MATH NEWS

Grade 4, Module 5, Topic G

LAFAYETTE PARISH SCHOOL SYSTEM

4th Grade Math

Module 5: Fraction Equivalence, Ordering, and Operations

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 5 of Eureka Math (Engage New York) covers fraction equivalence, ordering, and operations.

Focus Area Topic G:

Repeated Addition of Fractions as Multiplication

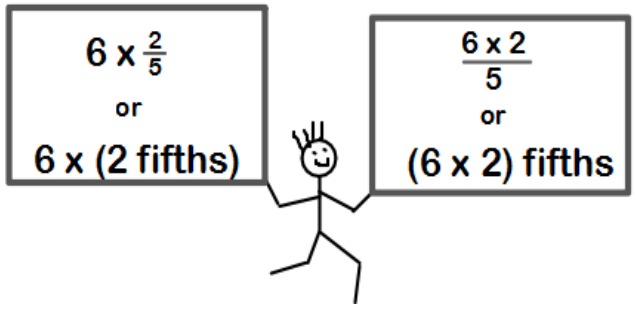
Words to Know:

Compose -change a group of unit fractions with the same denominator to a single non-unit fraction or mixed number

Decompose - change a non-unit fraction or mixed number to the sum of its parts or unit fractions

Mixed number - number made up of a whole number and a fraction

Line plot - display of data on a number line, using an x or another mark to show frequency



OBJECTIVES OF TOPIC G

- Represent the multiplication of n times a/b as (n × a)/b using the associative property and visual models.
- Find the product of a whole number and a mixed number using the distributive property.
- Solve multiplicative comparison word problems involving fractions.
- Solve word problems involving the multiplication of a whole number and a fraction including those involving line plots.

Focus Area Topic G:

Repeated Addition of Fractions as Multiplication

Using the Associative Property

Multiplying a whole number times a fraction was introduced in Topic A. Here's an example of how a fraction can be decomposed and rewritten as a multiplication sentence.

$$\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = 3 \times \frac{1}{5}$$

Now students will use the associative property to multiply a whole number times a mixed number.

Consider this example. $5 \times \left(3 \times \frac{1}{2}\right)$

Each plate has $\frac{1}{2}$ of a cake on it. There are 3 plates on each table. There are 5 tables in the room. To find out how much cake there is, first we can think about the plates on each table and write $3 \times \frac{1}{2}$ which would give us the amount of cake on each table, $\frac{3}{2}$. Now, we can multiply the amount of cake on each table, $\frac{3}{2}$ by 5, the number of tables in the room. $5 \times \frac{3}{2}$

$5 \times \frac{3}{2} = 5 \times (3 \text{ halves})$

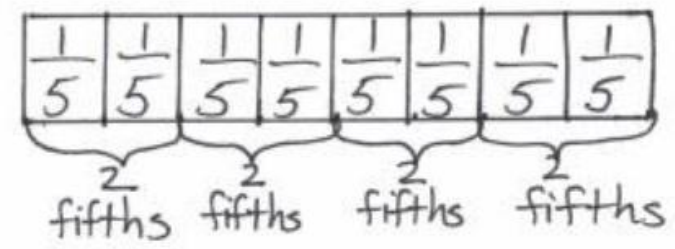
$(5 \times 3) \text{ halves} = 15 \text{ halves}$

$15 \text{ halves} = 7\frac{1}{2} \text{ cakes in the room}$

Example Problem and Answer

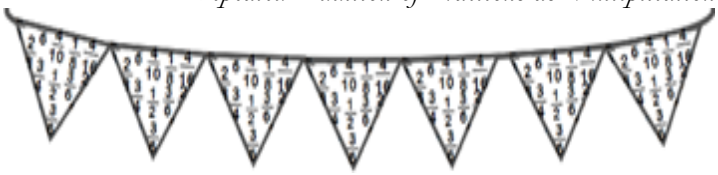
Draw and label a tape diagram to show the following are true.

