

Name: \_\_\_\_\_

Unit: Polynomials & Factoring

Date: \_\_\_\_\_ Bell: \_\_\_\_\_

### Homework 8: Factoring Trinomials ( $ax^2 +$

**Directions:** Factor each polynomial. Check your answer by distributing.

1.  $2x^2 + 5x + 2$      $a \cdot c = 4$   
 $+ b = 5$

$2x^2 + 4x + 1x + 2$      $4, 1$   
 $4x, 1x$

$2x(x+2) + 1(x+2)$

$(x+2)(2x+1)$

2.  $3n^2 + 5n + 2$      $a \cdot c = 6$   
 $+ b = 5$

$3n^2 + 3n + 2n + 2$      $3, 2$   
 $3n, 2n$

$3n(n+1) + 2(n+1)$

$(n+1)(3n+2)$

3.  $2y^2 + 9y - 5$

4.  $3g^2 - 7g + 2$

5.  $2k^2 - 11k + 15$

6.  $9p^2 + 6p - 8$

7.  $6m^2 - 13m + 6$

8.  $3c^2 + 2c - 16$

9.  $4b^2 + 12b + 9$

**Directions:** Factor each polynomial. Look for a GCF first.

10.  $8x^2 - 2x - 10$     GCF: 2  
 $2(4x^2 - x - 5)$      $a \cdot c = -20$   
 $+ b = -1$

$2(4x^2 - 5x + 4x - 5)$      $-5, 4$   
 $-5x, 4x$

$2(x)(4x-5) + 1(4x-5)$

$2(4x-5)(x+1)$

11.  $6a^2 + 9a - 27$     GCF: 3  
 $3(2a^2 + 3a - 9)$      $a \cdot c = -18$   
 $+ b = 3$

$3(2a^2 + 6a - 3a - 9)$      $6, -3$   
 $6a, 3a$

$3(2a)(a+3) - 3(a+3)$

$3(a+3)(2a-3)$

12.  $60x^2 + 4x - 8$

13.  $16x^2 - 24x + 8$

14.  $20x^2 + 55x + 30$

15.  $10x^2 - 32x + 24$

# Factoring Polynomials

## DIFFERENCE OF SQUARES

Review] Simplify the following:

- $(x + 4)(x - 4) =$  \_\_\_\_\_ = \_\_\_\_\_
- $(5x + 1)(5x - 1) =$  \_\_\_\_\_ = \_\_\_\_\_
- $(2a + 3b)(2a - 3b) =$  \_\_\_\_\_ = \_\_\_\_\_

↑  
This resulting product is called a DIFFERENCE OF SQUARES.

To factor a difference of squares use the following rule:

$$a^2 - b^2 = (a - b)(a + b)$$

Examples: Factor the following difference of squares. Check your answers by FOIL.

1. $a^2 - 4$ $(a - 2)(a + 2)$	2. $n^2 - 64$
3. $81 - x^2$ $(9 - x)(9 + x)$	4. $c^2 - 100$
5. $k^2 + 25$ Prime	6. $1 - 49y^2$
7. $9b^2 - 100$	8. $25x^2 - 49$ $(5x - 7)(5x + 7)$
9. $16a^2 - 121$	10. $x^2 - 81y^2$
11. $4h^2 - 25g^2$	12. $64u^2 - v^2$ $(8u - v)(8u + v)$
13. $x^2y^2 - 1$	14. $81n^4 - 25$

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15. $4c^2 - 5d^2$ Prime	16. $49m^4 - 16$
17. $k^6 - 16$	18. $4p^4 - 25$
19. $121r^6 - 1$	20. $64m^4 - 9n^2$

Multi-Step Factoring: Look for a GCF first, then factor the difference of squares.

21. $24a^2 - 54b^2$	22. $36x^2 - 9x$ GCF: $9x$ $9x(4x^2 - 1)$ $9x(2x - 1)(2x + 1)$
23. $45q^2 - 20q$	24. $325^2 - 18u^2$ GCF: $2$ $2(163^2 - 9u^2)$ $2(45 - 3u)(45 + 3u)$
25. $100b^3 - 36b$	26. $3x^4 - 48x^2$
27. $8x^2y - 32y^3$	28. $125m^3 - 5m$
29. $3n^2 - 147$	30. $18x^2 - 50$
31. $m^3n - mn$	32. $16x^3 - 100x$
33. $80n^4 - 125n^2$	34. $12n^4 - 3$

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