December 6, 2017

UNIT 4: POLYNOMIALS

SECTION 5.6: MULTIPLYING AND DIVIDING A POLYNOMIAL BY A MONOMIAL

K. SEARS
MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

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

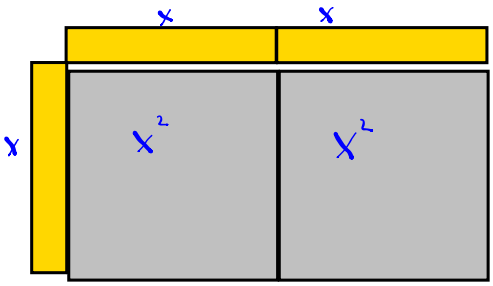
PR7: "Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials concretely, pictorially and symbolically."

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.

MULTIPLYING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

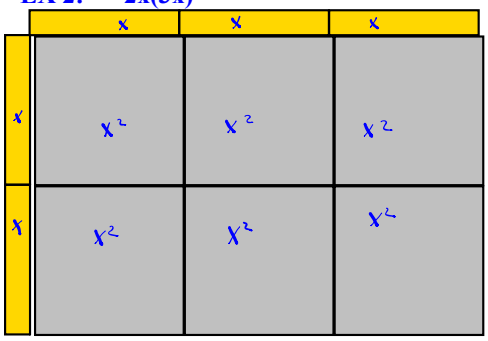
EX 1: $x(2x) = 2x^2$



So... $x(2x) = 2x^2$

MULTIPLYING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

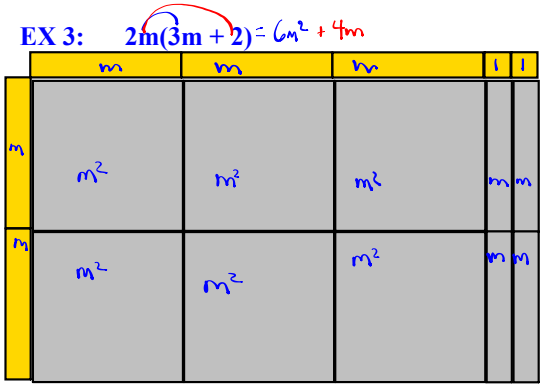
EX 2: $2x(3x) = 6x^2$



So... $2x(3x) = 6x^2$

MULTIPLYING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

EX 3: $2m(3m + 2) = 6m^2 + 4m$



So... $2m(3m + 2) = 6m^2 + 4m$

TO MULTIPLY A POLYNOMIAL BY A MONOMIAL:

Using the distributive property, multiply the monomial outside the brackets by each term inside the brackets. Multiply the coefficient outside the brackets by the coefficient(s) and/or constant inside the brackets, and add the exponents of common variables (see page 86, "Product of Powers").

EX: $1x(2x) = 2x^2$
$= 1x(2x)$
$= (1)(2)(x)(x)$
$= 2x^2$

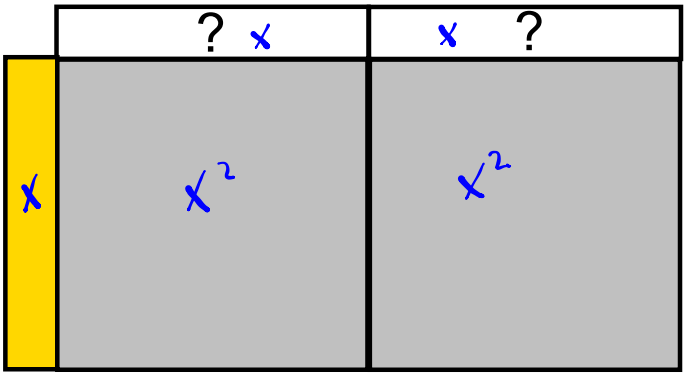
EX: $2x(3x) = 6x^2$
$= (2)(3)(x)(x)$
$= 6x^2$

EX: $2m(3m + 2) = 6m^2 + 4m$
$= (2m)(3m) + (2m)(2)$
$= (2)(3)(m)(m) + (2)(2)(m)$
$= 6m^2 + 4m$

