

**Like terms** are terms that only differ by their coefficients. This means that they share exactly the same variables with exactly the same exponents. To simplify polynomial expression, we combine like terms. This means that the coefficients of like terms are combined using the math operations of adding or subtracting. Notice that when like terms are combined, the exponents on the variables remain unchanged.

**Example 2**

Identify the like terms in each group.

a)  $7a^2$   $4ab$   $-b$   $7c$   $5b =$

$$\boxed{7a^2 \quad 4ab \quad 5b-b \quad 7c}$$

b)  $4x^2$   $5xy$   $-6x^2$   $11y$   $\frac{1}{3}x^2 = 4x^2 + \frac{1}{3}x^2 - 6x^2 \quad 5xy \quad 11y$

$$\boxed{-\frac{5}{3}x^2 \quad 5xy \quad 11y}$$

c)  $16mn$   $-12m$   $n$   $2m^2$   $10nm$

**Example 3**  $2m^2 - 12m \cdot n = 26mn$

Simplify each of the following by combining like terms. Combining like terms means adding or subtracting like terms in order to simplify the polynomial.

a)  $4x + 3x =$

$$\boxed{7x}$$

b)  $-6m + 11m - 3m$

$$\boxed{11m - 9m = 2m}$$

c)  $15xy + 2xy - 10xy$

$$\boxed{17xy - 10xy = 7xy}$$

d)  $7 - p^2 + 2p - 1 + 4p^2 - 9p$

$$4p^2 - p^2 + 2p - 9p + 7 - 1$$

$$\boxed{3p^2 - 7p + 6}$$