Name: _____ Class: _____

AU7: Notes & HW #4 – Mixed Practice Date: _____

Simplify the following to write an equivalent expression:

1. $(x+5)(x+4)=$

2. $(2x^3-4x^2+3)+(x^3-3x^2+1)=$

3. $-3x^2(x^2+3x)=$

4. $(4x+3)(x-7)=$

5. $(5n^2-7)-(2n^2+n-3)=$

6. $(3x)(x^2-5x-3)=$

7. $(5x-3)(4x+2)=$

8. $(3x^3+7x^2)+(x^2-2x^3)=$

9. $4(x^2-3)+x(x+1)=$

10. $(3x-1)(2x^2-5x+1)=$

11. $(2x-13x^2+3)-(2x^2+8x)=$

12. $(x-9)(x+9)=$

Factor the polynomial using the G.C.F. to write an equivalent expression:

13. $8x^3-12x^2+4x=$

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

15. $16m^3-8m^2+12m=$

16. $6y^4+9y^3-27y^2=$

17. $3x^2-x+5=$

18. A square poster of length $3x$ is going to have a square painting centered on it. The length of the painting is $2x$. The area of the poster not covered by the painting will be painted black. What is the area of the poster that will be painted black?

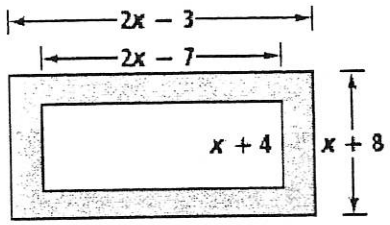
19. The width of a rectangular painting is three inches more than twice the height. A frame that is 2.5 inches wide goes around the painting.

a. Write an expression for the area of the painting.

b. Write an expression for the combined area of the painting and frame.

c. What is the area of the frame?

20. The Cutting Edge frame shop makes a mat by cutting out the inside of a rectangular board. Use the diagram to find the length and width of the original board if the area of the mat is 184 in^2.



Chapter 9

Extra Practice: Skills and Word Problems

Lesson 9-1 Simplify. Write each answer in standard form.

1. $(5x^3 + 3x^2 - 7x + 10) - (3x^3 - x^2 + 4x - 1)$
2. $(x^2 + 3x - 2) + (4x^2 - 5x + 2)$
3. $(4m^3 + 7m - 4) + (2m^3 - 6m + 8)$
4. $(8t^2 + t + 10) - (9t^2 - 9t - 1)$
5. $(-7c^3 + c^2 - 8c - 11) - (3c^3 + 2c^2 + c - 4)$
6. $(6v + 3v^2 - 9v^3) + (7v - 4v^2 - 10v^3)$
7. $(s^4 - s^3 - 5s^2 + 3s) - (5s^4 + s^3 - 7s^2 - s)$
8. $(9w - 4w^2 + 10) + (8w^2 + 7 + 5w)$
9. The sides of a rectangle are $4t - 1$ and $5t + 9$. Write an expression for the perimeter of the rectangle.
10. Three consecutive integers are $n - 1$, n, and $n + 1$. Write an expression for the sum of the three integers.

Lesson 9-2 Simplify each product.

11. $4b(b^2 + 3)$
12. $9c(c^2 - 3c + 5)$
13. $8m(4m - 5)$
14. $5k(k^2 + 8k)$
15. $5r^2(r^2 + 4r - 2)$
16. $2m^2(m^3 + m - 2)$
17. $-3x(x^2 + 3x - 1)$
18. $-x(1 + x + x^2)$

Find the GCF of the terms of each polynomial. Factor.

19. $t^6 + t^4 - t^5 + t^2$
20. $3m^2 - 6 + 9m$
21. $16c^2 - 4c^3 + 12c^5$
22. $8v^6 + 2v^5 - 10v^9$
23. $6n^2 - 3n^3 + 2n^4$
24. $5r + 20r^3 + 15r^2$
25. $9x^6 + 5x^5 + 4x^7$
26. $4d^8 - 2d^{10} + 7d^4$

Lessons 9-3 and 9-4 Simplify each product. Write in standard form.

