JANUARY 5, 2016
UNIT 4: POLYNOMIALS

SECTION 5.5: MULTIPLYING AND DIVIDING A POLYNOMIAL BY A CONSTANT

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will begin working on the Math 9 Specific Curriculum Outcome (SCO) "Patterns and Relations 7" OR PR7 which states:

PR7: "Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials concretely, pictorially and symbolically."

What does THAT mean???

SCO PR7 means that we will multiply and divide polynomials with one or more terms by monomials (expressions containing only one term). We will do this with pictures (algebra tiles) and without. The largest exponent allowed is 2.

WARM-UP, PART I: Use the following polynomial to answer the questions below.

$$5x^2 + 6y^2 - 3xy - 8$$

1. How many terms are in this polynomial? 4
2. What do you call a polynomial with this many terms?
3. What is / are the variable(s)? x and y
4. What is / are the numerical coefficient(s)? 5, 6, -3
5. What is / are the constant(s)? -8
6. What is the degree of this polynomial? 2

WARM-UP, PART II: Simplify the following:

1. $(5x^2 + 3x - 2xy - 8) + (-2x^2 - 3x + 10)$

$= 3x^2 - 2xy + 2$

2. $(-a^2 + 4a - 12) - (-7a^2 - 9a + 1)$

$= (-a^2 + 4a - 12) + (7a^2 + 9a - 1)$

$= 6a^2 + 13a - 13$

MULTIPLYING USING ALGEBRA TILES:

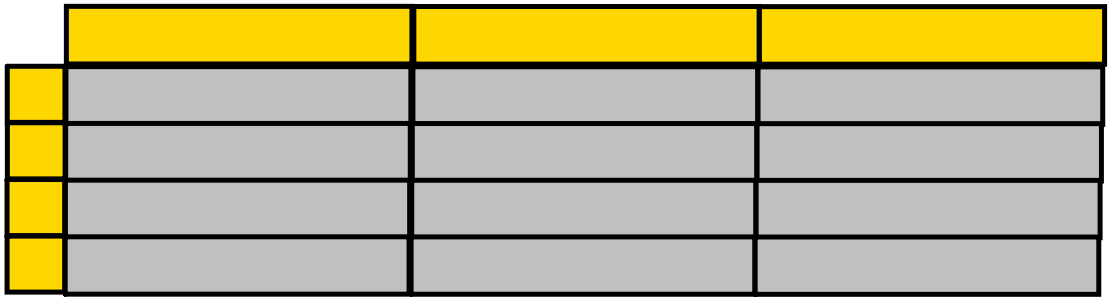
EX 1: 2(x)

So... 2(x)

= 2x

MULTIPLYING USING ALGEBRA TILES:

EX 2 : 4(3x)

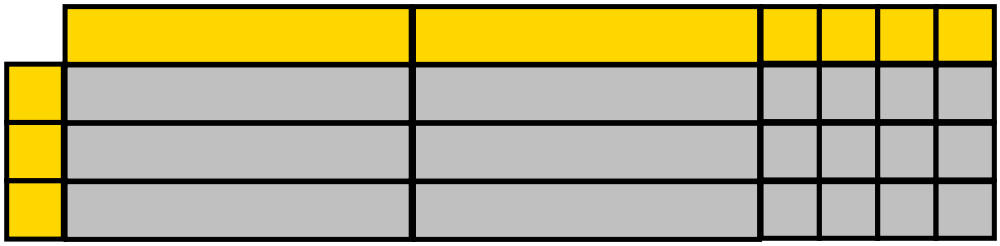


So... 4(3x)

= 12x

MULTIPLYING USING ALGEBRA TILES:

EX 3: 3(2m + 4)



So... $3(2m + 4)$

$= 6m + 12$

TO MULTIPLY A POLYNOMIAL BY A CONSTANT:

Multiply the constant outside the brackets by the coefficients and/or constants inside the brackets. ("Distribute" the constant to all of the actual numbers inside the brackets.)

Distributive Property: A product can be written as a sum or difference of two products.

EX:	$a(b + c)$	$a(b - c)$
	$= ab + ac$	$= ab - ac$

EX:	$2(4 + 3)$	$2(4 - 3)$	**(BEDMAS)**
	$= 2(7)$	$= 2(1)$	
	$= 14$	$= 2$	

EX:	$2(4 + 3)$	$2(4 - 3)$	**(DIST. PROP.)**
	$= 2(4) + 2(3)$	$= 2(4) - 2(3)$	
	$= 8 + 6$	$= 8 - 6$	
	$= 14$	$= 2$	

EX: $3(2m + 4)$

$= 3(2m) + 3(4)$

$= 6m + 12$

MULTIPLYING USING THE DISTRIBUTIVE PROPERTY:

EX 1: $4(3x)$

$= 12x$

EX 2: $5(2y - 7)$

$= 5(2y) + 5(-7)$

$= 10y - 35$

EX 3: $-2(4p^2 - p + 6)$

$= -8p^2 + 2p - 12$

EX 4: $(4x^2 + 3xy - 7y)(2)$

$= 8x^2 + 6xy - 14y$

CONCEPT REINFORCEMENT:

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Page 246: #7ab
Page 247: #12 and #15
Page 248: #21 and #22