Multiplication of Two Monomials

Understanding of Multiplication of Two Monomials

- A monomial is an algebraic expression with only one term.
- Multiplication of two monomials involves multiplying their coefficients and applying the law of exponents for their variables.
- If variables are the same, add their exponents while multiplying.

Important Points

- Multiply the numerical parts (coefficients) normally.
- For variables with the same base, add the powers: $a^m \times a^n = a^{m+n}$
- Arrange the final answer with variables in alphabetical order for standard form.
- Watch out for negative signs while multiplying.

Examples with Solutions

Example: Multiplying Simple Monomials

 \succ Multiply: 5x \times 3x²

Solution: Multiply coefficients: 5 × 3 = 15

Add powers of x: $x^1 \times x^2 = x^3$

Answer: 15x³

Example: Multiplying Monomials with Different Variables

- > Multiply: 4a × 7b
- **Solution:** Multiply coefficients: 4 × 7 = 28

Variables are different, so write together: ab

Answer: 28ab

Example: Multiplying Monomials with Multiple Variables

- Multiply: 2x²y × 3xy³
- **Solution:** Multiply coefficients: 2 × 3 = 6

Add powers for x: $x^2 \times x^1 = x^3$

Add powers for y: $y^1 \times y^3 = y^4$

Answer: $6x^{3}y^{4}$

Example: Multiplying Negative Monomials

Multiply: (-3m²) × (4m³)
Solution: Multiply coefficients: -3 × 4 = -12

Add powers of m: $m^2 \times m^3 = m^5$

Answer: −12m⁵

Example: Multiplying Monomials with Fractions

> Multiply: $\left(\frac{1}{2}\right) p \times \left(\frac{3}{4}\right) p^2$

Solution: Multiply coefficients: $\left(\frac{1}{2}\right) \times \left(\frac{3}{4}\right) = \frac{3}{8}$

Add powers of p: $p^1 \times p^2 = p^3$

Answer: $\left(\frac{3}{8}\right)p^3$

Summary Points

- Multiply coefficients first.
- Add exponents if the bases (variables) are same.
- Combine variables properly when bases are different.
- Be careful with signs (+/–) while multiplying.
- Arrange the final answer in proper standard form.