NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

For each problem below, find the GCF of the expression, if one exists. Be careful, some expressions have no GCF.

1. $9x^2 - 81 \rightarrow$ $9(x^2-9)$
   GCF: 9
   $x^2 - 9$ | $9x^2$ | -81 | 9

2. $-4x^2 + x \rightarrow$ $-x(4x-1)$
   GCF: $-x$
   $4x - 1$ | $4x^2$ | $+x$ | $-x$

3. $45x^2 - 9 \rightarrow$ $9(5x^2-1)$
   GCF: 9
   $5x^2 - 1$ | $45x^2$ | -9 | 9

4. $-31x^2 - 3x \rightarrow$ $-x(31x+3)$
   GCF: $-x$
   $31x + 3$ | $-31x^2$ | $-3x$ | $-x$

5. $27x - 9 \rightarrow$ $9(3x-1)$
   GCF: 9
   $3x - 1$ | $27x$ | -9 | 9

6. $9x - 4 \rightarrow$ $9x-4$
   GCF: NONE

7. $-14x^2 + 35 \rightarrow$ $-7(2x^2+5)$
   GCF: -7

8. $-2x^2 - 3x \rightarrow$ $-x(2x+3)$
   GCF: $-x$

9. $x^2 - 6x + 12 \rightarrow$ $x^2-6x+12$
   GCF: NONE

10. $-6x^2 - 6x + 6 \rightarrow$ _____
    GCF: -6
    $-6(x^2+x-1)$

11. $16x^2 + 8x - 24 \rightarrow$ _____
    GCF: 8
    $8(2x^2+x-3)$

12. $60x^2 - 10x + 6 \rightarrow$ _____
    GCF: 2
    $2(30x^2-5x+3)$

13. $8x^2 - 4xy + 2xw \rightarrow$ _____
    GCF: $2x$
    $2x(4x-2y+w)$

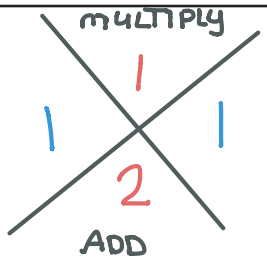
14. $ax^2 + ax - a \rightarrow$ _____
    GCF: a
    $a(x^2+x-1)$

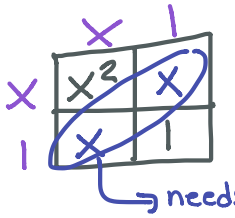
15. $6bx^2 - 2bx + 8b \rightarrow$ _____
    GCF: $2b$
    $2b(3x^2-x+4)$

Factor each equation in Problems 16–21. You may use either the algebra tile model or the generic rectangle.

16. $y = x^2 + 2x + 1$

$y=(x+1)(x+1)$



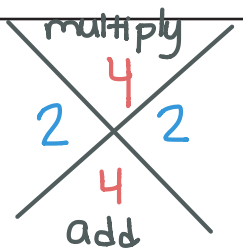


$(x+1)(x+1)$

needs to add to 2x & product of 1

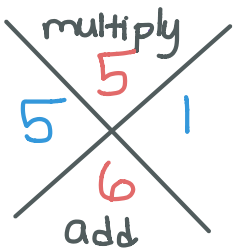
17. $y = x^2 + 4x + 4$

$y=(x+2)(x+2)$



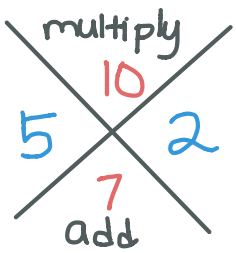
18. $y = x^2 + 6x + 5$

$y=(x+5)(x+1)$



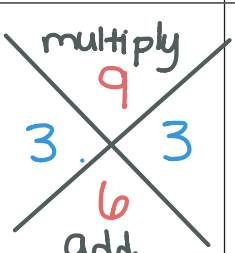
19. $y = x^2 + 7x + 10$

$y=(x+5)(x+2)$



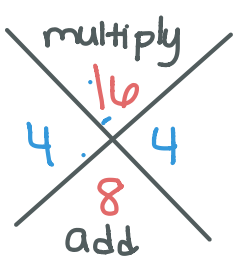
20. $y = x^2 + 6x + 9$

$y=(x+3)(x+3)$



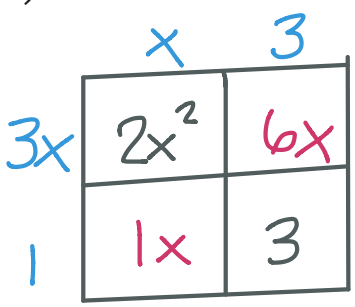
21. $y = x^2 + 8x + 16$

$y=(x+4)(x+4)$



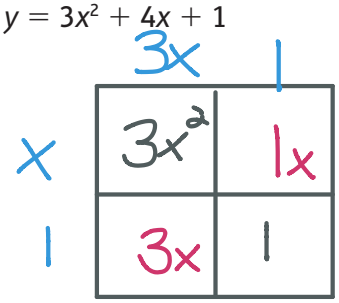
Factor each equation in Problems 22–27.

