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UNIT 4:   POLYNOMIALS

SECTION 5.6:
MULTIPLYING AND
DIVIDING A
POLYNOMIAL BY A
MONOMIAL

M. MALTBY INGERSOLL
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."
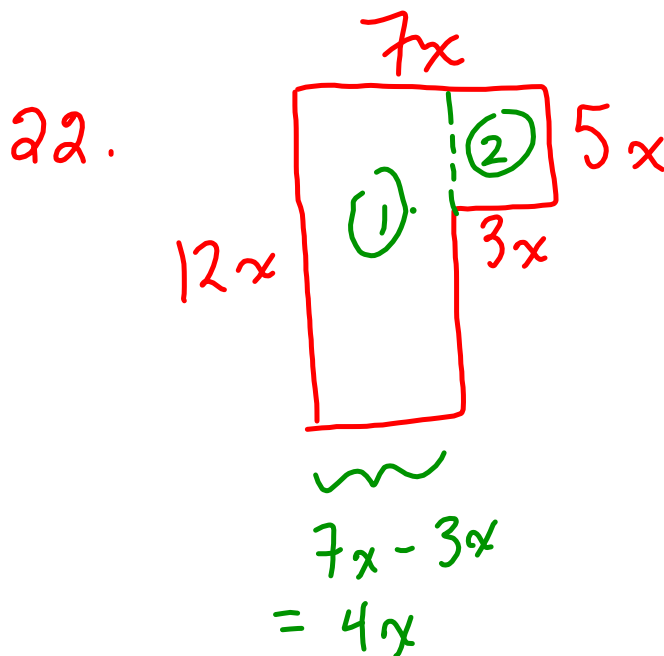
What does THAT mean???

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.

HOMEWORK QUESTIONS???
(pgs 255/6/7, #6, 9ab, 12, 14, 19, 20, 22 and 24)

22.

$$7x$$

$$12x$$

② $5x$

① $3x$

$7x - 3x$

$= 4x$

$A = ① + ②$

$= bh + bh$

$= 4x(12x) +$

$3x(5x)$

$= 48x^2 + 15x^2$

$= 63x^2$

HOMEWORK QUESTIONS???
(pgs 255/6/7, #6, 9ab, 12, 14, 19, 20, 22 and 24)

24. $2\pi r (r + h)$

a) $2\pi r^2 + 2\pi rh$

b) $2\pi r (r+h)$
   $= [2\pi(5)](5+3)$
   $\doteq 31.4159(8)$

   $\doteq 251.3274 \text{ cm}^2$

$2\pi r^2 + 2\pi rh$
$= 2\pi(5^2) + 2\pi$
$\qquad (5)(3)$
$\doteq 157.0796 +$
$\qquad 94.2478$
$\doteq 251.3274 \text{ cm}^2$

WARM-UP: Multiply or divide as indicated.

1. -6(y² - 8y + 10)   **2. $\underline{27a^2 - 30b^2 + 18ab - 3}$**
                                       -3

$= -6y^2 + 48y - 60$

$= -9a^2 + 10b^2 - 6ab + 1$

3. -7x(2x - 6xy + 9)

