MATH NEWS

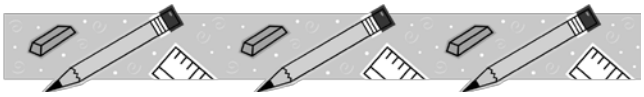
Grade 7, Module 2, Topic C

7th Grade Math

Module 2: Rational Numbers

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 2 of Eureka Math (Engage New York) builds on their understanding of rational numbers to add, subtract, multiply, and divide signed numbers. Previous work in computing the sums, differences, products, and quotients of fractions serves as a significant foundation as well.



Focus Area Topic C:

Applying Operations with Rational Numbers To Expressions and Equations

Words to Know:

Additive Identity - the additive identity is 0.

Break-Even Point - the point at which there is neither a profit nor loss.

Profit - a gain; as in the positive amount represented by the difference between the money earned and spent.

Students understand that if a number sentence is true and we make any of the following changes to the number sentence, the resulting number sentence will be true:

Adding the same number to both sides of the equation

If $a = b$, then $a + c = b + c$

Subtracting the same number from both sides of the equation

If $a = b$, then $a - c = b - c$

Multiplying each side of the equation by the same number

If $a = b$, then $a(c) = b(c)$

Dividing each side of the equation by the same nonzero number

If $a = b$ and $c \neq 0$, then $a \div c = b \div c$

Focus Area Topic C:

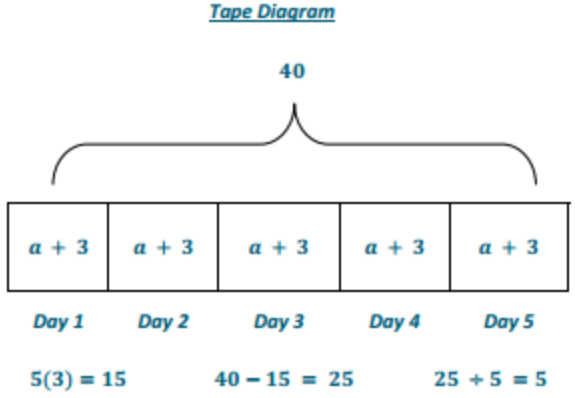
Applying Operations with Rational Numbers to Expressions and Equations

In Topic C, students problem-solve with rational numbers and draw upon their work from Grade 6 with expressions and equations. They perform operations with rational numbers, incorporating them into algebraic expressions and equations.

Example Problem and Answer

Problem: Eric's father works two part-time jobs; one in the morning, and one in the afternoon, and works a total of 40 hours each 5-day work week. If his schedule is the same each day and he works 3 hours each morning, how many hours does Eric's father work each afternoon?

Answer: Eric's father works 5 hours in the afternoon.



Algebraic Equation & Solution

Number of Afternoon hours: a

Number of Morning hours: 3

5(a + 3) = 40 This means 5 groups of *a+3*

5a + 15 = 40 Distributive Property

If 5a + 15 = 40, then 5a+ 15-15= 40-15

5a + 0 =25 Simplify the equation

5a= 25 Divide by 5 or multiply by $\frac{1}{5}$ to solve for *a*.

a = 5

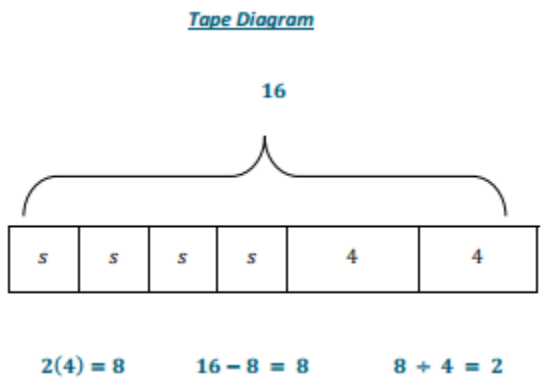
Focus Area Topic C:

Students translate word problems to write and solve algebraic equations using tape diagrams to model the steps they record algebraically.

Example Problem and Solution:

Henry is making a bookcase and has a total of 16ft. of lumber. The left and right sides of the bookcase are each 4 ft. high. The top, bottom and two shelves are all the same length. How long is each shelf?

Solution: Each shelf is 2 ft. long.



Algebraic Equation & Solution
Shelves: s ft.
Sides: 8 ft.
$4s + 8 = 16$ 4 shelves plus sides (8 ft.) = 16 ft.

If $4s + 8 = 16$, then $4s + 8 - 8 = 16 - 8$

$4s + 0 = 8$ Simplify

$4s = 8$ Divide by 4 or multiply by $\frac{1}{4}$ to solve for s.

$s = 2$

Students write and evaluate expressions to represent real-world scenarios.

Example Problem and Solution:

Three friends went to the movies. Each purchased a medium-sized popcorn for p dollars and a small soft drink for s dollars. Write the expression that represents the total amount of money the three friends spent at the concession stand.

Solution: 3(p + s)

Explanation: This means 3 groups of $p + s$. Three friends each have a popcorn and small drink. We can also write the expression as 3p + 3s (Three popcorns plus three small drinks) then we can use the distributive property, which is why the solution is 3 (p + s).

Students perform various calculations involving rational numbers to solve a problem related to the change in an investment's balance over time.

Example Problem and Solution:

Using the incomplete register below, work forward and backward to determine the beginning and ending balances after the series of transactions listed.

DATE	DESCRIPTION OF TRANSACTION	PAYMENT	DEPOSIT	BALANCE
	Beginning Balance	---	---	
1/31/12	Paycheck		350.55	
2/1/12	Gillian's Chocolate Factory (Candy)	32.40		685.26
2/4/12	Main Street Jeweler's	425.30		
2/14/12	Saratoga Steakhouse	125.31		

Solution:

DATE	DESCRIPTION OF TRANSACTION	PAYMENT	DEPOSIT	BALANCE
	Beginning Balance	---	---	367.11
1/31/12	Paycheck		350.55	717.66
2/1/12	Gillian's Chocolate Factory (Candy)	32.40		685.26
2/4/12	Main Street Jeweler's	425.30		259.96
2/14/12	Saratoga Steakhouse	125.31		134.65

Students revisit the Integer Game to justify if-then statements found in the lesson.

Example Problem and Solution:

Compare the two expressions.
Expression 1: 6 + 7 + -5 Expression 2: -5 + 10 + 3

A. Are the two expressions equivalent? How do you know?
B. Subtract -5 from each expression. Write the new numerical expression, and write a conclusion as an if-then statement.

Solution: A. Yes, they are both equal to 8. When two expressions evaluate to the same number they are equivalent.
Part B:
Expression 1: $6 + 7 + -5 - (-5)$ 13
Expression 2: $-5 + 10 + 3 - (-5)$ 13

If $6 + 7 + -5 = -5 + 10 + 3$, then $6 + 7 + -5 - (-5) = -5 + 10 + 3 - (-5)$.

If expression 1 = expression 2 then expression $1 - (-5)$ = expression $2 - (-5)$.

Students solve equations for the value of the variable by using inverse operations.

Example Problem and Solution: Suppose you want to buy your favorite ice cream bar while at the amusement park and it costs $2.89. If you purchase the ice cream bar and 3 bottles of water, and pay with a $10 bill and receive no change, then how much did each bottle of water cost?

Solution: 2.89 + 3w = 10

The cost of a water bottle is $2.37.

Explanation: w = cost of each water
Three bottles of water plus an ice cream bar cost $10. Subtract 2.89 to get the cost of only the water. Divide by 3 to get the cost of each water.