MATH NEWS

(Permission granted for reprint from Lafayette Parish School System)

Grade 5, Mission 3, Topic A

5th Grade Math

Mission 3: Addition and Subtraction of Fractions

Math Parent Letter

Mission 3 covers Addition and Subtraction of Fractions. This newsletter will address making equivalent fractions.

Topic A. Equivalent Fractions

Words to know

- Equivalent Fractions
- Vertically
- Horizontally
- Numerator
- Denominator
- Expression

Things to Remember:

- **Equivalent Fraction** – fractions that have the same value, even though they many look differently. Example: $\frac{1}{2}$ and $\frac{4}{8}$
- **Numerator** – A number written above the line in a common fraction to indicate the number of parts of the whole
- **Denominator** – The number below the line in a fraction, indicating the number of equal parts into which one whole is divided.
- **Vertically** – ↕
- **Horizontally** – ↔

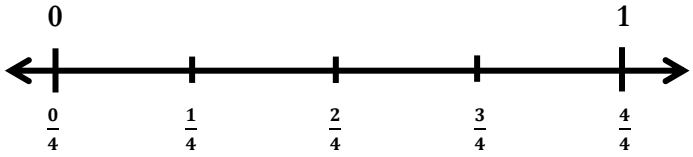
Objectives of Topic A

- Make equivalent fractions with the number line, the area model, and numbers.
- Make equivalent fractions with sums of fractions with like denominators.

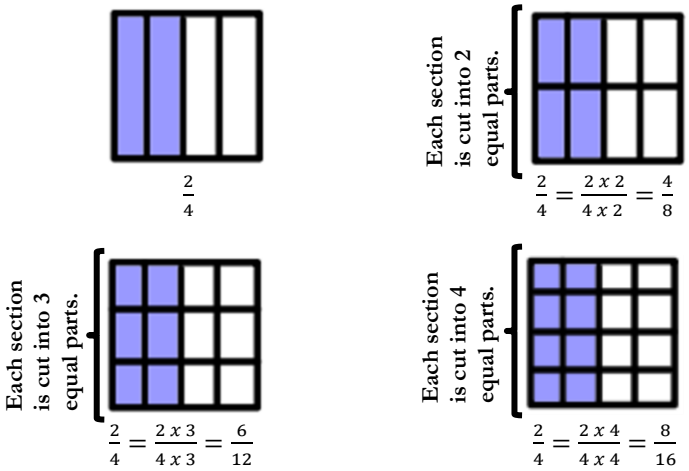
Focus Area– Topic A

Mission 3: Addition and Subtraction of Fractions

Mark 0 and 1 above the number line and $\frac{0}{4}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ and $\frac{4}{4}$ below the number line.

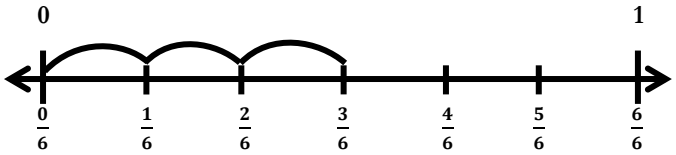


To find fractions equivalent to $\frac{2}{4}$, draw three **vertical** lines in each rectangle creating four parts. Shade in two section to create the fraction $\frac{2}{4}$. Now partition with **horizontal** lines to show the **equivalent fractions** $\frac{4}{8}, \frac{6}{12}$, and $\frac{10}{20}$.



Show the expression on a number line then solve.

$$\frac{1}{6} + \frac{1}{6} + \frac{1}{6}$$



$$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$$

$$3 \times \frac{1}{6} = \frac{3}{6}$$

Express the fraction as the sum of two or three equal fractional parts. Rewrite each as a multiplication equation.

$\frac{24}{5} = \frac{12}{5} + \frac{12}{5}$ $\frac{24}{5} = 2 \times \frac{12}{5}$

OR

$\frac{24}{5} = \frac{8}{5} + \frac{8}{5} + \frac{8}{5}$ $\frac{24}{5} = 3 \times \frac{8}{5}$

Express each of the following as the **sum of a whole number and a fraction**.

