ALMS8

TAILORED LEARNING, PERSONALIZED PROGRESS

LEARNING MODULE 4

Add and Subtract Simple Monomials

GRADE 8

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2 ADD AND SUBTRACT SIMPLE MONOMIALS

WELCOME, LEARNERS!

Throughout this course, we'll embark on an adventure filled with fun and practical math challenges. Get ready to explore the fascinating realm of monomials, where we'll learn how to add and subtract these algebraic expressions like pros! From mastering the basics to diving deep into complex monomial operations, we'll equip you with the skills and confidence to tackle any monomial problem that comes your way. So, let's dive in and discover the wonders of monomials together!

LEARNING OBJECTIVES

1. Apply the rules for adding and subtracting monomials
2. Add and subtract monomials
3. Demonstrate accuracy in adding and subtracting monomials

Steps in Adding and Subtracting Monomials

The most important thing to remember in adding or subtracting monomials, it must be a like terms. These are the terms w with the same variable(s) raised to the same exponent(s).

Adding Monomials

1. ***Add the coefficients.*** Determine the coefficient of each monomial and add.

   Given: $\mathbf{13x^2 + 4x^2}$

   13+4=17

   The coefficient of $13x^2$ is 13. Meanwhile, the coefficient of $4x^2$ is 4.

2. **Keep the variables and exponents the same.**

   =17x^2

   In the example, we just copy the variable a after adding the coefficients of each term in the monomials.

> *If adding unlike terms like 5x and 2y, the answer will just be as is which is 5x+2y.*

3. ***Simplify the expression.*** Simplify the expression by removing any unnecessary coefficients or parentheses.

More Examples:

Given: -2ab + 5ab

Notice that both terms have the variables “a” and “b”.

Adding the monomials:

=-2+5 (Adding the coefficients)

=3

=3ab *(Keeping the variables and exponents the same and simplify)*

Given: $-27x^2y + (-13x^2y)$

$= -27 + (-13)$

$= -40$

$= -40x^2y$

Given: $\frac{1}{4}z^3 + \frac{1}{2}z^3 + \frac{3}{5}z^2$

Since 1/4 and 1/2 are the like terms, having a same variable of z raised to the power of 3, these are the only monomials that could be added in the given.

$= \frac{1}{4} + \frac{1}{2}$

$= \frac{3}{4}$

$= \frac{3}{4}z^3$

After simplifying the like terms, just copy and add the $\frac{3}{5}z^2$

$= \frac{3}{4}z^3 + \frac{3}{5}z^2$

Given: $2x^2 + x$

$= 2x^2 + x$

The given monomials are unlike terms so it cannot be further simplified.

Subtracting Monomials:

1. **Subtract the coefficients.** Determine the coefficient of each monomial and subtract it. Keep the variables and exponents the same.

   Given: $10z^4$ –(-$5z^4$):

   =10-(-5)

   The subtrahend, (-5) is negative. Hence, we will apply the rule of subtracting integers, "change the sign of the subtrahend then add".

   = 10+5

   =15

2. **Keep the variables and exponents the same.** After subtracting the coefficients, just copy the variable and the exponent.

   $15z^4$

   In the example, we just copy the variable x after subtracting the coefficients of each term.

In subtracting monomials with unlike terms like 17x and 13y, the answer will just be as is which is 17x-13y.

3. ***Simplify the expression.*** Combine like terms and simplify the expression by removing any unnecessary coefficients or parentheses.

More Examples:

Given: $40bc^3$- $5bc^3$-

Notice that both terms have the variables "b" which is raised to the power of 1, and a variable c being raised to power of 3.

Subtracting the monomials:

=40-5 (Subtracting the coefficients)

=35

= $35bc^3$ *(Keeping the variables and exponents the same and simplify)*

Given: $-34y - 20y$

$= -34 - 20$

$= -54$

$= -54y$

Given: $48y^2 - 20y^2 - 10\,y$

Since 48 and 20 are the like terms, having a same variable of y raised to the power of 2, these are the only monomials that could be simplified.

$= 48 - 20$

$= 28$

$= 28y^2$

After simplifying the like terms, just copy and subtract the 10y

$= 28y^2 - 10\,y$

Given: $\frac{3}{4}x^5 - \frac{1}{2}x^5$

$= \frac{3}{4} - \frac{1}{2}$

$= \frac{5}{4}$

$= \frac{5}{4}x^5$