



MATH NEWS



LAFAYETTE
PARISH SCHOOL SYSTEM

Grade 6, Module 4, Topic D

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 D of Eureka Math (Engage New York), students formally utilize their understanding of expressions in order to expand, factor, and distribute.



Focus Area Topic D:

Expanding, Factoring, and Distributing Expressions

Words to Know:

Factor- a number or variable that is multiplied to get a product.

Variable: a letter used to represent a number

Simple Expression – a number, a letter which represents a number, a product whose factors are either numbers or letters involving whole number exponents, or sums and /or differences of such products.

Product: the solution when two factors are multiplied.

Equivalent Expressions – Two simple expressions are equivalent if both evaluate to the same number for every substitution of numbers into all the letters in both expressions.

Equation – an equation is a statement of equality between two expressions. $3a = 9$

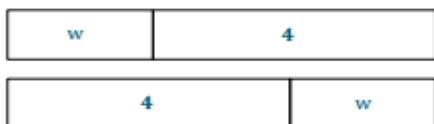
Coefficient – the factor that multiplies the variable.



Writing Addition and Subtraction Expressions

Problem and Solution:

Write an expression to show the sum of w and 4 and draw a model.



Solution: $w + 4$ or $4 + w$

Students understand that these two expressions are equivalent.

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Writing Addition and Subtraction Expression

Write an expression to show the difference of p and 3.



Answer: $p - 3$

Could we also say $3 - p$?

Answer: No, if we started with 3 and took p away, the models would not match. For instance if the value of p is 10 then 10 minus 3 is not the same as 3 minus 10.

Students recognize that these two expressions are not the same because the commutative property does not apply to subtraction.

Writing and Expanding Multiplication Expressions

Problem and Solution:

Simplify by finding the product of the following expression:

$$5 \cdot m \cdot 3 \cdot p = 5 \cdot 3 \cdot m \cdot p$$

Solution: $15mp$

In topic D students will also expand multiplication expressions.

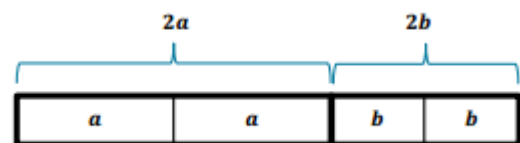
Write the following expressions in expanded form:

$35m$

Solution: $5 \cdot 7 \cdot m \cdot p$

Factoring Expressions:

What expression could we use to represent this model?



How many a 's are in the expression? 2

How many b 's are in the expression? 2

What expression could we write to represent the model?

$$(a + b) + (a + b) = 2(a + b)$$

Focus Area Topic D:

Expanding, Factoring, and Distributing Expressions

Writing and Expanding Multiplication Expressions

Problem and Solution:

Use the GCF and the distributive property to write an equivalent expression for $6x + 9y$.

The GCF of 6 and 9 is 3.

Solution: $3(2x + 3y)$ is an equivalent expression for $6x + 9y$.

Distributing Expressions:

Students model and write equivalent expressions using the distributive property. They move from a factored form to an expanded form of an expression.

Example and Solution:



What expression could we write to represent the new diagram?

Solution: $2a + 2b$

What conclusion can we draw from the models about equivalent expressions?

Solution: $2(a + b) = 2a + 2b$

Prove these two forms are equivalent by substituting numerical values for a and b .

Solution:

Let $a = 5$ and $b = 3$

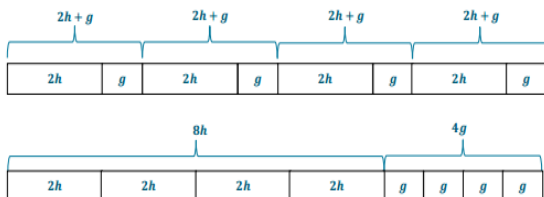
$$2(5 + 3) = 2 \cdot 5 + 2 \cdot 3$$

$$2(8) = 10 + 6 \\ 16 = 16$$

Problem and Solution:

Create a model for the expressions $4(2h + g)$. Then write another equivalent expression using the distributive property.

Solution: $8h + 4g$



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Writing Division Expression

Students write numerical expressions in two forms, $\text{dividend} \div \text{divisor}$ and $\frac{\text{dividend}}{\text{divisor}}$, and note the relationship between the two.

Problem and Solution:

Write each of the following expressions in two ways.

- 15 divided by 5

Solution $15 \div 5$ and $\frac{15}{5}$

- a divided by 4

Solution $a \div 4$ and $\frac{a}{4}$

- g divided by the quantity h plus 3

Solution $g \div (h + 3)$ and $\frac{g}{h+3}$

- the quotient of 6 and m

Solution $6 \div m$ and $\frac{6}{m}$

Write an expression using vocabulary words to represent each given expression.

Problem and Solution:

- $5d - 10$

Possible solution: The product of 5 and d minus 10 or 10 less than 5 times d .

- $\frac{b}{d+2}$

Possible solution: The quotient of b and the sum of d and 2.

Write Expressions in Which Letters Stand for Numbers

- Three more than 4 times a number c .

Solution: $4c + 3$

- The quantity of 4 increased by g , and then the sum is divided by 9.

Solution: $\frac{4+g}{9}$

- Tai earned 4 points fewer than double Oden's points. Oden earned p points.

Solution: $2p - 4$