$\frac{14}{3} = \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{2}{3}$

$= 1 + 1 + 1 + 1 + \frac{2}{3}$

$= 4 + \frac{2}{3}$

$= 4\frac{2}{3}$

$\frac{34}{9} = \frac{9}{9} + \frac{9}{9} + \frac{9}{9} + \frac{7}{9}$

$= 3 \times \frac{9}{9} + \frac{7}{9}$

$= 3 \times 1 + \frac{7}{9}$

$= 3 + \frac{7}{9}$

$= 3\frac{7}{9}$

Rachel cut six equal lengths of yarn. Each piece was 4 sevenths of a foot long. How many feet of yarn did she cut? Express your answer as the sum of a whole number and the remaining fractional part.

$\frac{4}{7} + \frac{4}{7} + \frac{4}{7} + \frac{4}{7} + \frac{4}{7} + \frac{4}{7} = \frac{24}{7}$

$\frac{24}{7} = \frac{7}{7} + \frac{7}{7} + \frac{7}{7} + \frac{3}{7}$

$= 3 \times \frac{7}{7} + \frac{3}{7}$

$= 3 \times 1 + \frac{3}{7}$

$= 3\frac{3}{7}$

Rachel cut $3\frac{3}{7}$ feet of yarn.

MATH NEWS

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Grade 5, Mission 3, Topic B

5th Grade Math

Mission 3: Addition and Subtraction of Fractions

Math Parent Letter

Mission 3 covers Addition and Subtraction of Fractions. This newsletter will address making like units pictorially.

Topic B. Making Like Units Pictorially

Words to know

- Unit Fraction
- Simplest Form
- Equivalent Fraction
- Improper Fraction
- Mixed Number
- Associative Property
- Product
- Estimate
- Decimal Fraction
- Factor
- Standard Algorithm

Things to Remember:

- **Unit Fraction –** A fraction whereby the numerator (the "top number") is 1.
  Examples: $\frac{1}{2}, \frac{1}{6}, \frac{1}{100}$
- **Improper Fraction**- An improper fraction is a fraction where the numerator (the top number) is greater than or equal to the denominator (the bottom number.
  Examples: $\frac{7}{2}$ *(seven halves)* *and* $\frac{5}{5}$ *(five fifths)*
- **Simplest form (fraction)**- A fraction is in **simplest form** when the numerator and denominator only have 1 as their common factor.
  Example: $\frac{2}{4}$ *can be* ***simplified*** *to* $\frac{1}{2}$ *since 2 and 4 have a common factor of 2.*
  ½ is in **simplest form** because the only common factor for 1 and 2 is 1.
- **Mixed Number**-A **mixed number** is a whole number and a fraction combined into one "**mixed**" number.
  Example: $1\frac{1}{3}$
- **Equivalent Fraction**-Fractions which have the same value, even though they may look different.
  Example: $\frac{1}{2}$ *and* $\frac{2}{4}$
- **Associative Property - Associative Property** states that you can add or multiply regardless of how the numbers are grouped. By 'grouped' we mean where the parentheses are placed.
  Example: 5 x 7 x 2 = (5 x 2) x 7 or 5 x (2 x 7)

Objectives of Topic B

- Add and subtract fractions with unlike units using the strategy of creating equivalent fractions.
- Add and subtract fractions with sums between 1 and 2.
- Solve two-step word problems.

Focus Area– Topic B

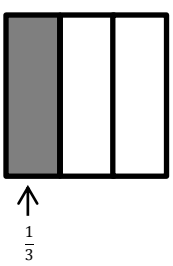
Mission 3: Addition and Subtraction of Fractions

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

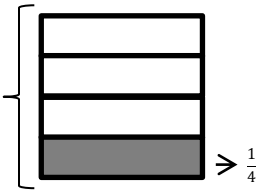
Step 1: Ask yourself can the fraction one third be added to the fraction one fourth? No, because the units are not the same. We need to find like units.

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.

Divide the **rectangular model vertically** into three equal units. Shade in one unit to represent one out of three.

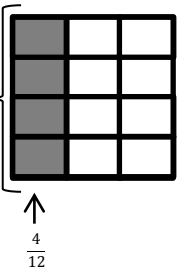


Divide the **rectangular model horizontally** into four equal units. Shade in one unit to represent one out of four.