27. $(5c + 3)(-c + 2)$
28. $(3t - 1)(2t + 1)$
29. $(w + 2)(w^2 + 2w - 1)$
30. $(3t + 5)(t + 1)$
31. $(2n - 3)(2n + 4)$
32. $(b + 3)(b + 7)$
33. $(3x + 1)^2$
34. $(5t + 4)^2$
35. $(w - 1)(w^2 + w + 1)$
36. $(a + 4)(a - 4)$
37. $(3y - 2)(3y + 2)$
38. $(w^2 + 2)(w^2 - 2)$
39. **Geometry** A rectangle has dimensions $3x - 1$ and $2x + 5$. Write an expression for the area of the rectangle as a product and in standard form.
40. Write an expression for the product of the two consecutive odd integers $n - 1$ and $n + 1$.

Lessons 9-5 to 9-7 Factor each expression.

41. $x^2 - 4x + 3$
42. $3x^2 - 4x + 1$
43. $v^2 + v - 2$
44. $5t^2 - t - 18$
45. $m^2 + 9m - 22$
46. $x^2 - 2x - 15$
47. $2n^2 + n - 3$
48. $2h^2 - 5h - 3$
49. $m^2 - 25$
50. $9y^2 - 1$
51. $9y^2 + 6y + 1$
52. $p^2 + 2p + 1$
53. $x^2 + 6x + 9$
54. $25x^2 - 9$
55. $4t^2 + t - 3$
56. $9c^2 - 169$
57. $4m^2 - 121$
58. $3v^2 + 10v - 8$
59. $4g^2 + 4g + 1$
60. $-w^2 + 5w - 4$
61. $9t^2 + 12t + 4$
62. $12m^2 - 5m - 2$
63. $36s^2 - 1$
64. $c^2 - 10c + 25$

Lesson 9-8 Factor each expression.

65. $3y^3 + 9y^2 - y - 3$
66. $3u^3 + u^2 - 6u - 2$
67. $w^3 - 3w^2 + 3w - 9$
68. $4z^3 + 2z^2 - 2z - 1$
69. $3x^3 + 8x^2 - 3x$
70. $y^5 - 9y$
71. $2p^3 - 4p^2 + 2p - 4$
72. $3y^3 - 3y^2 - 6y$

Name: Date: Class:

SPORTY HOST

The game of baseball was first played in the United States in 1829. Up until 1935, the games were always played in the daytime. Which city hosted the first nighttime baseball game?

Simplify each problem by using either the distributive property or the FOIL pattern. On the "scoreboard," mark a "run" for Cincinnati for every solution that ends in a negative number; mark a run for Dallas for every solution that ends in a positive number. The city with the most runs is the one that hosted the event.

Tip: Use the left and right distributive properties when multiplying two polynomials. In other words, $(ax + b)(x^2 + x + c) = ax(x^2 + x + c) + b(x^2 + x + c)$ where a, b, and c are real numbers. Use the FOIL pattern when multiplying two binomials: $(x + b)(x + c) = x^2 + bx + cx + bc$, where b and c are real numbers.

1. $(x + 2)(x - 5)$
2. $(x - 4)(x^2 + 2x + 6)$
3. $(x + 3)(2x + 6)$
4. $(x + 2)(x^2 + 7x - 10)$
5. $(x^2 - 8)(x^2 + 3x - 1)$
6. $(3x^2 + 2)(x - 3)$
7. $(5x - 7)(3x - 4)$
8. $(x^2 + 4x - 2)(x + 4)$
9. $(-2x + 5)(x - 1)$

SCOREBOARD	
Cincinnati	**Dallas**

Answer: _____

Name _____ Class _____ Date _____

Reteaching 9-4

Multiplying Special Cases

OBJECTIVE: Finding the square of a binomial and finding the difference of two squares.

