Name:_____ Period:_____Date:_____

Factoring Answers

Section I. Factor Out First

1. $15x^2 + 35x$

   $5x(3x + 7)$

2. $a^3b^2c^4 + a^5bc^2$

   $a^3bc^2(bc^2 + a^2)$

3. $18k^4m^2 - 12k^3m^7$

   $6k^3m^2(3k - 2m^5)$

4. $7q^4 - 28q^2 + 14q$

   $7q(q^3 - 4q + 2)$

Section II. Factoring a Difference of Two Squares

5. $x^2 - 36$

   $(x - 6)(x + 6)$

6. $x^2 - 121$

   $(x - 11)(x + 11)$

7. $x^2 - 4$

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

8. $4x^2 - 81$

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

9. $9x^2 - 169y^2$

   $(3x - 13y)(3x + 13y)$

10. $25x^2 - 49y^2$

    $(5x - 7y)(5x + 7y)$

Section III. Double Factor

11. $x^4 - 81$

    $(x^2 + 9)(x + 3)(x - 3)$

12. $x^4 - 16$

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

13. $x^4 - 2x^2 - 8$

    $(x^2 + 9)(x + 3)(x - 3)$

14. $x^4 - 6x^2 - 27$

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

Section IV. Factoring a Trinomial with a Leading Coefficient of 1

15. $x^2 + 13x + 36$

    $(x + 9)(x + 4)$

16. $x^2 - 8x + 15$

    $(x - 5)(x - 3)$

17. $x^2 + 2x - 24$

    $(x + 6)(x - 4)$

18. $x^2 - 10x - 56$

    $(x - 14)(x + 4)$

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

$(x + 6)(x - 1)$

20. $x^2 + 4x + 3$

$(x + 1)(x + 3)$

21. $x^2 - 11x - 12$

$(x - 12)(x + 1)$

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

$(x - 9)(x - 1)$

23. $x^2 - 16x + 64$

$(x - 8)^2$

24. $x^2 + 8x + 16$

$(x + 4)^2$

Section V. Recognizing the Switch of *a* and *c* in $ax^2 + bx + c$

25a. $x^2 + 7x + 10$

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

25b. $10x^2 + 7x + 1$

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

26a. $x^2 + 11x + 28$

$(x + 7)(x + 4)$

26b. $28x^2 + 11x + 1$

$(7x + 1)(4x + 1)$

27a. $x^2 - 6x - 16$

$(x - 8)(x + 2)$

27b. $16x^2 - 6x - 1$

$(2x - 1)(8x + 1)$

28a. $x^2 + 2x - 35$

$(x + 7)(x - 5)$

28b. $35x^2 + 2x - 1$

$(7x - 1)(5x + 1)$

Section VI. Factoring by Grouping

29. $5x^3 + 10x^2 + 3x + 6$

$(5x^2 + 3)(x + 2)$

30. $2x^3 - 12x^2 - 3x + 18$

$(2x^2 - 3)(x - 6)$

31. $3x^3 - 12x^2 + x - 4$

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

32. $4x^3 + 8x^2 - 9x - 18$

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

Section VII. Factoring with a Leading Coefficient and a Constant Greater than 1.

33. $3x^2 + 5x + 2$

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

34. $2x^2 + 3x - 27$

$(2x + 9)(x - 3)$

35. $4x^2 - 8x - 21$

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

36. $6x^2 + x - 40$

$(3x + 8)(2x - 5)$

37. $5x^2 - 17x + 6$

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

38. $12x^2 - 19x - 18$

$(3x + 2)(4x - 9)$

Section VIII. Factoring by Factoring out First

39. $2x^2 + 12x - 14$

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

40. $x^3 - 13x^2 + 40x$

$x(x - 8)(x - 5)$

41. $3x^2 - 27$

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

42. $3x^2 - 12x - 96$

$3(x - 8)(x + 4)$

43. $6x^3 - 36x^2 + 30x$

$6x(x - 5)(x - 1)$

44. $2x^2y + 14xy - 16y$

$2y(x + 8)(x - 1)$