

Addition with Fractions



National Center and State Collaborative

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Words and Math

- Before you begin instruction, you may need to review the different ways the operation of addition is referred to in word problems
- Some key phrases to look for include:
 - Added to
 - Plus
 - Sum
 - More than

Adding fractions with the same denominator: An example

- To add fractions with the same denominator, you add the numerators together while keeping the denominator

$$\frac{7}{13} + \frac{11}{13} = \frac{7 + 11}{13}$$

An improper fraction

→ $\frac{18}{13} = 1\frac{5}{13}$

To simplify the improper fraction

1. Divide 18 by 13
2. Record the whole number (the number before the decimal)
3. Subtract 13 from 18 to find what is left over
4. Record that number as the new numerator for the fraction

Adding fractions with different denominators

- Step 1: find a common denominator
 - Method 1- multiply one denominator by the other
 - If you use this method, after you finishing adding, you may need to reduce the fraction to it's simplest form
 - For example, $\frac{18}{24} = \frac{6}{8}$
 - Method 2- find the least common denominator
 - If you use this method, students may benefit from having a chart already showing multiples of numbers 1-10 so they can select the correct multiple

Adding fractions with different denominators: An example

- Using method 1

$$\frac{4}{5} + \frac{1}{6} =$$

Multiply 5 by 6 to
get new
denominator

$$\frac{24}{30} + \frac{5}{30} = \frac{29}{30}$$

In this case, the
sum cannot be
simplified further so
there is no need to
reduce the fraction

Adding fractions with different denominators: An example

- Using method 2

$$2\frac{1}{8} + 1\frac{1}{2} =$$

Step 1: Convert mixed numbers to improper fractions

$$\frac{17}{8} + \frac{3}{2}$$

Step 2: 8 is the least common denominator

$$\frac{17}{8} + \frac{12}{8} = \frac{29}{8} \quad \text{or} \quad 3\frac{5}{8}$$

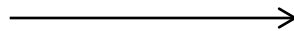
Step 3: add numerators

Step 4: Convert improper fraction back to a mixed number (See slide 3)



Ideas for application

- Begin adding my manipulating concrete objects
- Use measuring cups in the context of cooking
 - Fill the $\frac{2}{3}$ rd measuring cup with water, fill the $\frac{1}{4}$ measuring cup with water, and pour into one of the large measuring cups to see how much water there was after adding them



Making connections

- Adding fractions address the following 4th and 5th grade Core Content Connectors
 - 4.NO.2h1 Add and subtract fractions with like denominators of (2,3,4 or 8)
 - 4.NO.2h2 Add and subtract fractions with like denominators (2,3,4 or 8) using representations
 - 4.NO.2h3 Solve word problems involving addition and subtraction of fractions with like denominators (2,3,4 or 8)
 - 5.NO.2b1 Add and subtract fractions with unlike denominators by replacing fractions with equivalent fractions (identical denominators)
 - 5.NO.2b2 Add or subtract fractions with unlike denominators