NAME _____ DATE _____

Module 11 Simplifying Algebraic Expressions with Polynomials
Lesson 5 Multiplying Polynomials

Find each product. Write answers in simplest form.

1. $(b - 4)(b + 4)$

2. $(r - 3)^2$

3. $(3c + 2)^2$

4. $(q - 5)(q + 5)$

5. $(3m - n)^2$

6. $(8p - 2q)(8p + 2q)$

7. $(7a + 6)^2$

8. $(3r - 7s)^2$

9. $(c - d)(c + d)$

10. $(12t + 5u)^2$

11. $(9a + 8)^2$

12. $(2ab - 1)^2$

13. $(y + 1)(y^2 - y + 1)$

14. $(a + 2)(a^2 + 3a - 6)$

15. $(2b - 1)(4b^2 - b + 2)$

16. $(5d - 3)(2d^2 + 3d + 6)$

17. $(a^2 + 2a + 3)(3a^2 + 4a - 6)$

18. $(3g^2 - 2g + 8)(g^2 + 4g - 5)$

19. $(7j^2 + 2j + 1)(-3j^2 - 5j - 1)$

20. $(q^2 - 3q + 2)(3q^2 + 5q - 4)$

21. $x^2 + 3x + 4$
$\times \quad x - 3$

22. $4g^2 - 3g + 2$
$\times \quad 8g + 6$

23. $v^2 + 3v + 6$
$\times\ 2v^2 - 4v - 5$

24. $7z^2 - z + 6$
$\times\ 4z^2 + 5z + 8$

Journal

1. Cynthia prefers to multiply polynomials horizontally, and Michael prefers to multiply polynomials vertically. Give some advantages of each method.
2. Find two binomials whose product is $25x^2 - 81$.
3. Explain how to use the pattern for the square of a sum to find the product of two binomials.
4. How is the Distributive Property used in multiplying polynomials?
5. Find a binomial that can be squared to get $16x^2 - 72x + 81$.

Cumulative Review

Simplify. Write answers using positive exponents.

1. $(2x^3y^4)^{-3}$

2. $\frac{12x^3y^3}{4xy^5}$

Simplify.

3. $(4x^2 + 5x - 3) + (2x^2 + 7x - 1)$

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

5. $(8z^3 - 2z^2 + 6) - (2z^3 - 3z + 4)$

6. $(5a^2 + 10a - 3) - (2a^2 - 5a + 6)$

7. $(6b - 3)(5b + 1)$

8. $(4c - 2d)(2c - 3d)$

Simplify. Write answers in scientific notation.

9. $(6 \times 10^4)(8 \times 10^3)$

10. $\frac{3.2 \times 10^6}{8 \times 10^3}$