$= -14x^2 + 42x^2y - 63x$

$$x + x$$

$$= 1x^1 + 1x^1$$

$$= 2x^1$$

$$= 2x$$

$$x(x)$$

$$= 1x^1(1x^1)$$

$$= 1x^2$$

$$= x^2$$

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

EX 1:   **2x²/x** $\dfrac{2x^2}{x}$

?	?
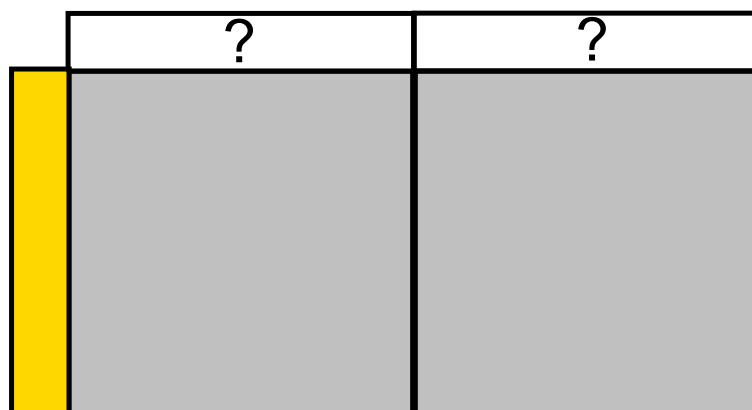
So...   **2x²/x**

      = 2x

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

$$\frac{6x^2}{2x}$$

EX 2:   **6x²/2x**

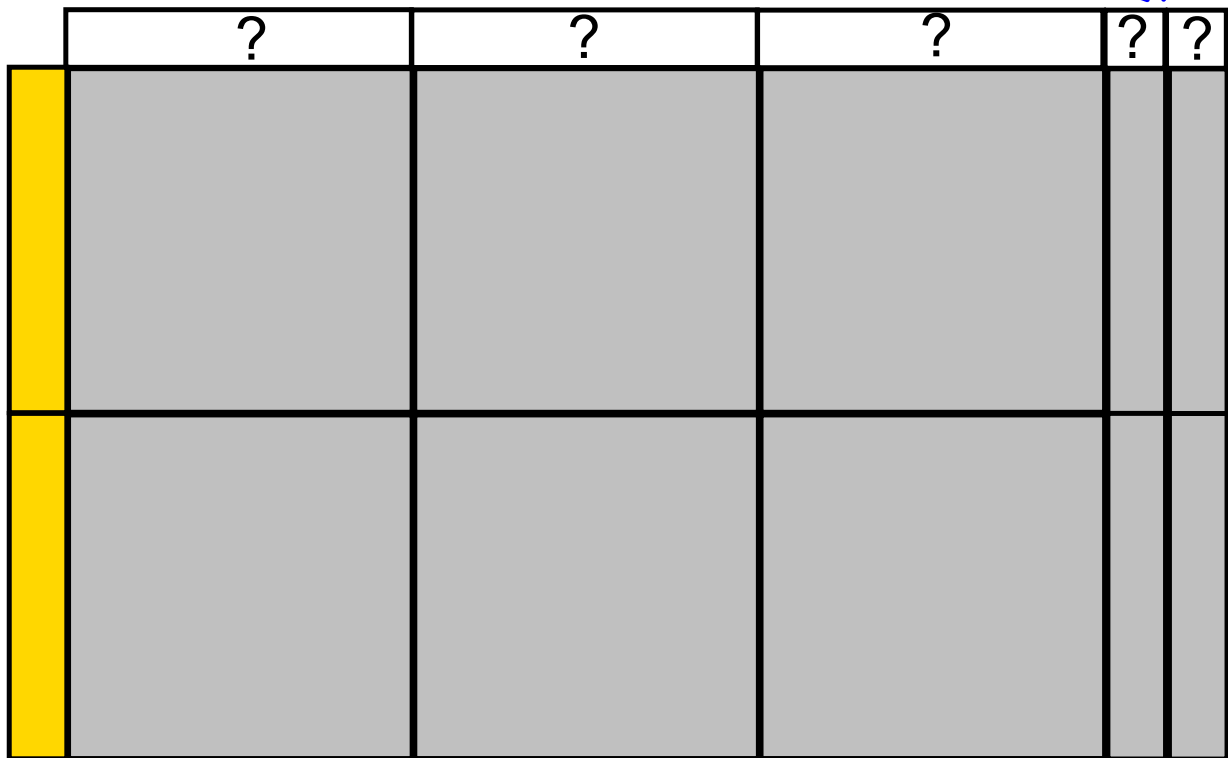| ?	?	?
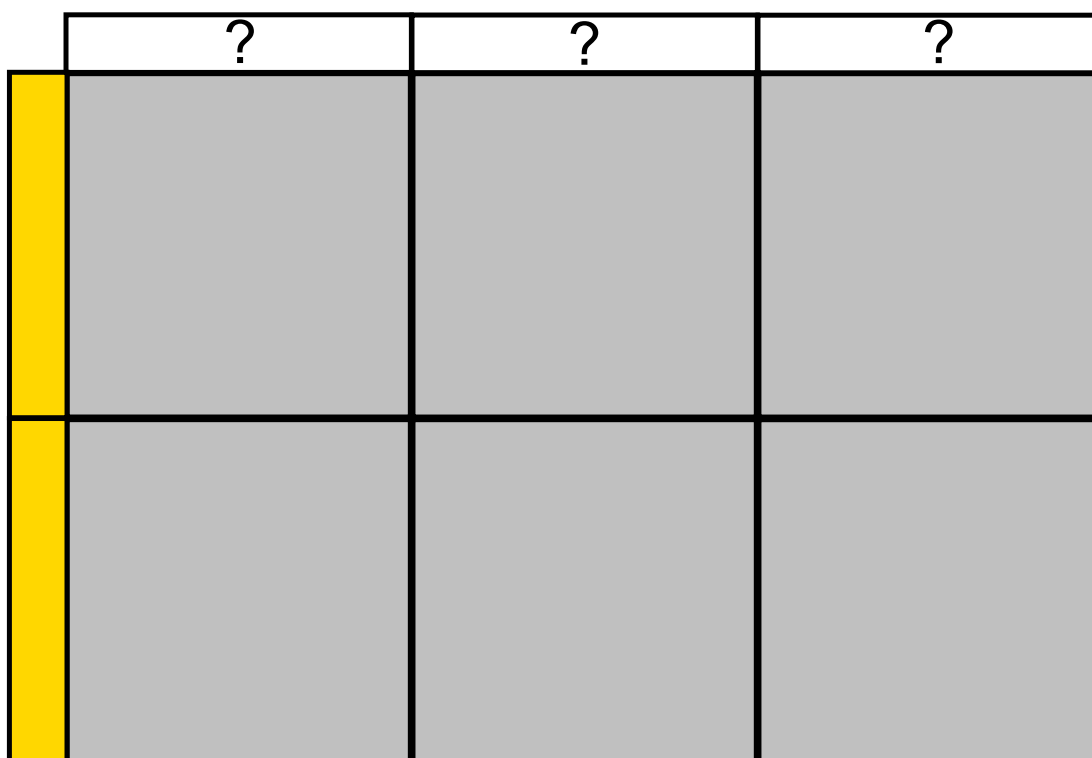
So...   **6x²/2x**

