MATH NEWS

Grade 5, Module 3, Topic C

5th Grade Math

Module 3: Addition and Subtraction of Fractions

Math Parent Letter

This document is created to give parents and students an 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. Grade 5 Module 3 of Eureka Math (Engage New York) covers Addition and Subtraction of Fractions. This newsletter will discuss Module 3, Topic C.

Topic C*: Making Like Units Numerically*

Words to know:

- equivalence
- numerically
- sum
- difference
- mixed number
- improper fraction

Things to Remember!!!

- **Equivalence** - being equal, having the same value
- **Numerically** - using numbers
- **Sum** - the answer to an addition problem
- **Difference** - the answer to a subtraction problem
- **Number Line** - a line used to show placement of whole numbers, fractions, and mixed numbers
- **Mixed Number** – a whole number plus a fraction smaller than 1, written without the + sign, e.g. $5\frac{3}{4}$ means $5 + \frac{3}{4}$
- **Improper Fraction** – a fraction with the numerator equal to or greater than the denominator

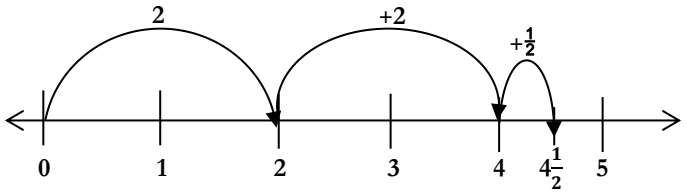
OBJECTIVES OF TOPIC C

- Add fractions to and subtract fractions from **whole numbers** using **equivalence** and the **number line** as strategies.
- Add fractions making like units **numerically.**
- Add fractions with **sums** greater than 2.
- Subtract fractions making like units **numerically.**
- Subtract fractions greater than or equal to 1.

Focus Area– Topic C: *Making Like Units*

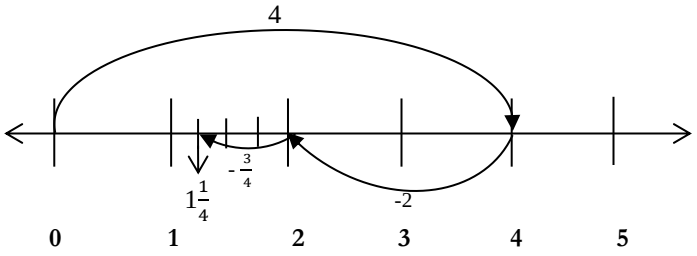
Problem 1: $2 + 2\frac{1}{2} = 4\frac{1}{2}$

Step 1: Add the whole numbers.
Step 2: Add the fraction.



Problem 2: $4 - 2\frac{3}{4} = 1\frac{1}{4}$

Step 1: Subtract the whole numbers.
Step 2: Subtract the fraction.



Problem 3: $\frac{3}{4} - \frac{1}{5} = \left(\frac{3x5}{4x5}\right) + \left(\frac{1x4}{5x4}\right)$

$\frac{15}{20} + \frac{4}{20} = \frac{19}{20}$

Step 1: Make like units **numerically.**
Step 2: Add fractions.

Problem 4: $7\frac{5}{8} + 8\frac{2}{5}$

Step 1: Add the whole numbers. $= 7 + 8 + \frac{5}{8} + \frac{2}{5}$

Step 2: Make like units **numerically.** $= 15 + \left(\frac{5\,x\,5}{8\,x\,5}\right) + \left(\frac{2\,x\,8}{5\,x\,8}\right)$

Step 3: Add fractions. $= 15 + \frac{25}{40} + \frac{16}{40}$

Step 4: If sum is an improper fraction, rename fraction as a mixed number. $= 15 + \frac{41}{40}$

$= 15 + 1 + \frac{1}{40}$

Step 5: Add whole number to fraction. $= 16\frac{1}{40}$

Step 6: Simplify **sum** if possible.

