

## Curriculum Outcome

- (PR 5) Demonstrate an understanding of polynomials (limited to of degree less than or equal to 2).
- (PR 6) Model, record and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially and symbolically (limited to polynomials of degree less than or equal to 2).
- (PR 7) 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.

**Student Friendly:**

**"Multiplying & Dividing Polynomials "**

Try these:

$$3(2x - 6y + 2z)$$

$$(30m - 15a + 9t - 54h) \div (-3)$$

$$\frac{36p + 45q - 81}{9}$$

$$-4(6z - 9)$$

$$(49t^2 - 7) \div (7)$$

$$(11y^2 - 8y + 10)(5)$$

Try these:

$$3(2x - 6y + 2z)$$

$$6x - 18y + 6z$$

$$\begin{array}{cccc} (30m - 15a + 9t - 54h) \div (-3) \\ \hline -3 & -3 & -3 & -3 \end{array}$$

$$-10m + 5a - 3t + 18h$$

$$\frac{36p + 45q - 81}{9}$$

$$4p + 5q - 9$$

$$-4(6z - 9)$$

$$-24z + 36$$

$$\begin{array}{cc} (49t^2 - 7) \div (7) \\ \hline 7 & 7 \end{array}$$

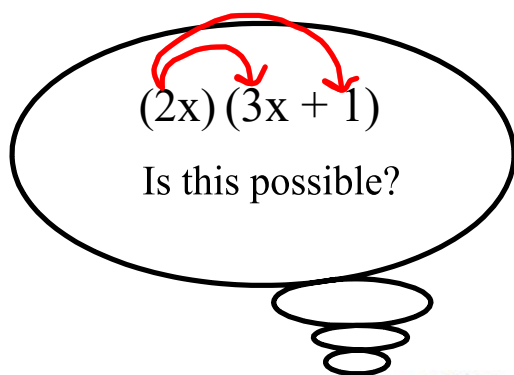
$$7t^2 - 1$$

$$(11y^2 - 8y + 10)(5)$$

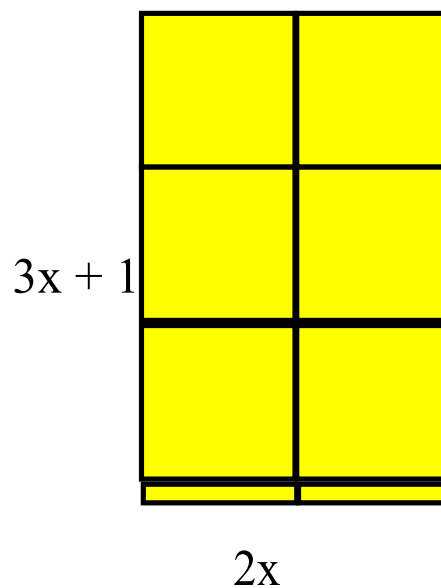
$$55y^2 - 40y + 50$$

section 5.6

# *Multiplying and Dividing a Polynomial by a Monomial*



$$\text{Area} = L \times W$$



## SOME REVIEW

Laws of Exponents

Remember...  $b^x \rightarrow$  "b raised to the power of x" where, b – base  
 x – exponent

**#1. PRODUCT - when multiplying...**

"if the base is the same, then ADD the exponents."

$$b^m \times b^n = b^{m+n}$$

example:

$$2^5 \times 2^6 =$$

$$2^{11}$$

$$(x^7)(x^3) =$$

$$x^{10}$$

**#2. QUOTIENT - when dividing...**

"if the base is the same, then SUBTRACT the exponents."

$$\frac{b^m}{b^n} = b^{m-n}$$

example:

$$\frac{2^7}{2^4} = 2^3$$

$$\frac{x^8}{x^6} = x^2$$

# Multiplying a Monomial by a Monomial

Note:

**Multiply coefficients  
with coefficients and  
variables with variables**

Follow exponent laws for variable with the same base

$$(11)(5y^2)$$

$$55y^2$$

$$(-7n)(5n)$$

$$-35n^2$$

$$(8m^5)(4m^2x)$$

$$32m^7x$$

Hint:

Coefficient and variables by their own kind

Just say your answer  
(Time is up)

SMILE

$$6y^2 \cdot 7y^3$$

$$= 42y^5$$

# Multiplying a Binomial by a Monomial

$$(6x + 3)(5y)$$

$$30xy + 15y$$

$$(5y)(6x + 3)$$

$$30xy + 15y$$

You Try!

