



TAILORED LEARNING, PERSONALIZED PROGRESS

SUPPLEMENTARY MODULE 5

Multiply and Divide Simple Monomials, Leading
to the Derivation of the Laws of Exponent



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MULTIPLYING AND DIVIDING SIMPLE MONOMIALS, LEADING TO THE DERIVATION OF THE LAWS OF EXPONENT



Welcome, Grade 8 learners!



Hey there, math enthusiasts! If you're still feeling a bit shaky from our recent lessons on multiplying and dividing simple monomials, fear not! We're here to provide you with some extra support and guidance. Remember, mastering new concepts takes time and practice, and it's absolutely okay to take it step by step. In this supplementary session, we'll revisit key ideas, tackle some challenging problems together. So, let's embrace the learning process together and keep striving for success. You've got this!



LEARNING OBJECTIVE:

At the end of this lesson students will be able:

1. demonstrate understanding of the steps involved in multiplying and dividing monomials;
2. articulate the step-by-step process of multiplying and dividing simple monomials; and
3. reflect on the significance of knowing how to multiply and divide monomials in deriving the laws of exponents.

To multiply monomials, follow these steps:



a. Multiply the coefficients: Start by multiplying the numerical coefficients together.

b. Add the exponents of like variables: For each variable, add the exponents if they are the same.

Example 1:

Consider the monomials $3x^2$ and $4x^3$.

Multiply the coefficients: $3 \times 4 = 12$

Add the exponents of like variables : $x^{2+3} = x^5$

Hence, $3x^2(4x^3) = 12x^5$

Example 2:

Consider the monomials $12ab$ and $-3a$

Multiply the coefficients: $12(-3) = -36$

Add the exponents of like variables:

In terms of a , it will be : $a^{1+1} = a^2$

In terms of b , since there are no variable b in the second expression, just copy it.

Or it will be, $b^{1+0} = b$

Hence, $12ab(-3a) = -36a^2b$

To divide monomials, follow these steps:



- a. Divide the coefficients:** Begin by dividing the numerical coefficients.
- b. Subtract the exponents of like variables:** For each variable, subtract the exponent of the divisor from the exponent of the dividend.

Example 1:

Let's divide $12x^5$ by $4x^2$

Divide the coefficients : $12/4 = 3$

Subtract the exponents of like variables : $x^{5-2} = x^3$

Hence, $12x^5 \div 4x^2 = 3x^3$

Example 2:

Let's divide $64m^2n^3$ by $-8m^3n$

Divide the coefficients : $64/(-8) = -8$

Subtract the exponents of like variables:

In terms of m: $m^{2-3} = m^{-1}$

(In this case, the variable m will be placed or stay in the denominator of the fraction, following the rule for negative exponent where: $a^{-1} = 1/a$)

In terms of n: $n^{3-1} = n^2$

Hence, $64m^2n^3 \div (-8m^3n) = -8n/m$