NAME: _____ PERIOD: _____

FACTORING

Notes and Practice – GCF

Notes and Practice – Diff of Squares

Notes and Practice – Trinomials

Notes and Practice – Mixed Practice

Factoring GCF's

Factoring out a greatest common factor:

1. Determine what each term below has in common.

    Ex 1. 3, 6, 9   Ex 2. 2x, 8x, -4x

2. Factor the common value out by dividing each term by the common value.

    Ex 3. $f(x) = 4x + 4$ Ex 4. $f(x) = 2x^2 - 3x$

    Ex 5. $f(x) = 2x + 6y - 12z$ Ex 6. $f(x) = 5x^3 + 15x^2 - 10x$

3. You Practice:

    1. $f(x) = 8x^2 + 3x$ 2. $f(x) = 16x^3 - 8x^2$

    3. $f(x) = 12x + 4y - 8z$ 4. $f(x) = 4x^3 + 18x^2 + 3x - 5$

GCF - Additional Practice:

Factor the following by factoring out the GCF.

1. $2x + 8$

2. $4x + 16$

3. $6x - 12$

4. $3 + 15x$

5. $2x^2 - 7x$

6. $21x + 14x^2$

7. $4y + 4x$

8. $8x^3 - 3x$

9. $3x + 9y - 18z$

10. $x^4 + 3x^3 - 12x$

Factoring Difference of Two Squares $\quad a^2 - b^2 = (a + b)(a - b)$

STEP 1: Check GCF First

STEP 2: Check to see if Difference of Squares can be done.

> *** Is it a binomial (2 terms)?**
> *** Is it a subtraction problem?**
> *** Are both terms perfect squares?**

Ex 1. $x^2 - 9$

Ex 2. $x^2 - 49$

Ex 3. $4x^2 - 25$

Ex 4. $5x^2 - 20$

Ex 5. $x^{16} - 25$

Ex 6. $x^8 - 100$

You Try:

1. $x^2 - 121$

2. $x^2 - 64$

3. $9x^2 - 1$

4. $2x^2 - 32$

5. $x^9 - 36$

6. $x^{20} - 49$

3

Difference of Squares - Additional Practice:

Factor using the difference of two squares. If not possible, explain why.

1. $a^2 - 1$

2. $3a^2 - 12$

3. $16c^2 + 4$

4. $c^2 - 4$

5. $k^2 - 19$

6. $t^4 - 1$

7. $36j^2 - 121$

8. $9x^8 - 81$

9. $y^{10} - 4$

10. $w^2 - 36$

11. $x^3 - 16$

12. $q^{12} + y^6$

13. $c^2 - 8$

14. $64 - c^8$

15. $27x^6 - 12y^{12}$

4

Factoring Trinomials

STEP 1: Once in standard form, always check to see if there is a GCF First
STEP 2: Check a·c method if it's a trinomial

- Multiply a·c and determine which pair of factors multiply to give you a·c but also add together to give you b.
- Replace the original b term with the 2 factors
- Separate your problem into 2 groups
- Determine the GCF of each group and factor it out (your parentheses should match if the trinomial is factorable and you've done it correctly)
- Regroup your insiders and your outsiders into parentheses

Ex 1. $2x^2 - 11x - 6$ Ex 2. $x^2 + 9x + 20$ Ex 3. $3x^2 + 2x - 8$

Ex 4. $x^2 - 7x - 18$ Ex 3. $2x^2 + 13x + 6$ Ex 4. $4x^2 + 3x + 1$

You Try:

1. $2x^2 + 7x + 3$ 2. $x^2 + 8x + 12$ 3. $7x^2 - 4x - 3$

Special Cases:

Ex 1. $x^2 + 10 - 11x$ Ex 2. $5x^2 + 15x - 20$

5

Factoring Trinomials - Additional Practice:

1. $3x^2 + 17x + 10$

2. $x^2 + 8x + 12$

3. $x^2 + 8x + 12$

4. $x^2 + 12x + 11$

5. $5x^2 - 7x + 2$

6. $x^2 + 10 + 7x$

7. $6x^2 + x - 15$

8. $x^2 - 11x + 24$

9. $4x^2 + 13x + 3$

10. $x^2 - 6x + 5$

11. $x^2 - 3x - 4$

12. $4x^2 - 25x - 21$

13. $x^2 - 2x - 48$

14. $28x^2 - 25x + 3$

15. $x^2 + 3x - 18$

16. $x^3 + 12x^2 + 32x$

17. $2x^4 + 8x^3 + 8x^2$

18. $18x^2 - 18x + 4$

6

Mixed Factoring - Additional Practice:

1. $x^2 + 5x + 4$

2. $4x^2 - 18x - 10$

3. $x^2 + 8x$

4. $x^2 + 9x + 14$

5. $2x^2 + 9x - 18$

6. $x^2 - 8x + 12$

7. $5x^2 + 17x - 12$

8. $x^2 - 64$

9. $x^2 + 3x - 10$

10. $x^2 + 13x + 40$

11. $2x^2 - 15x - 8$

12. $4x^2 + 20x$

13. $x^2 - 4x + 3$

14. $3x^2 + 12x$

15. $3x^2 + 32x - 11$

16. $x^2 - 49$

17. $x^2 + 6x - 27$

18. $11x^2 + 14x - 16$

19. $3x - 18y + 6z$

20. $25x^2 - 49$

21. $x^2 + 2x - 80$

22. $3x^2 + 15x + 18$

23. $2x^2 - 9x + 10$

24. $X^8 - 100$

25. $x^2 - 5x - 6$

26. $4x^2 + 32x + 28$

27. $64x^6 - x^{10}$

28. $2x^2 - 2x - 4$

29. $12x^2 - 3x$

30. $x^2 - 14x - 72$

8