3)  $6k^2(8fk^3 - 7k^5)$

The image shows a handwritten algebraic multiplication problem. The expression is  $-4x^2 (3x^2 + 5x - 7)$ . The terms are color-coded:  $-4x^2$  is blue,  $3x^2$  is blue,  $5x$  is red, and  $-7$  is green. Colored brackets are drawn under each term. Colored arrows show the distribution: a blue arrow from  $-4x^2$  to  $3x^2$ , a red arrow from  $-4x^2$  to  $5x$ , and a green arrow from  $-4x^2$  to  $-7$ . Below the expression, the result is written as  $-12x^4 - 20x^3 + 28x^2$ , with the terms color-coded to match the original expression:  $-12x^4$  is blue,  $-20x^3$  is red, and  $+28x^2$  is green.

$$-4x^2 (3x^2 + 5x - 7)$$
$$-12x^4 - 20x^3 + 28x^2$$



## Dividing a Binomial by a Monomial

$$\frac{24p^2 - 14p}{2p}$$

$$\frac{24p^2}{2p} \quad \frac{-14p}{2p}$$

$$12p - 7$$

You Try!

$$1) \quad \frac{72x - 48x^2}{12x}$$

$$\frac{72x}{12x} - \frac{48x^2}{12x}$$

$$6 - 4x$$

$$2) \quad \frac{15x^2y + 12xy^2}{3xy}$$

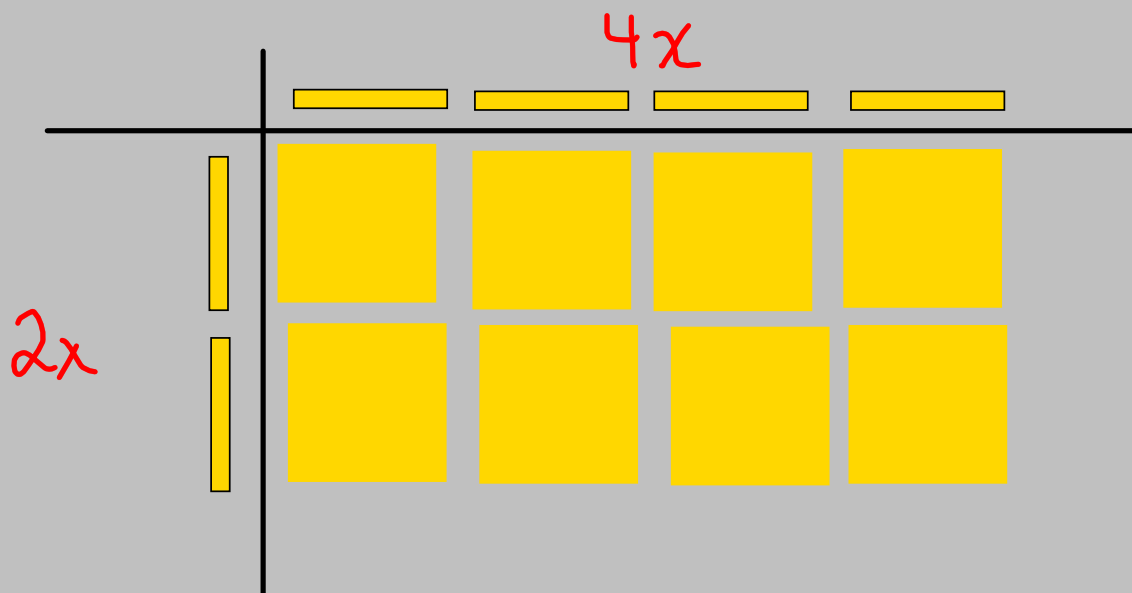
$$\frac{15x^2y}{3xy} + \frac{12xy^2}{3xy}$$

