Algebra1Coach.com

Multiplying and Factoring

Unit 8 Lesson 3

Students will be able to:

Factor and perform multiplication of Polynomials

Key Vocabulary:

- Factoring
- Greatest Common Factor
- Multiplication
- Monomials
- Polynomials

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 1: Find the product of the following monomials

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

$12x^3y^4$

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

$2x^2y^7z^3$

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

$63ab^2c$

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

$4.3x(4x+2)$

$5.3a(2a^2+4b)$

$6.5x(x^2+3x-4)$

$7.6ab(2a+3b-4c+5)$

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

$4.3x(4x+2)$

$12x^2+6x$

$5.3a(2a^2+4b)$

$6a^3+12ab$

$6.5x(x^2+3x-4)$

$5x^3+15x^2-20x$

$7.6ab(2a+3b-4c+5)$

$12a^2b+18ab^2-24abc+30ab$

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

$8.24x^2 - 18x^3$

$9.60ab^5 - 105a^2b^4$

$10.28a^2b^4c^5 - 42a^3b^2c^4 + 56ab^3c^3$

Sample Problem 3: Factor the following polynomials

$8.24x^2 - 18x^3$

$factors: (4\times 6)x^2 - (6\times 3)x^3$

$GCF: 6x^2$

$Answer: 6x^2(4-3x)$

$9.60ab^5 - 105a^2b^4$

$factors: (2^2\times 3\times 5)ab^5 - (3\times 5\times 7)a^2b^4$

$GCF: (3\times 5)ab^4 = 15ab^4$

$Answer: 15ab^4(4b-7a)$

$10.28a^2b^4c^5 - 42a^3b^2c^4 + 56ab^3c^3$

$factors: (2\times 2\times 7)a^2b^4c^5 - (2\times 3\times 7)a^3b^2c^4 + (2\times 4\times 7)ab^3c^3$

$GCF: (2\times 7)ab^2c^3 = 14ab^2c^3$

$Answer: 14ab^2c^3(2ab^2c^2 - 3a^2c^2 + 4b)$