8 fifths = 4 × (2 fifths) = (4 × 2) fifths



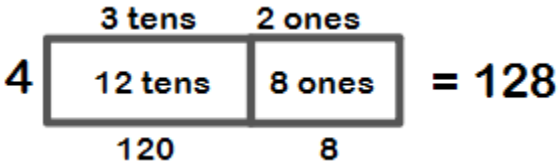
Focus Area – Topic G:

Repeated Addition of Fractions as Multiplication



Using the Distributive Property

Students will explore the use of the distributive property to multiply a whole number by a mixed number. We can use the distributive property to show 4 × 32 as (4 × 3 tens) + (4 × 2 ones). The following area model uses the distributive property.



Students begin to see the multiplication of each part of a mixed number by the whole number and use the appropriate strategies to do so.

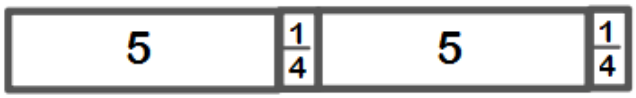
In the following example, we use a tape diagram.

Let's say we want to multiply $2 \times 5\frac{1}{4}$.

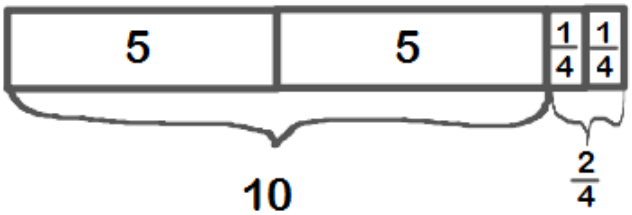
We can create a tape diagram to show $5 + \frac{1}{4}$.

Since we are multiplying by 2, we will draw our tape diagram 2 times.

as in multiply



We rearrange the parts of our tape diagram to show our wholes together and our parts together.



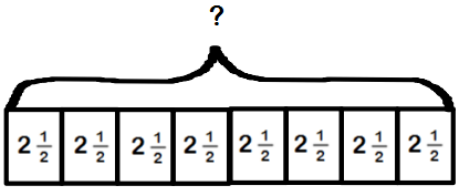
Therefore

$$2 \times 5\frac{1}{4} = (2 \times 5) + (2 \times \frac{1}{4}) = 10\frac{2}{4}$$

Module 5: Fraction Equivalence, Ordering, and Operations

Example Problems and Answers

A grocery store had a sale on rice. Eight families each bought $2\frac{1}{2}$ pounds of rice. How many pounds of rice did the store sell to these families?



$$8 \times 2\frac{1}{2} = (8 \times 2) + (8 \times \frac{1}{2})$$
$$= 16 + \frac{8}{2}$$
$$= 16 + 4$$
$$= 20$$

The store sold 20 pounds of rice to these families.

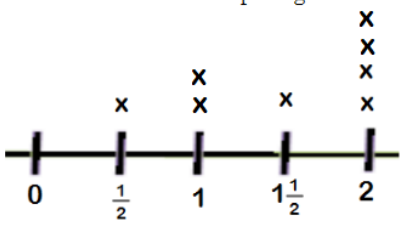
Understanding Line Plots

A line plot is a graph that shows frequency of data along a number line.

This chart shows the heigth in cm of 8 plants.

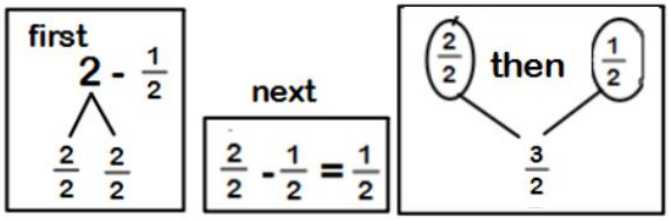
Plant	Heigth in cm
A	2
B	2
C	$\frac{1}{2}$
D	1
E	2
F	$1\frac{1}{2}$
G	1
H	2

The line plot below shows the number of plants that grew a certain amount of cm. Each x represents a plant. The number on the number line represents the amount of cm the plant grew.



Example Problems and Answers

What is the difference in growth of the tallest and shortest plant?



Therefore

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