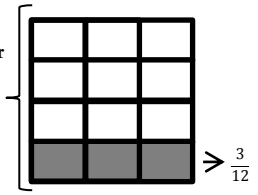


Step 3: Have both **rectangular models** show the same size units.

Divide the **rectangular model showing** $\frac{1}{3}$ into fourths using three horizontal lines.



Divide the **rectangular model showing** $\frac{1}{4}$ into thirds using two vertical lines.



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

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

$\frac{1}{3} = \frac{4}{12}$ *and* $\frac{1}{4} = \frac{3}{12}$ *are both* ***equivalent fractions***

Now, we can add the units.

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

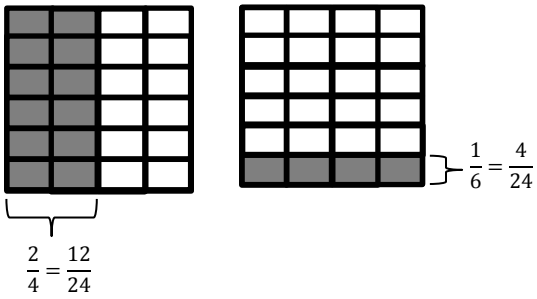
Application Problem:

Gabe ran $\frac{1}{3}$ miles on Monday and $\frac{1}{4}$ miles on Tuesday. How far did Gabe run on both days. Answer: $\frac{7}{12}$ *miles*

(The steps above would be used to determine how far Gabe ran on both days.)

For the following problem, draw a picture using rectangular models.

$$\frac{2}{4}+\frac{1}{6}=$$



$$\frac{12}{24}+\frac{4}{24}=\frac{16}{24}=\frac{2}{3}$$

The fraction $\frac{16}{24}$ *can be* ***simplified*** to $\frac{2}{3}$. The only common factor for 2 and 3 is 1; therefore it is in **simplest form.**

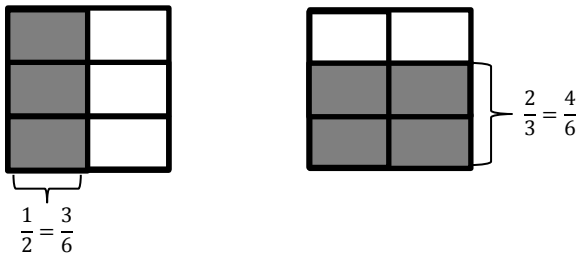
To find the **simplest form** we divide both the numerator and denominator by a common factor.

Example 1: $\frac{16}{24}\div\frac{2}{2}=\frac{8}{12}\div\frac{2}{2}=\frac{4}{6}\div\frac{2}{2}=\frac{2}{3}$

Example 2: $\frac{16}{24}\div\frac{4}{4}=\frac{4}{6}\div\frac{2}{2}=\frac{2}{3}$

Example 3: $\frac{16}{24}\div\frac{8}{8}=\frac{2}{3}$

Marco bought two pizzas for dinner. He ate $\frac{1}{2}$ of the pizza for dinner and $\frac{2}{3}$ 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* ***improper fraction***

$\frac{7}{6}$ *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 $\quad \frac{1}{6}+\frac{5}{6}$ = 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.

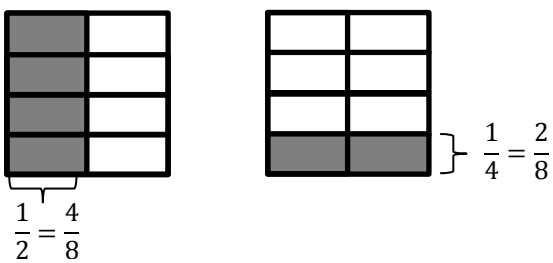
Solve the following problem using the **Associative Property**.

$$1\frac{1}{4}-\frac{1}{2}=$$

$1\frac{1}{4}$ *is the same as* $1+\frac{1}{4}$ therefore, you can rewrite the problem using the **Associative Property**.

$$\left(1+\frac{1}{4}\right)-\frac{1}{2}=\left(1-\frac{1}{2}\right)+\frac{1}{4}=\frac{1}{2}+\frac{1}{4}$$

$$\frac{1}{2}+\frac{1}{4}=$$



$$\frac{4}{8}+\frac{2}{8}=\frac{6\div2}{8\div2}=\frac{3}{4}$$