



MATH NEWS



LAFAYETTE
PARISH SCHOOL SYSTEM

Grade 6, Module 4, Topic G

6th Grade Math

Module 4 : Expressions and Equations

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. In Module 4, Topic G, students recognize that the solution can also be found using properties of operations. They make connections to the model and determine that $1 + a - 1 = 6 - 1$ and , ultimately, that $a = 5$. Students represent two- step and multi-step equations involving all operations with bar models or tape diagrams while continuing to apply properties of operations and the order of operations to solve equations in the remaining lessons in this topic.



Focus Area Topic G:

Solving Equations

Words to Know:

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

Number Sentence – a math sentence written using mathematical symbols and numerals.

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

Evaluate – to calculate the value of an equation.

Sum – the result of adding two or more numbers.

Difference- the result of subtracting two numbers.

Product- the result of multiplying two or more numbers

Quotient – the answer after you divide one number by another

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

Inequality- a mathematical sentence that contains the symbols, <, >, ≥ or, ≤.

Solution to the equation- a number or value for the variable that results in a true number sentence

Focus Area Topic G:

Solving Equations

The opening exercise in Topic G has students discussing the symbols used to compare number sentences. Students will use these symbols to write complete sentences to describe what happens when a variable is substituted with a number, and if it converts the equation or inequality into a true number sentence or a false number sentence.

Example Problem and Solution:

Symbol	What the Symbol Stands For	Example
=	Is equal to	$4\frac{7}{8} = 4.875$
>	Is greater than	$5\frac{1}{4} > 4\frac{7}{8}$
<	Is less than	$4\frac{1}{2} < 4\frac{7}{8}$
≥	Is greater than or equal to	$4\frac{7}{8} \geq 4\frac{7}{8}$
≤	Is less than or equal to	$4\frac{7}{8} \leq 5\frac{1}{4}$

Example Problem and Solution:

Substitute the value into the variable and state in a complete sentence whether the resulting number sentence is true or false.

1. $4 + x = 12$; Substitute 8 for x.

$$4 + 8 = 12$$

When 8 is substituted for x, then number sentence is true.

2. $3g > 15$; Substitute $4\frac{1}{2}$ for g.

$$3(4\frac{1}{2}) > 15$$

$$13\frac{1}{2} \text{ is not greater than } 15$$

When $4\frac{1}{2}$ is substituted for g, the number sentence is false.



Focus Area Topic G:

Solving Equations

For the next few examples students identify a value for the variable that would make each equation or inequality a true number sentence..

Example Problem and Solution:

Identify a value for the variable that would make each equation or inequality true. Is this the only possible answer? State when the equation or inequality is true using equality and inequality symbols.

- $3g = 12$; The equation is true when $g = 4$
- $30 > 2d$; Answers can vary. The inequality is true when $d < 15$
- $10 - h \leq 7$; The inequality is true for any value of h that is greater than or equal to 3 and false when the value is less than 3.

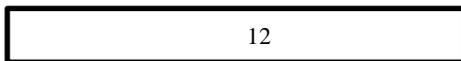
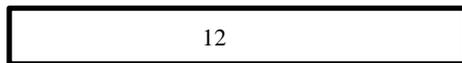
or

The inequality is true when $h \geq 3$ and false when $h < 3$.

In lesson 26, students solve one-step equation through the use of a tape diagram.

Example Problem and Solution:

$$12 = 8 + c$$



Focus Area Topic G:

Solving Equations

In the previous example the equation $12 = 8 + c$, students solve the equation using a tape diagram. They can also solve the equation algebraically:

Examples Problem and Solutions:

$$1. 12 = 8 + c$$

$$12 - 8 = 8 + c - 8$$

$$4 = c$$

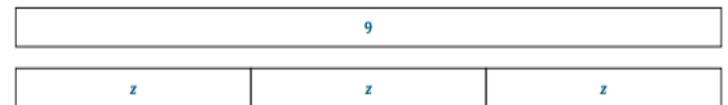
$$\text{Check: } 12 - 8 = 8 + 4 - 8;$$

$$4 = 4.$$

This is a true number sentence so 4 is the correct solution.

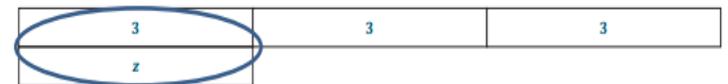
Solve $3z = 9$ using a tape diagram and algebraically; then check your answer.

First, draw two tape diagrams, one to represent each side of the equation.



If 9 has to be split into three equal groups, how big would each group be? **Answer:** 3

Demonstrate the value of z using tape diagrams.



How can we demonstrate this algebraically?

$$3z = 9$$

$$3z \div 3 = 9 \div 3$$

$$z = 3$$

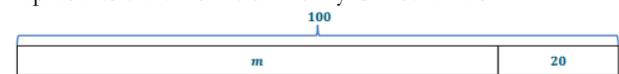
The left side of the equation will equal z because we know the identity property states $a \cdot b \div b = a$

The right side of the equation will be 3 because $9 \div 3 = 3$; therefore the value of z is 3.

We can substitute the value of z into the original equation to see if the number sentence is true.

$3(3) = 9$; $9 = 9$. The number sentence is true so our answer is correct.

2. Marissa has twice as much money as Frank. Christina has \$20 more than Marissa. If Christina has \$100, how much money does Frank have? Let f represent the amount of money Frank has in dollars and m represent the amount of money Marissa has in dollars. The tape diagram below represents the amount of money Christina has.



$$m + 20 = 100$$

$$m + 20 - 20 = 100 - 20$$

$$m = 80$$

What does the 80 represent?

80 is the amount of money in dollars that Marissa has.

Now that we know Marissa has \$80, Frank has half as much money as Marissa; therefore, $2f = 80$ is the amount of money Frank has. **Answer:** $2f \div 2 = 80 \div 2$; $f = 40$; Frank has \$40