

## A. Simplifying Polynomial Expressions

### I. Combining Like Terms

- You can add or subtract terms that are considered "like", or terms that have the same variable(s) with the same exponent(s).

$$\begin{aligned} \text{Ex. 1:} \quad & 5x - 7y + 10x + 3y \\ & \underline{5x - 7y} + \underline{10x} + \underline{3y} \\ & 15x - 4y \end{aligned}$$

$$\begin{aligned} \text{Ex. 2:} \quad & -8h^2 + 10h^3 - 12h^2 - 15h^3 \\ & \underline{-8h^2} + \underline{10h^3} - \underline{12h^2} - \underline{15h^3} \\ & -20h^2 - 5h^3 \end{aligned}$$

### II. Applying the Distributive Property

- Every term inside the parentheses is multiplied by the term outside of the parentheses.

$$\begin{aligned} \text{Ex. 1: } & 3(9x - 4) \\ & 3 \cdot 9x - 3 \cdot 4 \\ & 27x - 12 \end{aligned}$$

$$\begin{aligned} \text{Ex. 2: } & 4x^2(5x^3 + 6x) \\ & 4x^2 \cdot 5x^3 + 4x^2 \cdot 6x \\ & 20x^5 + 24x^3 \end{aligned}$$

### III. Combining Like Terms AND the Distributive Property (Problems with a Mix!)

- Sometimes problems will require you to distribute AND combine like terms!!

$$\begin{aligned} \text{Ex. 1: } & 3(4x - 2) + 13x \\ & 3 \cdot 4x - 3 \cdot 2 + 13x \\ & 12x - 6 + 13x \\ & 25x - 6 \end{aligned}$$

$$\begin{aligned} \text{Ex. 2: } & 3(12x - 5) - 9(-7 + 10x) \\ & 3 \cdot 12x - 3 \cdot 5 - 9(-7) - 9(10x) \\ & 36x - 15 + 63 - 90x \\ & -54x + 48 \end{aligned}$$

## **PRACTICE SET 1**

Simplify.

1.  $8x - 9y + 16x + 12y$

2.  $14y + 22 - 15y^2 + 23y$

3.  $5n - (3 - 4n)$

4.  $-2(11b - 3)$

5.  $10q(16x + 11)$

6.  $-(5x - 6)$

7.  $3(18z - 4w) + 2(10z - 6w)$

8.  $(8c + 3) + 12(4c - 10)$

9.  $9(6x - 2) - 3(9x^2 - 3)$

10.  $-(y - x) + 6(5x + 7)$