<table>
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Coherence
within and across the Grade
- Add and Subtract Fractions with different denominators
- Solve word problems to add/sub fractions using visual models, equations, or benchmark fractions
- Multiply and Divide Fractions
  - Division as equal sharing.
  - Multiply a fraction times a whole number understanding a fraction is a multiple of its unit fraction.
  - Develop formula for finding the product of two fractions \( \frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd} \) expressed using examples or number lines.
- Division of a whole number by a whole number \( 5 ÷ 3 \) is the same as multiplying a whole number by a unit fraction \( \frac{1}{3} \times 5 \)
- Division of a unit fraction by a whole number. \( \frac{1}{6} ÷ 3 = \frac{1}{18} \)
- Solve word problems – attend to underlying unit quantities
- Multiplication as Scaling (resizing)
  - See products such as \( 5 \times 3 \) or \( \frac{1}{2} \times 3 \) as expressions that can be interpreted in terms of a quantity, and as a scaling factor (5 or \( \frac{1}{2} \))
- \( 5 \times 3 = 15 \) can also be said that \( 5 \times 3 \) is 5 times as big as 3 without evaluating the product, \( \frac{1}{2} \times 3 \) as half the size of 3.

- Begin formal understanding of fractions
- Introduce unit fractions.
- Understand the importance of specifying the whole
- Explain what is meant by equal parts
- Know other fractions can be built by making copies of the unit fraction \( \frac{1}{b} \) to make other fractions \( \frac{a}{b} \)
- Introduced to representing fractions on a number line
- Recognize and generate simple equivalent fractions and explain why they are equivalent using visual models.
- Recognize whole numbers as fractions \( \frac{2}{1} = \frac{4}{2} = \frac{6}{3} = \frac{8}{4} \)
- Recognize fractions that are equivalent to whole numbers to express fractions as whole numbers. \( \frac{1}{2} = \frac{3}{3} = \frac{4}{4} \)
- Compare Fractions with the same unit fraction
- Compare fractions using location of the points on the number line.

- Are informally introduced to fractions
- Partition shapes into equal shares
- Begin to understand that when a whole shape is decomposed into more equal shares, the size of the share is smaller
- Begin to understand the relationship of equal parts to whole
- Begin to develop the understanding that equal pieces need not have same shape
- Use vocabulary: halves, thirds, fourths, half of, third of, etc. one of four, one of two, etc.

- Use number lines and area models to reason about equivalence.
- Explain why two fractions are equivalent using the multiplication principle using models.
- Use an understanding of equivalent fractions to compare fractions with different numerators and denominators.
- Use benchmarks \( \frac{1}{2} \),
- Add and Subtract Fractions with like denominators
- Add and subtract fractions using Use the concept of unit fractions to decompose a fraction in multiple ways \( \frac{5}{3} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} \) or \( \frac{5}{3} = \frac{2}{3} + \frac{2}{3} + \frac{1}{3} \) etc.
- Add and subtract mixed numbers using a variety of methods.
- Solve problems for addition and subtraction of fractions
- Multiply Fractions
  - by a whole number
  - using the concept of unit fractions and understanding of multiplication of whole numbers, \( 5 \times \frac{1}{3} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} \).
  - See a fraction as the product of whole number and fraction \( 7 \times \frac{1}{5} = \frac{7}{5} \)
  - Solve word problems involving fraction x whole number