Name _____ Class _____ Date _____

Practice 10-4

Factoring to Solve Quadratic Equations

Use the Zero-Product Property to solve each equation.

1. $(x + 5)(x - 3) = 0$

2. $(x - 2)(x + 9) = 0$

3. $(b - 12)(b + 12) = 0$

4. $(2n + 3)(n - 4) = 0$

5. $(x + 7)(4x - 5) = 0$

6. $(2x + 7)(2x - 7) = 0$

7. $(3x - 7)(2x + 1) = 0$

8. $(8y - 3)(4y + 1) = 0$

9. $(5x + 6)(4x + 5) = 0$

Solve by factoring.

10. $x^2 + 5x + 6 = 0$

11. $b^2 - 7b - 18 = 0$

12. $r^2 - 4 = 0$

13. $x^2 + 8x - 20 = 0$

14. $y^2 + 14y + 13 = 0$

15. $s^2 - 3s - 10 = 0$

16. $x^2 + 7x = 8$

17. $x^2 = 25$

18. $h^2 + 10h = -21$

19. $2t^2 + 8t - 64 = 0$

20. $3a^2 - 36a + 81 = 0$

21. $5x^2 - 45 = 0$

22. $2a^2 - a - 21 = 0$

23. $3n^2 - 11n + 10 = 0$

24. $2x^2 - 7x - 9 = 0$

25. $2n^2 - 5n = 12$

26. $3m^2 - 5m = -2$

27. $5s^2 - 17s = -6$

28. $6m^2 = 13m + 28$

29. $4a^2 - 4a = 15$

30. $4r^2 = r + 3$

31. Suppose you are building a storage box of volume 4368 in.^{3}. The length of the box will be 24 in. The height of the box will be 1 in. more than its width. Find the height and width of the box.

32. A banner is in the shape of a right triangle of area 63 in.^{2}. The height of the banner is 4 in. less than twice the width of the banner. Find the height and width of the banner.

33. A rectangular poster has an area of 190 in.^{2}. The height of the poster is 1 in. less than twice its width. Find the dimensions of the poster.

34. A diver is standing on a platform 24 ft above the pool. He jumps from the platform with an initial upward velocity of 8 ft/s. Use the formula $h = -16t^2 + vt + s$, where h is his height above the water, t is the time, v is his starting upward velocity, and s is his starting height. How long will it take for him to hit the water?

Solve each equation.

35. $(x - 9)(x + 8) = 0$

36. $x^2 - 9x - 10 = 0$

37. $(c - 21)(c + 21) = 0$

38. $(x - 12)(5x - 13) = 0$

39. $2a^2 - 21a - 65 = 0$

40. $x^2 + 6x - 91 = 0$

41. $a^2 + 6a - 72 = 0$

42. $4x^2 + 8x - 21 = 0$

43. $20d^2 - 82d + 80 = 0$

44. $3n^2 + 12n - 288 = 0$

45. $2s^2 - 13s - 24 = 0$

46. $x^2 + 5x = 150$

47. $3c^2 + 8c = 3$

48. $30a^2 + 121a - 21 = 0$

49. $c^2 - 81 = 0$

50. $x^2 + 306 = -35x$

51. $x^2 = 121$

52. $x^2 - 21x + 108 = 0$