

Practice 10-4**Factoring to Solve Quadratic Equations**

Use the Zero-Product Property to solve each equation.

- $(x + 5)(x - 3) = 0$
- $(x - 2)(x + 9) = 0$
- $(b - 12)(b + 12) = 0$
- $(2n + 3)(n - 4) = 0$
- $(x + 7)(4x - 5) = 0$
- $(2x + 7)(2x - 7) = 0$
- $(3x - 7)(2x + 1) = 0$
- $(8y - 3)(4y + 1) = 0$
- $(5x + 6)(4x + 5) = 0$

Solve by factoring.

- $x^2 + 5x + 6 = 0$
- $b^2 - 7b - 18 = 0$
- $r^2 - 4 = 0$
- $x^2 + 8x - 20 = 0$
- $y^2 + 14y + 13 = 0$
- $s^2 - 3s - 10 = 0$
- $x^2 + 7x = 8$
- $x^2 = 25$
- $h^2 + 10h = -21$
- $2t^2 + 8t - 64 = 0$
- $3a^2 - 36a + 81 = 0$
- $5x^2 - 45 = 0$
- $2a^2 - a - 21 = 0$
- $3n^2 - 11n + 10 = 0$
- $2x^2 - 7x - 9 = 0$
- $2n^2 - 5n = 12$
- $3m^2 - 5m = -2$
- $5s^2 - 17s = -6$
- $6m^2 = 13m + 28$
- $4a^2 - 4a = 15$
- $4r^2 = r + 3$

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- 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.
- 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.
- 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.
- 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.

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