

Algebra 12.2 Notes and Practice
Multiplying Polynomials

Name _____ Period _____

Warm Up

Write each polynomial in standard form.

1. $4x^3 + 3x^5 + 9x^4 - 2x + 11$

$3x^5 + 9x^4 + 4x^3 - 2x + 11$

2. $7x^2 + 3x - 2x^4 + 8x^6 - 7$

$8x^6 - 2x^4 + 7x^2 + 3x - 7$

Multiplying a Monomial and a Polynomial

Steps

Use the Distributive Property.

× Multiply the coefficients

+ Add the exponents of powers with the same base.

Simplify.

Exponent Product Rule

$$x^a \cdot x^b = x^{a+b}$$

$$x^3 \cdot x^4 = x^7$$

Simplify each product using the Distributive Property. Write the answer in standard form.

1. $3(2y + 4)$

$6y + 12$

2. $k(2k - 9)$

$2k^2 - 9k$

3. $-6p(p^4 - 8)$

$-6p^5 + 48p$

4. $-4g^2(2g + 7)$

$-8g^3 - 28g^2$

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

$2x^3 - 2x^2 + 6x$

6. $-3n^3(n^2 - 2n + 8)$

$-3n^5 + 6n^4 - 24n^3$

7. $3ab(4a^2 - 7b^3)$

$12a^3b - 21ab^4$

8. $-2x(3x - 4) + 7$

$-6x^2 + 8x + 7$

9. $5w(-7w + 3) - 2w(13 - 9w^2)$

$18w^3 - 35w^2 - 11w$

Multiplying Binomials

Steps

Use the Distributive Property.

Distribute each term in the 1st binomial to each term in the other binomial.

Combine like terms.

Example

$$(x+2)(x+4)$$

$$x^2 + 4x + 2x + 8$$

$$x^2 + 6x + 8$$

First Outer, Inner Last

$$(a+b)(c+d) =$$

$$ac + ad + bc + bd$$

Simplify each product using FOIL or the Distributive Property. Write in standard form.

10. $(y+8)(y+1)$

$$y^2 + y + 8y + 8$$

$$y^2 + 9y + 8$$

11. $(k-4)(k+5)$

$$k^2 + 5k - 4k - 20$$

$$k^2 + k - 20$$

12. $(x-10)(x-4)$

$$x^2 - 4x - 10x + 40$$

$$x^2 - 14x + 40$$

13. $(t+2)(t-2)$

$$t^2 - 2t + 2t - 4$$

$$t^2 - 4$$

14. $(n-1)(5n-4)$

$$5n^2 - 4n - 5n + 4$$

$$5n^2 - 9n + 4$$

15. $(6a+2)(2a+3)$

$$12a^2 + 18a + 4a + 6$$

$$12a^2 + 22a + 6$$

16. $(2m-5)^2$

$$(2m-5)(2m-5)$$

$$4m^2 - 10m - 10m + 25$$

$$4m^2 - 20m + 25$$

17. $5(2v+3)(3v-6)$

$$5(6v^2 - 12v + 9v - 18)$$

$$5(6v^2 - 3v - 18)$$

$$30v^2 - 15v - 90$$

Look at Problem #17, do you recognize any of the forms of a quadratic equation... standard, vertex, and/or factored? How would you find the x-intercepts or roots?

