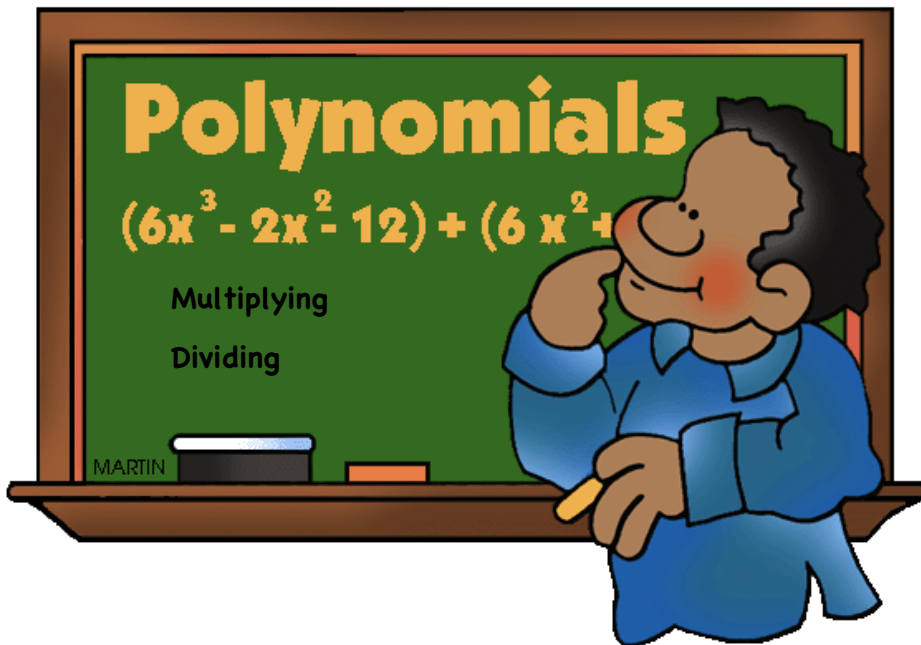


# SEMINAR NOTES

## Learning Guide 10



## Multiplying a Polynomial by a Constant

When multiplying a polynomial by a constant distribute the number in front of the brackets to each term in the brackets by multiplication.

**Ex.** Determine the following product.

$$4(-2x + 3y - 5)$$

**Try:** Multiply the following:

$$4(5x)$$

$$5(-3x)$$

$$(-3)(-2xy)$$

$$(-7x)(6)$$

**Find each product.**

$$5(2x^2 + 4x - 2)$$

$$3(x^2 - 2y)$$

$$(x^2 + x - 5)(-2)$$

## Dividing a Polynomial by a Constant

When dividing a polynomial by a constant make sure to divide each term in the numerator by the number in the denominator.

**Ex.** Determine the following quotient.

$$\frac{-12x + 18y - 6}{6}$$

**Try:** Divide the following.

$$\frac{14x}{7}$$

$$\frac{24x}{-4}$$

$$\frac{-32x}{8}$$

$$\frac{-16x}{-2}$$

Find each quotient.

$$\frac{24x^2 - 16}{8}$$

$$\frac{-16x^2 - 8x + 4}{-4}$$

$$\frac{15x^2 - 10x + 5}{5}$$

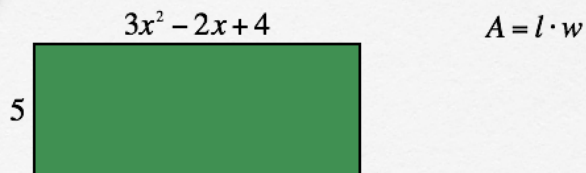
## Writing Algebra from Models

We can use algebra to represent a physical model.

- Write the area formula
- Substitute the dimensions.

**Ex.**

Write an algebraic expression to describe the area of the following rectangle.



## Multiplying a Polynomial by a Monomial

When multiplying a polynomial by a monomial distribute the term in front of the brackets to each term in the brackets by multiplication.

**Ex.** Determine the following product.

$$2x(3x + 4)$$

**Try:** Multiply.

$$(4x)(5x)$$

$$(5y)(-3x)$$

$$(-3x)(-2xy)$$

$$(-7x)(6y^2)$$

Find each product.

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

$$2m(3x^2 - 2y)$$

$$(4x^2 + 2x - 9)(-3x)$$



## Dividing a Polynomial by a Monomial

When dividing a polynomial by a monomial make sure to divide each term in the numerator by the number in the denominator.

**Ex.** Determine the following quotient.

$$\frac{12x^2 + 8x}{2x}$$

**Try:** Divide.

$$\frac{14x^2}{7x}$$

$$\frac{24x^3}{-4x^2}$$

$$\frac{-32xy}{8x}$$

$$\frac{-16x^2y}{-2y}$$

**Find each quotient.**

$$\frac{24x^3 + 12x^2 - 16x}{4x}$$

$$\frac{20x^3 - 8x^2 + 4x}{-4x}$$

$$\frac{15p^2q - 10pq + 5p}{5p}$$

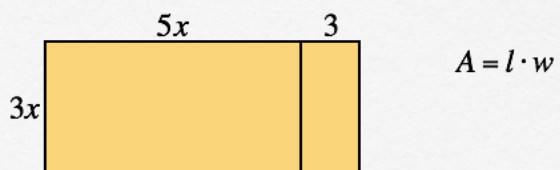
## Area with Algebra

We can use polynomial operations to find the area of figures with variable dimensions.

- Choose the appropriate formula for the figure.
- Substitute the dimensions into the formula.
- Multiply through the brackets.

**Ex.**

Write the multiplication sentence to describe the area of the rectangles below.



**Try:** Find the area of each rectangle and the total of the two rectangles.

