Name _____ Class _____ Date _____

Practice 9-2

Multiplying and Factoring

Simplify each product.

1. $4(a - 3)$

2. $-5(x - 2)$

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

4. $4x^3(x - 3)$

5. $-5x^2(x^2 + 2x + 1)$

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

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

8. $4d^2(d^2 - 3d - 7)$

9. $5m^3(m + 6)$

10. $a^2(2a + 4)$

11. $4(x^2 - 3) + x(x + 1)$

12. $4x(5x - 6)$

Find the GCF of the terms of each polynomial.

13. $8x - 4$

14. $15x + 45x^2$

15. $x^2 + 3x$

16. $4c^3 - 8c^2 + 8$

17. $12x - 36$

18. $12n^3 + 4n^2$

19. $14x^3 + 7x^2$

20. $8x^3 - 12x$

21. $9 - 27x^3$

22. $25x^3 - 15x^2$

23. $11x^2 - 33x$

24. $4n^4 + 6n^3 - 8n^2$

25. $8d^3 + 4d^2 + 12d$

26. $6x^2 + 12x - 21$

27. $8g^2 + 16g - 8$

Factor each polynomial.

28. $8x + 10$

29. $12n^3 - 8n$

30. $14d - 2$

31. $6h^2 - 8h$

32. $3z^4 - 15z^3 - 9z^2$

33. $3y^3 - 8y^2 - 9y$

34. $x^3 - 5x^2$

35. $8x^3 - 12x^2 + 4x$

36. $7x^3 + 21x^4$

37. $6a^3 - 12a^2 + 14a$

38. $6x^4 + 12x^2$

39. $3n^4 - 6n^2 + 9n$

40. $2w^3 + 6w^2 - 4w$

41. $12c^3 - 30c^2$

42. $2x^2 + 8x - 14$

43. $4x^3 + 12x^2 + 16x$

44. $16m^3 - 8m^2 + 12m$

45. $4a^3 - 20a^2 - 8a$

46. $18c^4 - 9c^2 + 7c$

47. $6y^4 + 9y^3 - 27y^2$

48. $6c^2 - 3c$

49. A circular pond will be placed on a square piece of land. The length of a side of the square is $2x$. The radius of the pond is x. The part of the square not covered by the pond will be planted with flowers. What is the area of the region that will be planted with flowers? Write your answer in factored form.

50. A square poster of length $3x$ is 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?

51. The formula for the surface area of a sphere is $A = 4\pi r^2$. A square sticker of side x is placed on a ball of radius $3x$. What is the surface area of the sphere not covered by the sticker? Write your answer in factored form.