



Grade 4 Unit 4

Operations with Fractions

Volume 1 Issue 4

References

Helpful Links:

<http://www.visualfractions.com/>

<http://www.adaptedmind.com/p.php?tagId=892>

http://www.mathplayground.com/index_fractions.html

Math Grade 4

Textbook Connection:

Ch. 8, Lessons 8.9-8.10

Ch. 9, Lessons 9.1-9.9

Ch.11, Lessons 11.8

Textbook Online:

<http://connected.mcgraw-hill.com/connected/login.do>

Student User ID:

ccsd(student ID)

Password: cobmath1

Dear Parents,

Your student's math class is calling for students to be actively engaged in doing math in order to learn math. In the classroom, students will frequently work on tasks and activities to discover and apply mathematical thinking. Students will be expected to explain or justify their answers and to write clearly and properly. Your student will receive a consumable My Math textbook and online access from his or her teacher.

Concepts Students will Use and Understand

- Fractions can be represented in multiple ways including visual and written form.
- Fractions can be decomposed in multiple ways into a sum of fractions with the same denominator.
- Fractional amounts can be added and/or subtracted.
- Mixed numbers can be added and/or subtracted.
- Mixed numbers and improper fractions can be used interchangeably because they are equivalent.
- Mixed numbers can be ordered by considering the whole number and the fraction.
- Proper fractions, improper fractions and mixed numbers can be added and/or subtracted.
- Fractions, like whole numbers can be unit intervals on a number line.
- Fractional amounts can be added and/or multiplied.
- If given a whole set, we can determine fractional amounts. If given a fractional amount we can determine the whole set.
- When multiplying fractions by a whole number, it is helpful to relate it to the repeated addition model of multiplying whole numbers.
- A visual model can help solve problems that involve multiplying a fraction by a whole number.
- Equations can be written to represent problems involving the multiplication of a fraction by a whole number.
- Multiplying a fraction by a whole number can also be thought of as a fractional proportion of a whole number. For example, $\frac{1}{4} \times 8$ can be interpreted as finding one-fourth of eight.
- Data can be measured and represented on line plots in units of whole numbers or fractions.
- Data can be collected and used to solve problems involving addition or subtraction of fractions.
- Use the four operations to solve multistep problems with whole numbers.

Vocabulary

common fraction: a fraction in which the numerator and denominator are both integers and are separated by a horizontal or slanted line

denominator: the bottom number in a fraction; the denominator indicates the total number of equal parts that make up the whole

equivalent sets: two groups or sets that have an equal number of items

improper fraction: a fraction in which the numerator is greater than the denominator (example: $\frac{5}{4}$)

increment: the process of increasing in number, size, or quantity

mixed number: a number consisting of a whole number and a proper fraction

numerator: the top number in a fraction; the numerator represents a number of equal parts within the whole

proper fraction: a fraction that is less than one, with the numerator less than the denominator

unit fraction: a fraction with a numerator of one

whole number: a number that has no fractional or decimal parts (1, 2, 3, etc.)

Symbols

$\frac{1}{2}$ -Common Fraction

$\frac{4}{3}$ -Improper Fraction

$5\frac{1}{2}$ -Mixed Number

Example 1

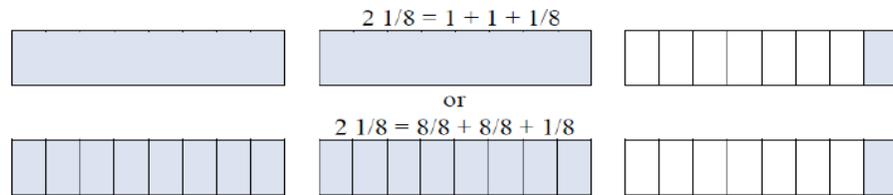
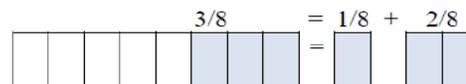
Compose (join) and Decompose (separate) Fractions of the Same Whole

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

Example: $1\frac{1}{4} - \frac{3}{4} = ? \rightarrow \frac{4}{4} + \frac{1}{4} = \frac{5}{4} \rightarrow \frac{5}{4} - \frac{3}{4} = \frac{2}{4} \text{ or } \frac{1}{2}$

Example 2

Decompose a Fraction into a Sum of Fractions with the Same Denominator



Example 3

Add and Subtract Mixed Numbers with Like Denominators

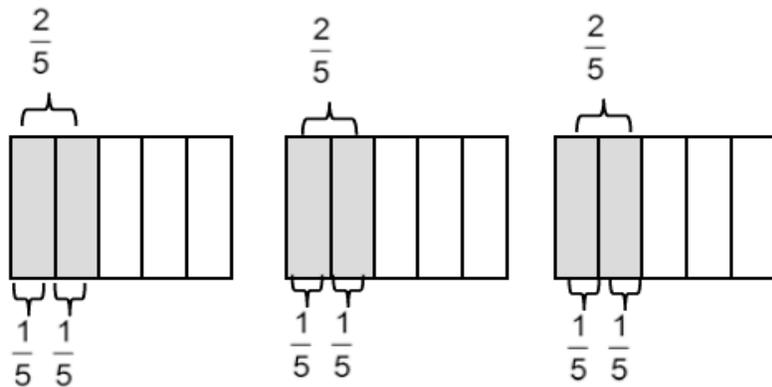


Student 1	Student 2	Student 3
$3 + 2 = 5 \text{ and } \frac{3}{4} + \frac{1}{4} = 1$	$3\frac{3}{4} + 2 = 5\frac{3}{4} + \frac{1}{4} = 6$	$3\frac{3}{4} = \frac{15}{4} \text{ and } 2\frac{1}{4} = \frac{9}{4} \text{ so } \frac{15}{4} + \frac{9}{4} = \frac{24}{4} = 6$

Example 4

Multiplication of a Fraction by a Whole Number

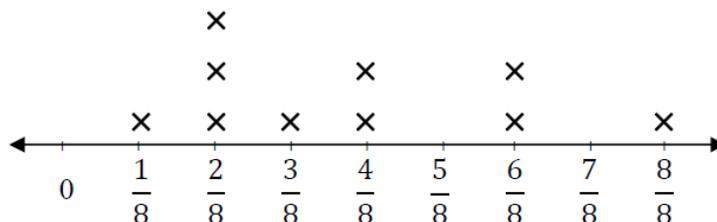
$$3 \times \frac{2}{5} = 6 \times \frac{1}{5} = \frac{6}{5}$$



Example 5

Represent and Interpret Data on a Line Plot

A student measured all of the objects in his desk. Record the lengths of each object on a line plot.



Activities to Complete at Home:

- Practice filling a measuring cup with water to show different mixed numbers. For example, pour $3 \frac{1}{2}$ cups of water into a bowl. Discuss the relevance of mixed numbers in a real-world context.
- Make a sandwich for each member of the family. Divide the sandwich into fourths. If you place $\frac{3}{4}$ of each sandwich on a plate, how many fourths are on the plate? (Example: $3 \times \frac{3}{4} = \frac{9}{4} = 2 \frac{1}{4}$ sandwich pieces).
- Measure various objects around your house to the nearest $\frac{1}{8}$ of an inch. Create a line plot to display the data. Ask your child questions about the line plot. (Example: How many objects were longer than $\frac{1}{2}$ inch?)
- While in the car, mark the passing of time with fractions. "We are one-third of the way there." "It will take us 20 minutes to get to the library." "In how many minutes will we be half-way there?"
- Practice finding solutions to everyday problems that occur. For example, while at the market, have students