MATH NEWS

Volume 4 | 5th Grade -- Unit 4 | 2nd -3rd Nine Weeks

Unit 4 Focus

Adding and Subtracting Fractions Using Models

Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators.

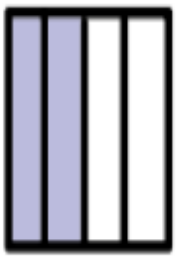
Before using any algorithm, students will have ample opportunities to work with visual models to see and explain how unlike denominators are related. Once students understand the need for like denominators and can identify appropriate denominators for addition and subtraction examples, they should apply their understanding of equivalent fractions to rewrite the given fractions so they can add or subtract.

Unit 4 Goals

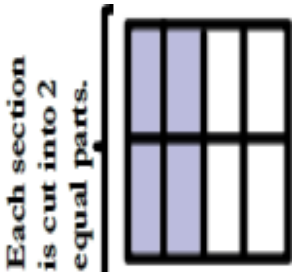
- Add and subtract fractions with unlike denominators (including mixed numbers)
- Solve word problems involving addition and subtraction of fractions using visual fraction models or equations to represent the problem
- Estimate mentally and assess the reasonableness of answers
- Evaluate expressions involving fractions using the order of operations
- Write simple expressions involving fractions

Understanding Equivalent Fractions:

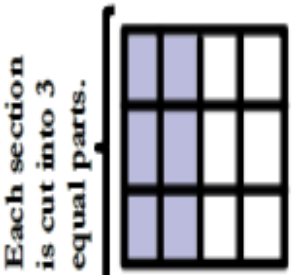
To find fractions equivalent to $\frac{2}{4}$, draw three vertical lines in each rectangle creating four parts. Shade in two sections to create the fraction $\frac{2}{4}$. Now partition with horizontal lines to show the equivalent fractions $\frac{4}{8}, \frac{6}{12}$, and $\frac{8}{16}$.



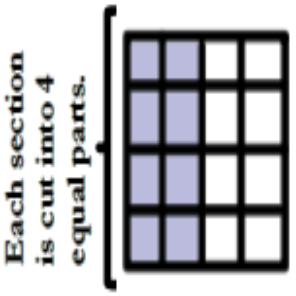
$\frac{2}{4}$



$\frac{2}{4} = \frac{2 \times 2}{4 \times 2} = \frac{4}{8}$



$\frac{2}{4} = \frac{2 \times 3}{4 \times 3} = \frac{6}{12}$



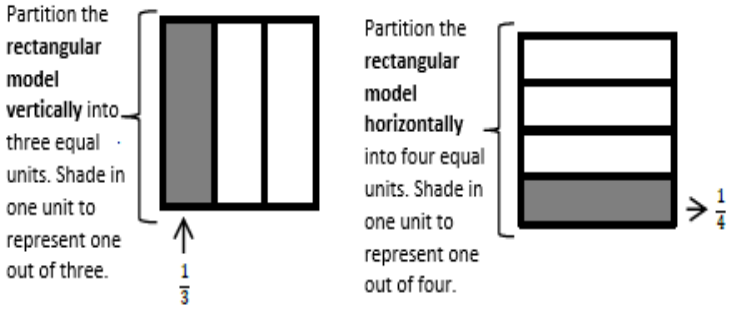
$\frac{2}{4} = \frac{2 \times 4}{4 \times 4} = \frac{8}{16}$

Addition and Subtraction of Fractions:

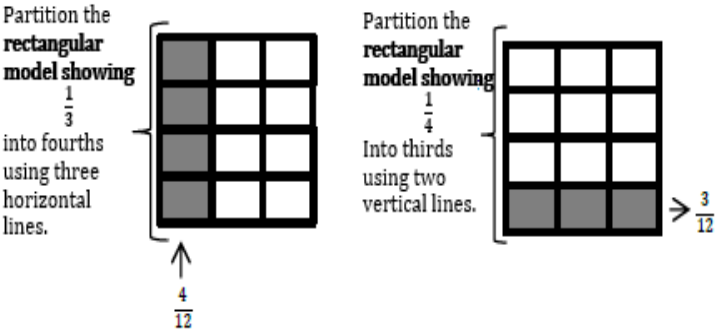
Problem 1: $\frac{1}{3}+\frac{1}{4}=$

Step 1: Ask yourself can the fraction one third be added to the fraction one fourth? No, because the units are not the same. We need to find like units.

Step 2: Begin the process of finding like units (denominators) by drawing two rectangular models. Each ***rectangular model*** *will represent a different unit fraction shown above.*



Step 3: Have both rectangular models show the same size units.



Each ***rectangular model*** *now has 12 units.*

Step 4: Rename each fraction showing like units (denominators).

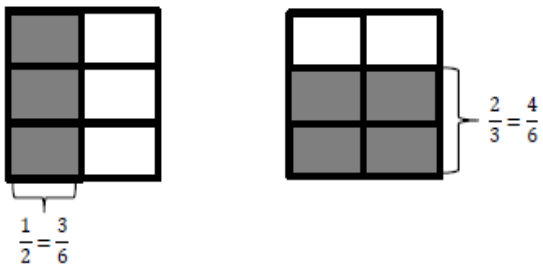
$$\frac{1}{3}=\frac{4}{12} \text{ and } \frac{1}{4}=\frac{3}{12}$$

Now, we can add the units.

$$\frac{4}{12}+\frac{3}{12}=\frac{7}{12}$$

Solving Word Problems involving addition & subtraction of fractions

Marco bought two pizzas for dinner. He ate $\frac{1}{2}$ of one pizza for dinner and $\frac{2}{3}$ of the other pizza for breakfast the next morning. Marco took the remaining pizza to school for lunch. How much total pizza did he eat for breakfast and lunch? How much pizza did Marco take to school for lunch?



$$\frac{3}{6}+\frac{4}{6}=\frac{7}{6}$$

$\frac{7}{6}$ is a fraction greater than one.

$\frac{7}{6}$ is the same as $\frac{6}{6}+\frac{1}{6}$

$\frac{6}{6}$ is equal to a whole.

$1+\frac{1}{6}=1\frac{1}{6}$ Mixed Number

Marco ate a total of one whole pizza and one-sixth of the second pizza for dinner and breakfast.

Question 2: How much pizza did Marco take for lunch?

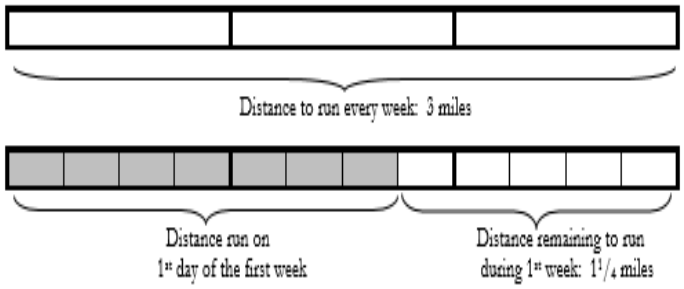
Strategy 1: $\frac{1}{6}$ + ___ = 1 whole pizza $\frac{1}{6}+\frac{5}{6}=1$ whole pizza

Strategy 2: 1 whole pizza - $\frac{1}{6}$ pizza eaten = $\frac{5}{6}$

Marco took five-sixths of a pizza to school for lunch.

Using a Bar Model to Show Thinking:

B. If Mary ran 3 miles every week for 4 weeks, she would reach her goal for the month. The first day of the first week she ran $1^3/_4$ miles. How many miles does she still need to run the first week?



How many miles does she still need to run the first week?

Mary needs to run $1\frac{1}{4}$ more miles to reach her goal of 3 miles.