Problem 5: $5\frac{2}{3} - 2\frac{1}{2}$

$= (5-2) + \frac{2}{3} - \frac{1}{2}$ **(Step 1:** Subtract the whole numbers.**)**

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

$= (3 - \frac{1}{2}) + \frac{2}{3}$ **(Step 2:** Subtract the second fraction from the whole number.)

$= 2\frac{1}{2} + \frac{2}{3}$ **(Step 3:** Make like units **numerically.)**

$= 2 + \left(\frac{1x3}{2x3}\right) + \left(\frac{2x2}{3x2}\right)$

$= 2 + \frac{3}{6} + \frac{4}{6}$ **(Step 4:** Add the fractions.**)**

$= 2 + \frac{7}{6}$ **(Step 5:** If sum of the fractions is an improper fraction, rename as a whole or mixed number.**)**

$= 2 + 1 + \frac{1}{6}$ **(Step 6:** Add fraction to whole numbers.**)**

$= 3\frac{1}{6}$ **(Step 7:** Simplify fraction if possible.**)**

Problem 6: Mrs. Sanchez made $7\frac{4}{5}$ gallons of punch for a party. If there were $10\frac{1}{2}$ gallons in the mixture, how many gallons did she have left in the mixture?

$10\frac{1}{2} - 7\frac{4}{5}$

$= (10-7) + \frac{1}{2} - \frac{4}{5}$

$= 3 + \frac{1}{2} - \frac{4}{5}$

$= \left(3 - \frac{4}{5}\right) + \frac{1}{2}$

$= 2\frac{1}{5} + \frac{1}{2}$

$= 2 + \left(\frac{1x2}{5x2}\right) + \left(\frac{1x5}{2x5}\right)$

$= 2 + \frac{2}{10} + \frac{5}{10} = 2\frac{7}{10}$

There are $2\frac{7}{10}$ gallons of Mrs. Sanchez's punch mixture left.

Problem 7: Bryant has a goal to drink at least $6\frac{1}{2}$ quarts of water during his day of training for the big marathon race. On his first break he drank $1\frac{3}{4}$ quarts, and during his second break he had another $2\frac{1}{5}$ quarts. How many quarts of water should Bryant drink on his last break of the day to reach his goal?

$$6\tfrac{1}{2} - \left(1\tfrac{3}{4} + 2\tfrac{1}{5}\right) = 6\tfrac{1}{2} - \left(3\tfrac{3}{4} + \tfrac{1}{5}\right) = 6\tfrac{1}{2} - \left(3 + \tfrac{3x5}{4x5} + \tfrac{1x4}{5x4}\right) = 6\tfrac{1}{2} - \left(3 + \tfrac{15}{20} + \tfrac{4}{20}\right)$$

$$6\tfrac{1}{2} - 3\tfrac{19}{20} = (6-3) + \tfrac{1}{2} - \tfrac{19}{20} = 3 + \tfrac{1}{2} - \tfrac{19}{20} = (3 - \tfrac{19}{20}) + \tfrac{1}{2}$$

$$2\tfrac{1}{20} + \tfrac{1}{2} = 2 + \left(\tfrac{1x2}{20x2}\right) + \left(\tfrac{1x20}{2x20}\right) = 2 + \tfrac{2}{40} + \tfrac{20}{40} = 2\tfrac{22}{40} = 2\tfrac{22\div2}{40\div2} = 2\tfrac{11}{20}$$

Or $2\tfrac{1}{20} + \tfrac{1}{2} = 2 + \left(\tfrac{1x1}{20x1}\right) + \left(\tfrac{1x10}{2x10}\right) = 2 + \tfrac{1}{20} + \tfrac{10}{20} = 2\tfrac{11}{20}$

Students do **not** have to use the least common denominator. They are just expected to create common denominators. In the end the answers will be the same.

Bryant should drink $2\frac{11}{20}$ quarts of water to reach his goal.

*******The strategy above is a possible approach. The student could have first added $1\frac{3}{4} + 2\frac{1}{5}$. Then take the sum and subtract from $6\frac{1}{2}$.***