$$5x + 4y$$

# Algebra Tiles

## Multiplication

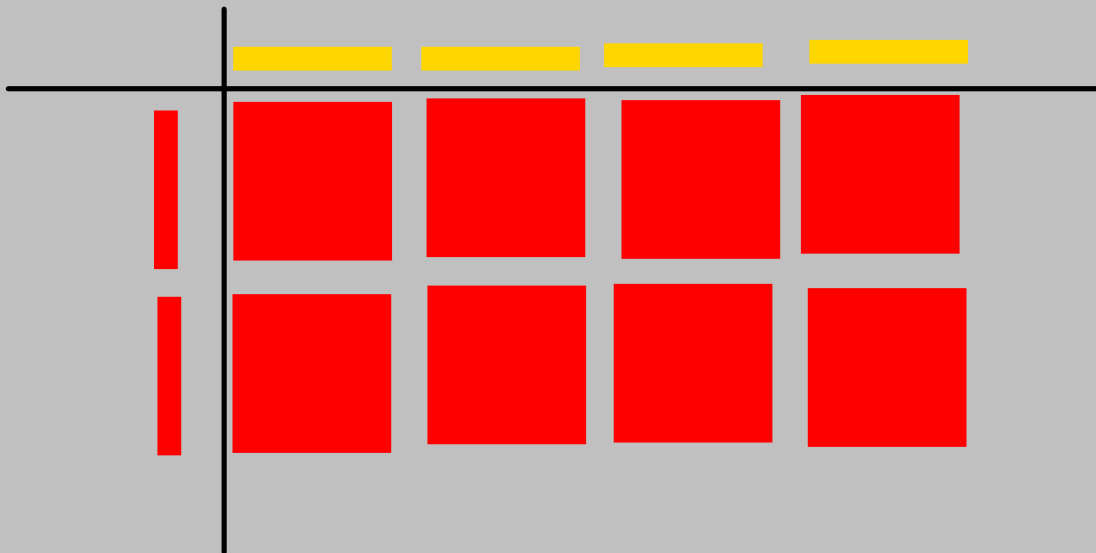
$$(2x)(4x) = 8x^2$$



# Algebra Tiles

## Multiplication

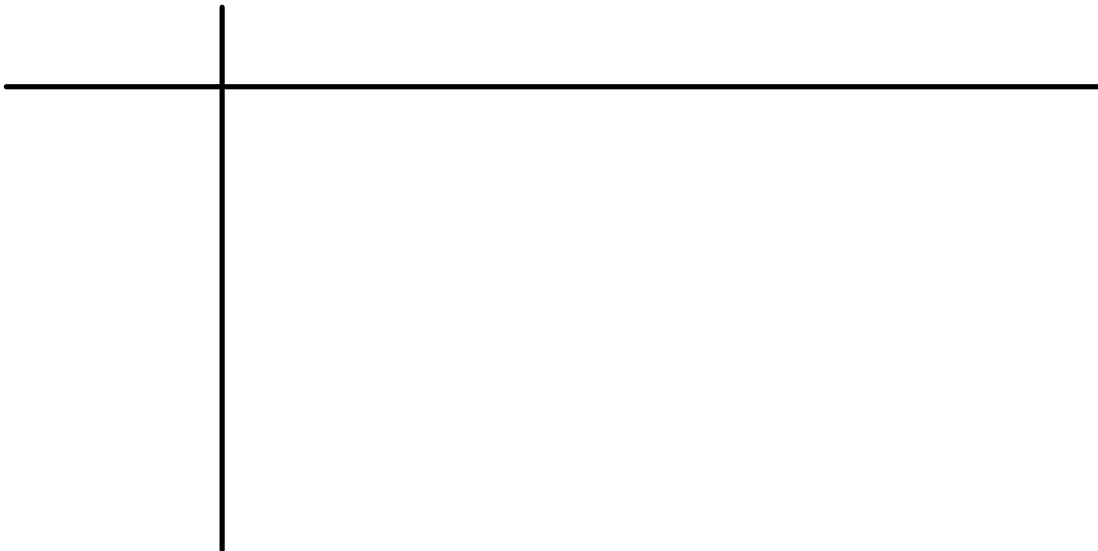
$$(-2x)(4x)$$



# Algebra Tiles

Determine the product of each

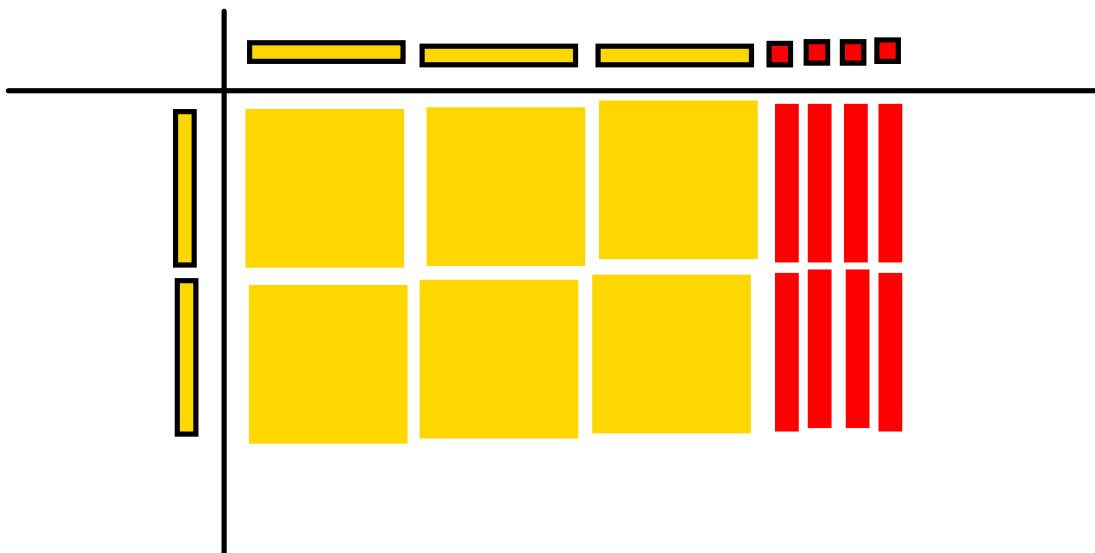