EX: $-4p(-5p + 6q - 7) = 20p^2 - 24pq + 28p$
$= 20p^2 - 24pq + 28p$

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

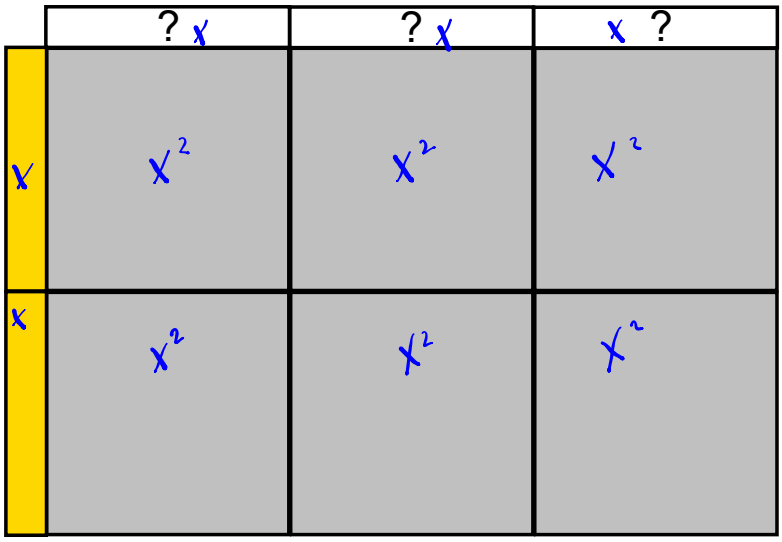
EX 1: $2x^2/x = 2x$



So... $2x^2/x$
$= 2x$

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

EX 2: $6x^2/2x = 3x$

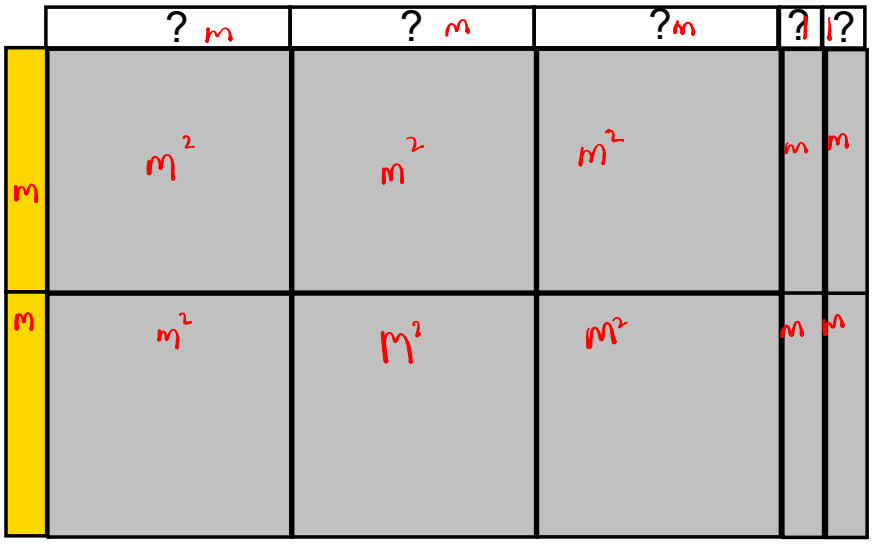


So... $6x^2/2x$

$= 3x$

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

EX 3: $(6m^2 + 4m)/2m$ → $\frac{6m^2}{2m} + \frac{4m}{2m}$ → $3m + 2$



So... $(6m^2 + 4m)/2m$

$= 3m + 2$

TO DIVIDE A POLYNOMIAL BY A MONOMIAL:

Using the distributive property, divide each term in the polynomial by the monomial. Divide the polynomial's coefficient(s) and/or constant by the coefficient in the monomial, and subtract the exponents of common variables (see page 86, "Quotient of Powers").

EX: $2x^2/x$

$= 2x^2/1x$

$= (2 \div 1)(x^2 \div x)$

$= (2)(x)$

$= 2x$

EX: $6x^2/2x$

$= (6 \div 2)(x^2 \div x)$

$= (3)(x)$

$= 3x$

EX: $(6m^2 + 4m)/2m$

$= (6m^2 \div 2m) + (4m \div 2m)$

$= (6 \div 2)(m^2 \div m) + (4 \div 2)(m \div m)$

$= (3)(m) + (2)(1)$

$= 3m + 2$

EX: $\frac{16x^2 - 32xy + 40x}{-4x}$

$= -4x + 8y - 10$

CONCEPT REINFORCEMENT:

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Page 255: 4, 6, 7, 9ab, 10ab

Page 256: 11, 12, 14, and 16

Page 257: 19 - 25

TEST PREPARATION:

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Page 258: Study Guide
Page 259: #1 TO #7, #9 and #10
Page 260: #12, #15, #16, #18 and #19
Page 261: #22 TO #29
Page 262: Practice Test