FACTORING POLYNOMIALS & F.O.I.L

NAME: _____ DIV: ____ DATE: _____

Factor: What are both numbers divisible by? What do they have in common.

Do Q# 1-9 (ODD), 15-31 (ODD)

First
Outer
Inner
Last

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

F O I L

$= x^2 + 4x + 4$

Do Q# 5-21 (ODD)

Practice

State the missing factor.

1. $12x + 18y = (\blacksquare)(2x + 3y)$
2. $3x^2 - 5x = (\blacksquare)(3x - 5)$
3. $4ab + 3ac = (\blacksquare)(4b + 3c)$
4. $5x^2 + 10x = (\blacksquare)(x + 2)$
5. $8abc - 12ab = (\blacksquare)(2c - 3)$

Copy and complete.

6. $3y^2 + 18y = 3y(y + \blacksquare)$
7. $14a - 12b = 2(\blacksquare - 6b)$
8. $4a^3 - 8a^2 = 4a^2(\blacksquare - 2)$
9. $10x^3 - 5x^2 + 15x = 5x(2x^2 - \blacksquare + \blacksquare)$

Copy and complete.

10. $33ab - 22b = 11b(\blacksquare - \blacksquare)$
11. $4a^3 - 10a^2 + 6a = 2a(\blacksquare - \blacksquare + \blacksquare)$
12. $27a^2b^2 - 18ab + 9b = 9b(\blacksquare - \blacksquare + \blacksquare)$
13. $6x^2y - 4xy^2 = 2xy(\blacksquare - \blacksquare)$
14. $9a^3b - 12ab^4 = 3ab(\blacksquare - \blacksquare)$

Factor each binomial.

15. $10x + 15$
16. $28y - 14$
17. $2mn - n$
18. $5x^2 + 10x$
19. $8x^2 + 4x^3$
20. $9a^3b^2 - 6a^2b$
21. $4x^2y^2 - 6xy^2z^2$
22. $14a^2b^4 - 21b^2c^2$
23. $6x^2y^3z + 12xy^2z$
24. $15a^2b^5 - 9b^4c^5$

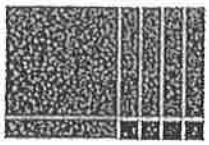
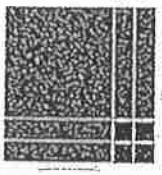
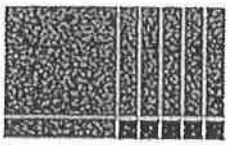
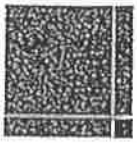
Problems and Applications

Factor each trinomial.

25. $9a - 6b + 3$
26. $4a - 8b + 16$
27. $12x^3 - 6x^2 + 24x$
28. $10x^3 - 5x^2 + 15x$
29. $24x^4y - 18x^3y + 12x^2y^2$
30. $8a^2b + 16ab - 24a$
31. $25m^3n - 15m^2n^2 + 5mn^3$

Practice

Express each area as a product and in expanded form.

1. 
2. 
3. 
4. 

Expand.

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

Find the product.

11. $(x + 1)(x + 2)$
12. $(x + 4)(x + 3)$
13. $(a + 4)(a + 4)$
14. $(y + 5)(y + 6)$
15. $(x - 4)(x - 3)$
16. $(a - 4)(a - 2)$
17. $(b - 1)(b - 5)$
18. $(y - 9)(y - 9)$
19. $(x - 6)(x + 3)$
20. $(c + 2)(c - 8)$
21. $(t + 10)(t - 10)$
22. $(q - 2)(q + 5)$

Expand.

23. $(c + 3)(c - 4)$
24. $(x + 2)(x - 5)$
25. $(y + 6)(y - 2)$
26. $(a + 9)(a - 5)$
27. $(x - 3)(x + 3)$
28. $(b - 7)(b + 10)$
29. $(y - 12)(y + 3)$
30. $(x - 7)(x + 1)$

Multiply.

31. $(x + 5)(2x + 1)$
32. $(3y + 1)(y + 2)$
33. $(x - 1)(2x - 1)$
34. $(a - 3)(2a$ [illegible]
35. $(5y - 7)(y + 3)$
36. $(x - 5)(4x$ [illegible] $3)$
37. $(2x + 3)(2x + 1)$
38. $(5y - 2)(3y - 4)$
39. $(4x + 1)(3x - 5)$
40. $(2y - 9)(5y + 2)$
41. $(7y - 3)(2y - 7)$
42. $(3x - 2)(8x + 5)$