MATERIALS: None

Examples

Finding the square of a binomial.

Remember:
- Square the first term.
- Double the product of the two terms.
- Square the last term.
- Write the sum of your three products.

$(x - 5)^2$

Square the first term:	x^2
Double $(x)(-5)$:	$2 \cdot (-5x) = -10x$
Square the last term:	$(-5)^2 = 25$
Write the sum of your three products:	$x^2 - 10x + 25$

Finding the difference of two squares.

Remember:
- Square the first term.
- Square the last term.
- Write the difference of your first square and your second square.

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

Square the first term:	$(3x)^2 = 9x^2$
Square the last term:	$(2)^2 = 4$
Write the difference of your first square and your second square:	$9x^2 - 4$

Exercises

Find each product.

1. $(x - 7)^2$
2. $(x + 1)^2$
3. $(x - 4)^2$
4. $(x - y)^2$
5. $(2x + 3)^2$
6. $(3x - 5)^2$
7. $(2x + 1)^2$
8. $(5x - 4)^2$
9. $(x + 7)(x - 7)$
10. $(x + 8)(x - 8)$
11. $(x - 3)(x + 3)$
12. $(x + y)(x - y)$
13. $(4x + 3)(4x - 3)$
14. $(2x + 5)(2x - 5)$
15. $(3x + 2)(3x - 2)$
16. $(7x - 1)(7x + 1)$

Name _____ Class _____ Date _____

Practice 9-4

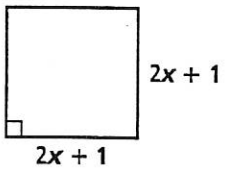
Multiplying Special Cases

Find each product.

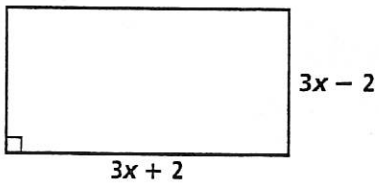
1. $(w - 2)^2$
2. $(y + 4)^2$
3. $(4w + 2)^2$
4. $(w - 9)^2$
5. $(3x + 7)^2$
6. $(3x - 7)^2$
7. $(2x - 9)^2$
8. $(x - 12)^2$
9. $(6x + 1)^2$
10. $(4x - 7)^2$
11. $(x + 8)(x - 8)$
12. $(x - 11)(x + 11)$
13. $(x - 12)(x + 12)$
14. $(y + w)(y - w)$
15. $(2x + 1)(2x - 1)$
16. $(5x - 2)(5x + 2)$
17. $(6x + 1)(6x - 1)$
18. $(2x - 4)(2x + 4)$
19. $(x^2 + y^2)^2$
20. $(2x^2 + y^2)^2$
21. $(a^2 - b^2)^2$
22. $(y^2 - 4w^2)^2$
23. $(3 - 6x^2)^2$
24. $(4a - 3y)^2$
25. $(3y + 2a)(3y - 2a)$
26. $(x^2 + 2y)(x^2 - 2y)$
27. $(3x^2 + 4w^2)(3x^2 - 4w^2)$
28. $(4x + 3w^2)(4x - 3w^2)$
29. $(2a + 7b)(2a - 7b)$
30. $(5a^2 - 6x)(5a^2 + 6x)$
31. 18^2
32. $(64)^2$
33. (29)(31)
34. (97)(103)
35. (19)(42)
36. (95)(205)

Find the area.

37.

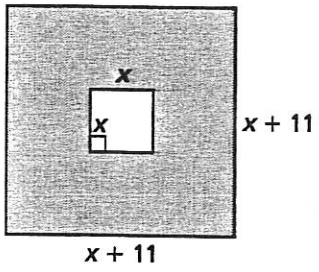


38.



Find the area of the shaded region.

39.



40.