

Name: _____

Guide

Date: _____

GCF & Factoring Trinomials when a is not equal to 1

ⓐ **Factoring Trinomials:** Writing the polynomial as a product of 2 binomials.

- Check for GCF 1st. Divide out the GCF of each term if one exists.
- When factoring $ax^2 \pm bx \pm c$, first find factors of **a** and **c**.
- Check the products of the inner and outer terms to see if the sum is **b**.
- When **c** is POSITIVE, both signs inside the parentheses will be the same as the middle term.
- When **c** is NEGATIVE, the signs in the parentheses will be different.

Factor each trinomial completely.

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

$(x+7)(x+2)$

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

3. $5x^2 + 11x + 2$

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

4. $3x^2 + 16x - 35$

5. $3x^2 - 10x + 3$

6. $2x^2 - 7x + 5$

$(3x-1)(x-3)$

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

8. $5x^2 - 39x - 8$

9. $14x^2 - 32x + 18$

$(3x-2)(x-2)$

$2(7x^2 - 16x + 9)$

$2(7x-9)(x-1)$

10. $2x^2 - 17x + 35$

11. $15x^2 - 6x - 48$

12. $7x^2 + 61x - 90$

$$\begin{array}{r|l} 1 & 15 \\ 3 & 5 \end{array} \quad \begin{array}{r|l} 1 & 48 \\ 2 & 24 \\ 3 & 16 \\ 4 & 12 \\ 6 & 8 \end{array}$$

$(5x+8)(3x-6)$

13. $5x^2 + 39x - 54$

14. $7x^2 - 45x + 18$

15. $x^2 - x - 90$

$$\begin{array}{r|l} 1 & 54 \\ 2 & 27 \\ 3 & 18 \\ 6 & 9 \end{array}$$

$(5x-6)(x+45)$

$(x-10)(x+9)$

Factor each trinomial completely.

16. $x^2 + 10x + 25$

17. $2x^2 - 5x - 63$

$$(2x+9)(x-7)$$

18. $4x^2 - 17x - 42$

19. $2x^2 + 16x + 32$

$$2(x^2 + 8x + 16)$$

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

20. $2x^2 - 7x + 5$

21. $9x^2 + 5x - 4$

$$(9x-4)(x+1)$$

22. $9x^2 - 6x + 1$

23. $9x^2 + 15x - 14$

$$\begin{array}{r} \overline{) 9} \\ 3 \end{array} \quad \begin{array}{r} \overline{) 14} \\ 2 \end{array}$$

$$(3x+7)(3x-2)$$

24. $5x^3 + 30x^2 - 200x$

25. $3x^2 - 10x + 7$

$$(3x-1)(x-7)$$

26. $3x^2 + 19x + 6$

27. $15x^2 - 15x - 50$

$$5(3x^2 - 3x - 10)$$

28. The area of a rectangle is represented by the expression $6x^2 + 17x + 12$. The length is given as $(2x + 3)$. What is an expression for the width?

29. The area of a rectangle is represented by the expression $5x^2 + 12x + 7$. The length is given as $(x + 1)$. What is an expression for the width?

$$(5x+7)$$