22. $y = 2x^2 + 7x + 3$



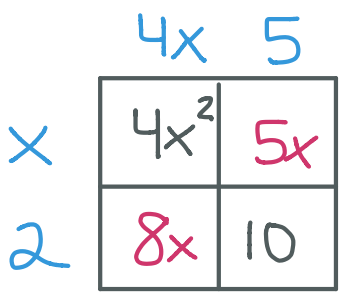
$y = (3x+1)(x+3)$

23. $y = 3x^2 + 4x + 1$



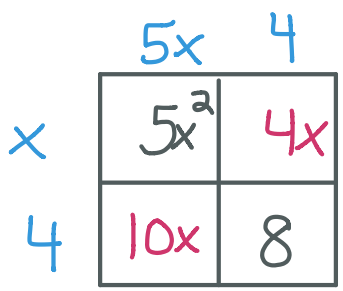
$y=(3x+1)(x+1)$

24. $y = 4x^2 + 13x + 10$



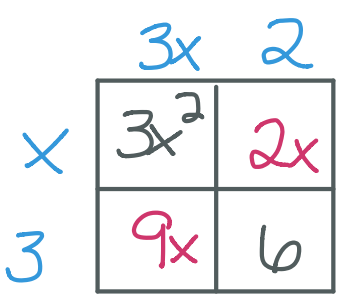
$y=(4x+5)(x+2)$

25. $y = 5x^2 + 14x + 8$



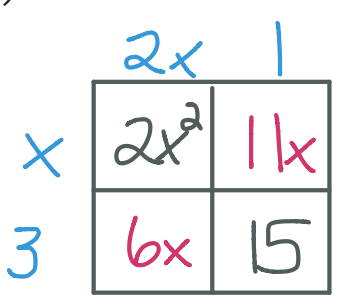
$y=(x+4)(5x+4)$

26. $y = 3x^2 + 11x + 6$



$y=(3x+2)(x+3)$

27. $y = 2x^2 + 11x + 15$



$y=(2x+1)(x+3)$

Factor each equation in Problems 28–33.

28. $y = 2x^2 - 7x + 3$

$y=(2x-1)(x-3)$

29. $y = 3x^2 - 14x - 5$

$y=(x-5)(3x+1)$

30. $y = 4x^2 + x - 3$

$y=(x+1)(4x-3)$

31. $y = 4x^2 - 4x - 3$

$y=(2x-3)(2x+1)$

32. $y = 6x^2 + x - 1$

$y=(3x-1)(2x+1)$

33. $y = 8x^2 - 10x - 3$

$y=(4x-1)(2x-3)$

Challenge Problems

34. Fill in the boxes with any numbers that make the equation true.

$$(\square x - 3)(\square x + \square) = 12x^2 - \square x - 15$$

Hint: What # is easiest to fill out? What are the factors of 12?

Answer: Many possibilities. possible answers: * 2, 6, 5, 8
1, 12, 5, 31

35. Fill in the blanks by finding the largest and smallest integers that will make the quadratic expression factorable.

Hint: How would you represent this problem visually?
What patterns are you observing for max & min values of C?

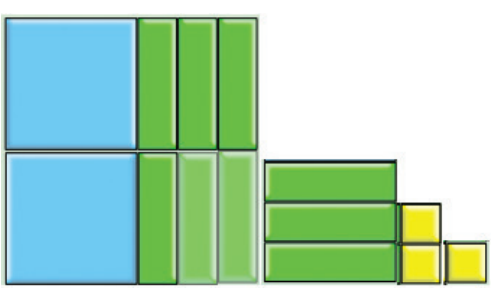
Answer: Largest C can be is 1

$$2x^2 + 3x + \square$$

Can find smaller values as shown in table. ⇒

C	1	0	-2	-5
FACTORS	(2x+1)(x+1)	x(2x+3)	(2x-1)(x+2)	(2x+5)(x-1)

36. An algebra tile model was started but not completed and it is missing some pieces. What trinomial could this be representing? What is it in factored form?



possible answer:

$2x^2 + 9x + 3$

cannot be factored.