

Mathematics 9

Section 5.2 - Like & Unlike Terms

When we deal with polynomials, we often have the situation where we have more than one term with the same variable. When this occurs, we must GROUP LIKE TERMS.

When we talk about like terms, we are ONLY referring to the VARIABLES & EXPONENTS. The coefficients do not play a role when deciding what the like terms are. They only come into effect when the actual combining occurs.

Examples of like terms:

$$\begin{array}{l} 4y \text{ \& } -7y \\ 3xy \text{ \& } 8xy \\ -7yz \text{ \& } 13zy \end{array} \qquad \begin{array}{l} 11a^2 \text{ \& } 6a^2 \\ -2n^2m \text{ \& } 9n^2m \end{array}$$

Examples of unlike terms:

$$\begin{array}{l} 4x^2 \text{ AND } 6x \\ 6b \text{ AND } 7ab \\ -8x \text{ \& } -8z \end{array} \qquad 13x^2y \text{ AND } -7xy^2$$

Once the like terms have been identified, then we look to the coefficients to determine the final value. The variables DO NOT change, only the coefficients do.

$$\begin{array}{l} 6n + 4n = 10n \\ -9y + 4y = -5y \\ 3n^2 - 8n^2 = -5n^2 \end{array} \qquad \begin{array}{l} 6ab + (-9ab) = -3ab \\ 5gh + 6hg = 11gh \text{ OR } 11hg \end{array}$$

As long as you remember that the variables need to be the same, and that they do not change during the combining process, you will be fine!

Let's look at how this works in an actual polynomial-type question:

$$4x^2 - 1 - 3x - 3 + 5x - 2x^2$$

Method #1

- USE SHAPES OR SYMBOLS TO INDICATE LIKE TERMS
- ENSURE YOU INCLUDE THE SIGN

$$\boxed{4x^2} - 1 \quad \text{♥} \quad \text{♥} \quad - 3 \quad \text{♥} \quad \text{♥} \quad + 5x \quad \text{♥} \quad \text{♥} \quad - 2x^2$$

$$2x^2 + 2x - 4$$

WRITE ANSWER IN DESCENDING ORDER

Method #2

REWRITE QUESTION IN

- DESCENDING ORDER
- $4x^2 - 2x^2 - 3x + 5x - 1 - 3$
- $2x^2 + 2x - 4$

We use the same process if the polynomial contains more than one variable. When determining the order of the terms, still place in descending order, but work alphabetically (as best you can).

$$4ab \quad \text{△} \quad - b^2 \quad \text{○} \quad - 3a^2 \quad \text{○} \quad + 2ab \quad \text{□} \quad - a \quad \text{△} \quad - 3b^2 \quad \text{♥} \quad - 5c \quad \text{♥} \quad + 2a \quad \text{□} \quad + 6b^2 \quad \text{△}$$

$$6ab + 2b^2 - 3a^2 + a - 5c$$

Try the following:

$$\underline{11} - 9n \quad \text{○} \quad + n^2 \quad \underline{+ 2} - n$$

$$n^2 - 10n + 13$$

$$\text{○} \quad - 7n^2 \quad \text{□} \quad + 12n \quad \underline{- 2} \quad \text{○} \quad - 3n^2 \quad \text{□} \quad - 3n \quad \underline{+ 5}$$

$$-10n^2 + 9n + 3$$

p. 222 #6, 7, 11 (NO TILES), 12, 13
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