

Algebra 1

Chapter 8
Section 8-2

Multiplying a Monomial and a Polynomial

Multiplying a monomial and a polynomial is like simplifying by distributing.

$$\text{Distribution: } 3(x - 5) = 3x - 15$$

$$\text{Multiplying: } 7x^4(x^3 + 2x - 10) = 7x^7 + 14x^5 - 70x^4$$

Multiplying

Multiply

$$x^2(8x^5 - 11)$$

$$8x^7 - 11x^2$$

$$-3n^2(n^8 - 5n^4 - 9n^3)$$

$$-3n^{10} + 15n^6 + 27n^5$$

$$5xy^2(2y + 2x)$$

$$10xy^3 + 10x^2y^2$$

$$km^2(a - 12m + akm)$$

$$akm^2 - 12km^3 + ak^2m^3$$

Factoring

Factoring is like the opposite of distributing. You can take a greatest common factor out of the terms of a polynomial.

$$\text{Factor: } 3x - 12 = 3(x - 4)$$

$$\text{Factor: } 5x^3 - x = x(5x^2 - 1)$$

$$\text{Factor: } 2x^7 - 16x^5 + 8x^3 = 2x^3(x^4 - 8x^2 + 4)$$

Common Factors

What is the greatest common factor of the terms?

14, 21, 70

7

33, 6, 15

3

48, 36, 10

2

2, 5, 19

1

Common Factors

What is the greatest common factor of the terms?

x, x^2, x^{18}

x

jnp^2, jp^5r^2, jp^2

jp^2

Factoring Polynomials

Factor: $6xy - 12y = 6y(x - 2)$

Factor: $11x^{12} - 3x^4 = x^4(11x^8 - 3)$

Factor: $15x^6 - 5x^7 + 20x^8 = 5x^6(3 - x + 4x^2)$