

Practice 10-5

Factoring to Solve Quadratic Equations

Use the Zero-Product Property to solve each equation.

1. $(x + 5)(x - 3) = 0$ **-5, 3** 2. $(x - 2)(x + 9) = 0$ **2, -9** 3. $(b - 12)(b + 12) = 0$ **12, -12**
 4. $(2n + 3)(n - 4) = 0$ **-1.5, 4** 5. $(x + 7)(4x - 5) = 0$ **-7, 1.25** 6. $(2x + 7)(2x - 7) = 0$ **±3.5**
 7. $(3x - 7)(2x + 1) = 0$ **$\frac{7}{3}, -.5$** 8. $(8y - 3)(4y + 1) = 0$ **$\frac{3}{8}, -.25$** 9. $(5x + 6)(4x + 5) = 0$ **-1.2, -1.25**

Solve by factoring.

10. $x^2 + 5x + 6 = 0$ **-3, -2** 11. $b^2 - 7b - 18 = 0$ **9, -2** 12. $r^2 - 4 = 0$ **±2**
 13. $x^2 + 8x - 20 = 0$ **-10, 2** 14. $y^2 + 14y + 13 = 0$ **-13, -1** 15. $s^2 - 3s - 10 = 0$ **5, -2**
 16. $x^2 + 7x = 8$ **-8, 1** 17. $x^2 = 25$ **±5** 18. $h^2 + 10h = -21$ **-7, -3**
 19. $2t^2 + 8t - 64 = 0$ 20. $3a^2 - 36a + 81 = 0$ 21. $5x^2 - 45 = 0$
 $2(t^2 + 4t - 32) = 0$
 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. $5s^2 - 17s = -6$
 $2n^2 - 5n - 12 = 0$
 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. $(x - 9)(x + 8) = 0$ **9, -8** 36. $x^2 - 9x - 10 = 0$
 38. $(x - 12)(5x - 13) = 0$ **12, $\frac{13}{5}$** 39. $2a^2 - 21a - 65 = 0$
 41. $a^2 + 6a - 72 = 0$ **12, 6** 42. $4x^2 + 8x - 21 = 0$
 44. $3n^2 + 12n - 288 = 0$ 45. $2s^2 - 13s - 24 = 0$
 47. $3c^2 + 8c = 3$ 48. $3a^2 + 121a - 21 = 0$
 50. $x^2 + 306 = -35x$ **-17, -18** 51. $x^2 = 121$
 37. $(c - 21)(c + 21) = 0$ **(w-10)(2w+19)**
 40. $x^2 + 6x - 9 = 0$ **w-10=0**
 43. $20d^2 - 82d + 80 = 0$ **2w+19=0**
 46. $x^2 + 5x = 150$
 49. $c^2 - 81 = 0$ **reasonable!**
 52. $x^2 - 21x + 108 = 0$ **w=10**

$3x + 7 = 0$
 $x = -\frac{7}{3}$
 $\frac{3}{3}x = -\frac{7}{3}$
 $x = -\frac{7}{3}$

$w(2w-1) = 190$
 $2w^2 - w = 190$
 190 in^2 $2w-1$
 w
 $2w^2 - w - 190 = 0$
 $w^2 - w - 380 = 0$
 $(w - \frac{20}{2})(w + \frac{19}{2})$

$x - 9 = 0$

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