Vocabulary and Readiness Check

Use the choices below to fill in each blank. Some choices may be used more than once.

- numerical coefficient
- combine like terms
- like term
- variable
- associative
- constant
- expression
- unlike
- distributive
- commutative

1. $14y^2 + 2x - 23$ is called a(n) ________ term while $14y^2, 2x,$ and $-23$ are each called a(n) ________ term.
2. To multiply $3(-7x + 1)$, we use the ________ property.
3. To simplify an expression like $y + 7y$, we ________ like terms.
4. By the ________ properties, the order of adding or multiplying two numbers can be changed without changing their sum or product.
5. The term $5x$ is called a(n) ________ term while the term $7$ is called a(n) ________ term.
6. The term $2$ has an understood ________ of $1$.
7. By the ________ properties, the grouping of adding or multiplying numbers can be changed without changing their sum or product.
8. The terms $-x$ and $5x$ are ________ terms and the terms $5x$ and $5y$ are ________ terms.
9. For the term $-3x^2y$, $-3$ is called the ________.

3.1 Exercise Set

Objective A Simplify each expression by combining like terms. See Examples 1 through 5.

1. $3x + 5x$
   \[8x\]
2. $8y + 3y$
   \[11y\]
3. $2n - 3n$
   \[-n\]
4. $7z - 10z$
   \[-3z\]
5. $4c + c - 7c$
   \[-2c\]
6. $5b - 8b - b$
   \[-4b\]
7. $4x - 6x + x - 5x$
   \[-6x\]
8. $8y + y - 2y - 8y$
   \[-y\]
9. $3a + 2a + 7a - 6$
   \[12a - 5\]
10. $5b - 4b + b - 15$
    \[2b - 15\]

Objective B Multiply. See Examples 6 and 7.

11. $6(7x)$
    \[42x\]
12. $4(4x)$
    \[16x\]
13. $-3(11y)$
    \[-33y\]
14. $-3(21z)$
    \[-63z\]
15. $12(6a)$
    \[72a\]
16. $13(5b)$
    \[65b\]

Multiply. See Examples 8 through 10.

17. $2(y + 5)$
    \[2y + 10\]
18. $3(x + 1)$
    \[3x + 3\]
19. $3(a - 6)$
    \[3a - 18\]
20. $4(y - 6)$
    \[4y - 24\]
21. $-4(3x + 7)$
    \[-12x - 28\]
22. $-8(8y + 10)$
    \[-64y - 80\]
Objective C Simplify each expression. First use the distributive property to multiply and remove parentheses. See Examples 11 through 13.

23. \(2(x + 4) - 7\)  
   \[2x + 1\]

24. \(5(6 - y) - 2\)  
   \[-5y + 28\]

25. \(8 + 5(3c - 1)\)  
   \[15c + 3\]

26. \(10 + 4(6d - 2)\)  
   \[24d + 2\]

27. \(-4(6n - 5) + 3n\)  
   \[-21n + 20\]

28. \(-3(5 - 2b) - 4b\)  
   \[2b - 15\]

29. \(3 + 6(w + 2) + w\)  
   \[7w + 15\]

30. \(8z + 5(6 + z) + 20\)  
   \[13z + 50\]

31. \(2(3x + 1) + 5(x - 2)\)  
   \[11x - 8\]

32. \(3(5x - 2) + 2(3x + 1)\)  
   \[21x - 4\]

33. \(-(2y - 6) + 10\)  
   \[-2y + 16\]

34. \(-(5x - 1) - 10\)  
   \[-5x - 9\]

Objectives A B C Mixed Practice Simplify each expression. See Examples 1 through 13.

35. \(18y - 20y\)  
   \[-2y\]

36. \(x + 12x\)  
   \[13x\]

37. \(z - 8z\)  
   \[-7z\]

38. \(-12x + 8x\)  
   \[-4x\]

39. \(9d - 3c - d\)  
   \[-3c + 8d\]

40. \(8r + s - 7s\)  
   \[8r - 6s\]

41. \(2y - 6 + 4y - 8\)  
   \[6y - 14\]

42. \(a + 4 - 7a - 5\)  
   \[-6a - 1\]

43. \(5q + p - 6q - p\)  
   \[-q\]

44. \(m - 8n + m + 8n\)  
   \[2m\]

45. \(2(x + 1) + 20\)  
   \[2x + 22\]

46. \(5(x - 1) + 18\)  
   \[5x + 13\]

47. \(5(x - 7) - 8x\)  
   \[-3x - 35\]

48. \(3(x + 2) - 11x\)  
   \[-8x + 6\]

49. \(-5(z + 3) + 2z\)  
   \[-3z - 15\]

50. \(-8(1 + v) + 6v\)  
   \[-2v - 8\]

51. \(8 - x + 4x - 2 - 9x\)  
   \[-6x + 6\]

52. \(5y - 4 + 9y - y + 15\)  
   \[13y + 11\]

53. \(-7x + 5) + 5(2x + 1)\)  
   \[3x - 30\]

54. \(-2(x + 4) + 8(3x - 1)\)  
   \[22x - 16\]

55. \(3r - 5r + 8 + r\)  
   \[-r + 8\]

56. \(6x - 4 + 2x - x + 3\)  
   \[7x - 1\]

57. \(-3(n - 1) - 4n\)  
   \[-7n + 1\]

58. \(5(c + 2) + 7c\)  
   \[12c + 10\]

59. \(4(z - 3) + 5z - 2\)  
   \[9z - 14\]

60. \(8(m + 3) - 20 + m\)  
   \[9m + 4\]

61. \(6(2x - 1) - 12x\)  
   \[-6\]

62. \(5(2a + 3) - 10a\)  
   \[15\]

63. \(-(4x - 5) + 5\)  
   \[-4x + 10\]

64. \(-(7y - 2) + 6\)  
   \[-7y + 8\]

65. \(-(4x - 10) + 2(3x + 5)\)  
   \[2x + 20\]

66. \(-(12b - 10) + 5(3b - 2)\)  
   \[3b\]

67. \(3a + 4(a + 3)\)  
   \[7a + 12\]

68. \(b + 2(b - 5)\)  
   \[3b - 10\]

69. \(5y - 2(y - 1) + 3\)  
   \[3y + 5\]

70. \(3x - 4(x + 2) + 1\)  
   \[-x - 7\]