$$= \ 3x$$

DIVIDING POLYNOMIALS BY MONOMIALS USING ALGEBRA TILES:

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

$$\frac{6m^2 + 4m}{2m}$$

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

$$\frac{x^5}{x^3}$$

$$= x^2$$

$$\frac{m^1}{m^1} \qquad \frac{5}{5}$$

$$= m^0 \qquad = 1$$

$$= 1$$

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: $2x^2/x$

     $= \ 2x^2/1x$

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

     $= \ (2)(x)$

     $= \ 2x$

$$\frac{2x^2}{1x^1} \ \rangle \ \text{subtract}$$
$$= 2x^1 \quad \underset{\frown}{2-1}$$
$$= 2x$$

EX: $6x^2/2x$

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

     $= \ (3)(x)$

     $= \ 3x$

$$\frac{6x^2}{2x^1}$$
$$= 3x$$

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

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

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

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

     $= \ 3m + 2$

$$\frac{6m^2 + 4m}{2m}$$

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

     $= \ -4x + 8y - 10$

$$\frac{6m^2 + 4m}{2m}$$

$$= 3m + 2$$

$$\frac{6m^2 + 2m}{2m}$$

$$= 3m + 1$$

CONCEPT REINFORCEMENT:

MMS9
Page 255:   **#10ab**
Page 256:   **#11 and #16**
Page 257:   **#21, #23 and #25**