

1. 3

2. Factoring $6x^2 - x - 2$ requires considering factors of 6 and -2 in different combinations until the combination is found that produces the correct middle term. Factoring $x^2 - x - 2$ only requires finding the factors of -2 that add up to -1 .

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

4. $8(v - 2)(v + 3)$

5. $4(k + 3)(k + 4)$

6. $6(y - 1)(y - 3)$

7. $7(b - 4)(b - 5)$

8. $9(r + 1)(r - 5)$

9. $(3h + 2)(h + 3)$

10. $(2m + 7)(4m + 1)$

11. $(2x - 1)(3x - 1)$

12. $(2w - 5)(5w - 3)$

13. $(n + 2)(3n - 1)$

14. $(2z - 1)(2z + 3)$

15. $2(g - 2)(4g + 3)$

16. $3(2v - 3)(3v + 2)$

17. $-(t - 3)(3t - 2)$

18. $-(v + 3)(7v + 4)$

19. $-(c - 5)(4c + 1)$

20. $-(h + 2)(8h - 3)$

21. $-(3w - 4)(5w + 7)$

22. $-(2d - 1)(11d - 9)$

23. need to factor 2 out of every term;
 $= 2(x^2 - x - 12) = 2(x + 3)(x - 4)$

24. These factors do not give the correct middle term;
 $= (2x - 3)(3x + 1)$

25. $x = -2, x = 3$

26. $k = -2, k = \frac{9}{2}$

27. $n = -\frac{5}{3}, n = \frac{3}{4}$

28. $b = -\frac{1}{2}, b = \frac{2}{7}$

29. $x = -\frac{7}{2}, x = 5$

30. $x = -3, x = \frac{1}{4}$

31. $x = -1, x = \frac{5}{7}$

32. $x = -\frac{1}{3}, x = 5$

33. a. $(5x - 2)$ ft
b. Substitute 3 for x into the expression for the area $15x^2 - x - 2$, then simplify; Substitute 3 for x into the expressions for the length $(5x - 2)$ and width $(3x + 1)$, simplify each, then multiply these two numbers.

34. 2.5 sec

35. length: 70 m, width: 31 m

36. yes; The length of the invitation is 5 inches, which is less than $5\frac{1}{8}$ inches. The width of the invitation is 3 inches, which is less than $3\frac{5}{8}$ inches.

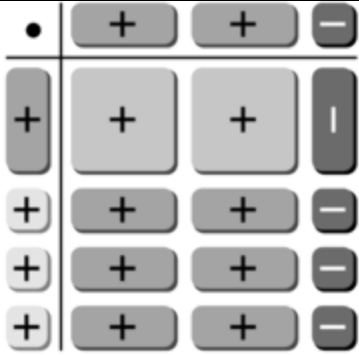
37. *Sample answer:* $6x^2 + 3x$

38. The graph of k represents function g , and the graph of ℓ represents function h ; Because c is positive, the constant terms in the factors must have the same sign. Because g has a positive value of b , the constant terms of the factors will both be positive, which results in negative roots, and k has two negative x -intercepts. Because h has a negative value of b , the constant terms of the factors will both be negative, which results in positive roots, and ℓ has two positive x -intercepts.

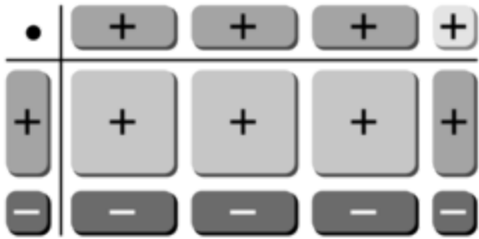
39. when no combination of factors of a and c produce the correct middle term; *Sample answer:* $2x^2 + x + 1$

40. no; To use the Zero-Product Property, one side of the equation needs to be 0. So, you must first subtract 2 from each side of the equation, then factor.

41. $\pm 9, \pm 12, \pm 21$

42. a. 

$$2x^2 + 5x - 3 = (x + 3)(2x - 1)$$

b. 

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

43. 3.5 in.

44. 4 ft

45. $(k + 2j)(4k - j)$

46. $(2x - y)(3x + 4y)$

47. $-(a - 2b)(6a - 7b)$

48. $3m(2m + 5n)(3m - n)$

49. ± 8

50. 2

51. -15

52. ± 9

53. $(-1, -4)$

54. $(4, 6)$

55. $(0, -7)$

56. $(-5, 3)$