Content Standard	***MAFS.4.NF*** *Number and Operations - Fractions* ***MAFS.4.NF.2*** *Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.* **MAFS.4.NF.2.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$. **MAFS.4.NF.2.3a** Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. **MAFS.4.NF.2.3b** Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:* $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}; \frac{3}{8} = \frac{1}{8} + \frac{2}{8}; 2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$. **MAFS.4.NF.2.3c** Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. **MAFS.4.NF.2.3d** Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
Assessment Limits	Denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, 100. Use mixed numbers and fractions with like denominators. Incorporate the concept of the same whole. Circle-based models, rectangular models, and number line models; do not overuse circle-based area food models (i.e., pizza).
Calculator	No
Acceptable Response Mechanisms	Equation Response Graphic Response – Drag and Drop, Drawing/Graphing, Hot Spot Multiple Choice Response Multi-Select Response Matching Item Response Natural Language Response
Context	Allowable. Required for MAFS.4.NF.2.3d

Example	
Context	Find the sum or difference of fractions with visual models or an equation including decomposition of fractions. • Unit fraction and non-unit fraction addends that sum to an improper fraction/factors in decomposition of fractions • Non-unit fraction addends that sum to a proper fraction/factors in decomposition of fractions
Context easier	• One or more unit fractions that sum to a proper fraction included in addends/factors in decomposition of fractions

Context more difficult	• Non-unit fraction addends that sum to an improper fraction/factors in decomposition of fractions • More than 1 fraction representation or decomposition of fraction representation

Sample Item Stem	Response Mechanism	Notes, Comments
An expression is shown. $\frac{1}{6}+\frac{1}{6}$ What is the value of the expression?	Equation Response	
An expression is shown. $\frac{9}{10}-\frac{4}{10}$ What is the value of the expression?	Equation Response	
An expression is shown. $\frac{2}{10}+\frac{9}{10}$ What is the value of the expression?	Equation Response	
Sue had $\frac{7}{8}$ of a cup of flour. She used $\frac{1}{8}$ of a cup. How much flour, in cups, does Sue have left?	Equation Response	
Which sums show different ways to express $\frac{5}{8}$? o $\frac{2}{8}+\frac{3}{8}$ o $\frac{6}{8}-\frac{1}{8}$ o $\frac{7}{8}-\frac{4}{8}+\frac{3}{8}$ o $\frac{1}{8}+\frac{3}{8}+\frac{1}{8}$ o $\frac{7}{8}-\frac{2}{8}-\frac{1}{8}$	Multi-Select Response	

What is the sum of $2\frac{2}{3}$ and $1\frac{2}{3}$? A. Enter your answer as a mixed number. B. Enter your answer as a fraction.	Equation Response	