



MATH NEWS



LAFAYETTE
PARISH SCHOOL SYSTEM

Grade 6, Module 4, Topic A

6th Grade Math

Module 4: Relationships of 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.) and is also posted as the Engage New York material being taught in the classroom. In Module 4 of Eureka Math (Engage New York), students will further discover and clarify the relationship of operations using models. From these models, students build and evaluate identities that are useful in solving equations and developing proficiencies with solving problems algebraically.



Focus Area Topic A:

Relationships of Operations

Words to Know:

Expression – Numbers, symbols and operators (such as + and \times) grouped together that show the value of something.

Number Sentence – Math sentence written using mathematics symbols and numerals.

Variable – A symbol for a specific number we don't know yet. It is usually a letter like x or y.

Evaluate – To calculate the value of.

Sum – The result of adding two or more numbers.

Difference- The result of subtracting two numbers.

Product – The answer to a multiplication problem.

Quotient – The answer to a division problem.

Equation – An equation says that two things are the same, using mathematical symbols.

Quotient – The answer to a division problem.

Focus Area Topic A:

Relationships of Operations

In Topic A, students extend their arithmetic work to include letters to represent numbers. Students understand that letters are simply “stand-ins” for numbers and that arithmetic is carried out exactly as it is with numbers.

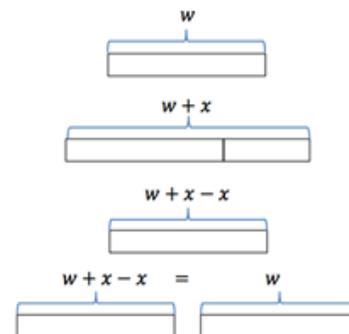
The Relationship of Addition and Subtraction

Inverse Operations

Using prior knowledge of numbers and operations, students further discover and clarify the relationships of the operations using models. Inverse operations are operations that reverse the effect of another operation. For example, addition and subtraction are inverse operations because addition reverses, or undoes, the effect of subtraction and subtraction reverses, or undoes the effect of addition.

Draw a series of tape diagrams to model to represent the following number sentence.

$$w + x - x = w$$



Draw a series of tape diagrams to represent the following number sentence.

$$12 \div 3 \times 3 = 12$$

Answer:



Focus Area Topic A:



Focus Area Topic A:

*The Relationship of Multiplication and Addition
& Division and Subtraction*

Similar Operations

Students continue to discover number relationships using tape diagrams. They will find the relationship between multiplication and addition as well as division and subtraction.

Example Problems and Answers

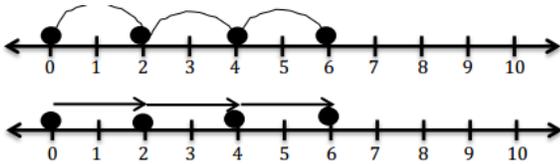
Problem: Write the addition sentence and the multiplication sentence that describes the model.



Answer:
 $5 + 5 + 5$
 and
 3×5

Problem: Roberto is not familiar with tape diagrams and believes that he can show the relationship of multiplication and addition on a number line. Help Roberto demonstrate that the expression 3×2 is equivalent to $2 + 2 + 2$ on a number line.

Answer:



The first number line shows that there are three groups of 2, results in 6. The second number line shows the sum of $2 + 2 + 2$, results in 6.

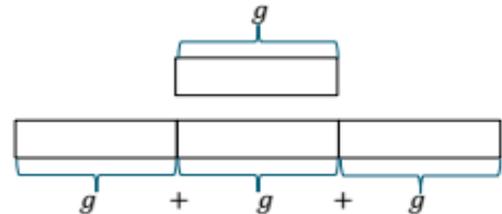
Focus Area Topic A:

*The Relationship of Multiplication and Addition
& Division and Subtraction*

Problem: Using variables, write a number sentence to show the relationship of multiplication and addition.

Answer: $3g = g + g + g$

Each “g” in the tape diagram represents the same number.



$3g$ is the same as writing $3 \times g$, but we no longer use the “x” to represent multiplication because it looks like a variable and therefore can be confusing. From here on out, whenever a number is next to a variable with no sign between them, it indicates multiplication.

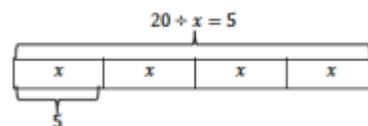
Problem: If $24 \div b = 12$, which number is being subtracted 12 times in order for the answer to be zero?

Answer: $24 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 = 0$; the answer is 2.

Problem: Represent $56 \div 8 = 7$ using subtraction. Explain your reasoning.

Answer: $56 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 = 0$ because $56 - 7 = 49$; $49 - 7 = 42$; $42 - 7 = 35$; $35 - 7 = 28$; $28 - 7 = 21$; $21 - 7 = 14$; $14 - 7 = 7$; $7 - 7 = 0$. $56 - 7$ eight times = 0 therefore; $56 \div 8$ is 7.

Problem: “x” is a number. What does $20 \div x = 5$ mean? What must the value of “x” be in the equation?



Answer: Exactly 5 “x”s can be subtracted from 20. The value of “x” would be 4.

$$20 - x - x - x - x - x = 0$$

$$20 - 4 - 4 - 4 - 4 - 4 = 0$$

