Name: _____ Date: _____

Learning Goal 5.3	I can multiply and divide polynomials.

- If you multiply something by 2, that means

adding that thing to itself

$7 \times 2 = 7 + 7$ repeated addition.

Example Expand and simplify, if possible.

a. $2(3x^2)$ = $3x^2 + 3x^2$ = $6x^2$ = $(2 \times 3)x^2$ = $6x^2$

constant, monomial

b. $2(3x^2 + 6)$ = $3x^2 + 6 + 3x^2 + 6$ = $3x^2 + 3x^2 + 6 + 6$ = $6x^2 + 12$ = $(2 \times 3)x^2 + (2 \times 6)$ = $6x^2 + 12$

binomial

c. $2(3x^2 - x + 6)$ = $3x^2 - x + 6 + 3x^2 - x + 6$ = $3x^2 + 3x^2 - x - x + 6 + 6$ = $6x^2 - 2x + 12$ = $(2 \times 3)x^2 - (2 \times 1)x + (2 \times 6)$ = $6x^2 - 2x + 12$

trinomial

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Invert it! For multiplication, we were given the side lengths of a rectangle and asked to find the area

For division, we are given the area and one side length and asked to find the missing side length

Example Simplify where possible.

a. $\frac{4x^2}{2}$ monomial ÷ constant $= \left(\frac{4}{2}\right)x^2 = 2x^2$

b. $\frac{(4x^2 + 6x)}{2}$ binomial ÷ constant $= \left(\frac{4}{2}\right)x^2 + \left(\frac{6}{2}\right)x = 2x^2 + 3x$

c. $\frac{(4x^2 + 6x - 10)}{2}$ trinomial ÷ constant $= \left(\frac{4}{2}\right)x^2 + \left(\frac{6}{2}\right)x - \left(\frac{10}{2}\right) = 2x^2 + 3x - 5$

A harder (or extending) problem would be

Find the greatest common factor of the following expression, then factor the expression. ← divide the expression by its GCF and rewrite the expression as a product

$3x^2$
-6

$GCF(3x^2, -6) = 3$

$$\frac{3x^2 - 6}{3} = \left(\frac{3}{3}\right)x^2 - \left(\frac{6}{3}\right) = x^2 - 2$$

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

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