

# Multiplying and Factoring Guide Notes

## Multiplication of Algebraic Expression:

**Monomials by Monomial.** to multiply monomials, use the commutative and associative rules for multiplication and in most cases, the theorem of exponents.

**Monomial by a Polynomial.** if a polynomial is to be multiplied by a monomial, the distributive rule is used. The product is the sum of all the products formed by multiplying each term polynomial by the monomial multiplier.

**Sample Problem 1:** Find the product of the following monomials

1.  $(3x^2y)(4xy^3)$

2.  $(xy^2z^3)(2xy^5)$

3.  $(3a)(21b^2c)$

**Sample Problem 2:** Find the product of the monomial by polynomials

4.  $3x(4x + 2)$

5.  $3a(2a^2 + 4b)$

6.  $5x(x^2 + 3x - 4)$

7.  $6ab(2a + 3b - 4c + 5)$

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### Factoring:

**Factoring Polynomials** is simply the reverse process of special product.

*A polynomial with integral coefficient is no longer factorable if:*

1. the coefficient have no common factor, and
2. it cannot be expressed as the product of two polynomial of lower degree.

**Sample Problem 3:** Factor the following polynomials

8.  $24x^2 - 18x^3$

9.  $60ab^5 - 105a^2b^4$

10.  $28a^2b^4c^5 - 42a^3b^2c^4 + 56ab^3c^3$