$$(2x)(3x - 4)$$



# Algebra Tiles

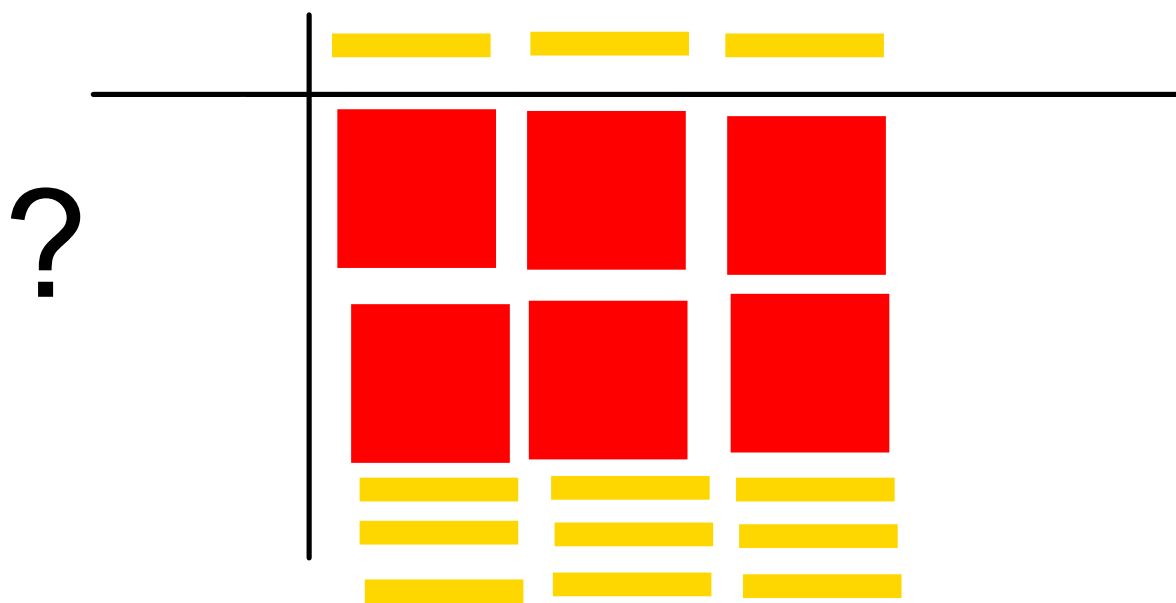
Determine the product of each

$$(2x)(3x - 4) = 6x^2 - 8x$$



# Algebra Tiles

Division  $\frac{(-6x^2 + 9x)}{(3x)}$



# Homework

page  
255-257

11,12,13,14

#16(acfh), #19, #21(cd), #25, #22(try)