NAME _____ DATE _____

Module 12 Simplifying Algebraic Expressions by Factoring Polynomials

Lesson 3 Factoring The Difference of Two Squares

Factor completely, if possible.

1. $c^2 - 36$

2. $g^2 - 4$

3. $w^2 + 9$

4. $j^2 - 9$

5. $9 - m^2$

6. $x^2 - 100$

7. $b^4 - 25$

8. $a^6 - 9$

9. $f^5 - 16$

10. $c^4 - 16$

11. $81 - j^8$

12. $x^8 - 1$

13. $c^2 - d^2$

14. $m^2 - 16n^2$

15. $a^6 - 121b^4$

16. $169 - 196z^2$

17. $64u^{10} - 225v^{12}$

18. $441x^6 - 256y^{14}$

19. $16x^8 - 81y^4$

20. $256a^{12} - 81b^4$

21. $a^8 - c^4$

22. $m^{16} - n^8$

23. $16c^2d^4 - 25$

24. $4 - 49s^4t^2$

Journal

1. Margo missed class the day the teacher taught the class to factor a difference of two squares. Explain the process used to factor a difference of two squares to her.
2. Describe a method to identify a polynomial as a difference of two squares.
3. Jimmy says that $16a^4 - 81b^8$ is factored completely as $(4a^2 + 9b^4)(4a^2 - 9b^4)$. Cindy says that he is incorrect. Who is correct? Explain.
4. Explain how to use factoring the difference of two squares to find the value of $51^2 - 49^2$.
5. Explain how to check the answer when factoring the difference of two squares.

Cumulative Review

Simplify.

1. $(f^2 - 2f + 6) + (8f^2 + 4f - 8)$

2. $(4n^2 + 6n - 3) - (7n^2 + 4n - 8)$

3. $2xy(x^2 + 3x + 7)$

4. $(a + 2b)(a - 4b)$

5. $(c + 2)(c^2 - 5c + 4)$

6. $(4x^2 + 11x - 3) \div (4x - 1)$

Factor, if possible.

7. $8y^{12} + 20y^4$

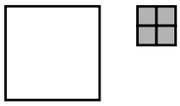
8. $10x^2y^5 - 12xy^3 - 18x^5y^4$

9. $2ab - 12a + 3b - 18$

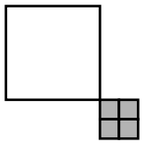
10. $14y^2 + 6y - 28yz - 12z$

Manipulatives

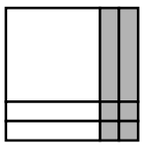
Use algebra tiles to factor $x^2 - 4$.
Model $x^2 - 4$ with tiles. Use one positive *x*-squared tile and four negative one tiles.



Arrange the tiles as two squares with their corners touching.



Fill in the extra space to make a rectangle by adding two zero pairs.



The length is $x + 2$. The width is $x - 2$.
The answer is $(x + 2)(x - 2)$.

Factor using algebra tiles.

1. $x^2 - 36$

2. $m^2 - 25$

3. $4a^2 - 9$

4. $j^2 - 1$