: Same as for Triba.		
4.NF.B.4	ТМбь		
Apply and extend previous understandings of multiplication to	<b>Stimulus:</b> The student is presented with a contextual problem involving the multiplication of a fraction by a whole number.		
multiply a fraction by a whole number.	<b>Example Stem:</b> There are 7 people at a picnic. Each person drinks $\frac{2}{3}$ of a liter of lemonade.		
<b>Evidence Required:</b> 6. The student solves contextual problems	<b>Part A:</b> Each pitcher holds 1 liter. Click on the pitchers to shade the amount of lemonade needed for the picnic. Use the fewest number of pitchers possible.		
involving the multiplication of a fraction by a whole	Part B: Click the total amount of lemonade that is needed.		
number by using visual fraction models and equations to represent the problem.	Part A:		
Tools: None			
Accessibility Note: Hot Spot items are not currently able to be Brailled. Minimize the			
developed to this TM.	Part B: $\frac{14}{3}$ L $\frac{9}{3}$ L $\frac{8}{3}$ L $\frac{10}{3}$ L		
	<b>Rubric:</b> <b>Part A:</b> (1 point) The student correctly shades the model to represent the product (e.g., $4\frac{2}{3}$ ).		
	<b>Part B:</b> (1 point) The student selects the correct product (e.g., $\frac{14}{3}$ ).		
	Response Type: Hot Spot		