

The Distributive Property

Simplify each expression.

1) $6(1 - 5m)$

$$6 - 30m$$

2) $-2(1 - 5v)$

$$-2 + 10v$$

3) $3(4 + 3r)$

$$12 + 9r$$

4) $3(6r + 8)$

$$18r + 24$$

5) $4(8n + 2)$

$$32n + 8$$

6) $-(-2 - n)$

$$2 + n$$

7) $-6(7k + 11)$

$$-42k - 66$$

8) $-3(7n + 1)$

$$-21n - 3$$

9) $-6(1 + 11b)$

$$-6 - 66b$$

10) $-10(a - 5)$

$$-10a + 50$$

11) $-3(1 + 2v)$

$$-3 - 6v$$

12) $-4(3x + 2)$

$$-12x - 8$$

13) $(3 - 7k) \cdot -2$

$$-6 + 14k$$

14) $-20(8x + 20)$

$$-160x - 400$$

15) $(7 + 19b) \cdot -15$

$$-105 - 285b$$

16) $(x + 1) \cdot 14$

$$14x + 14$$

Multi-Step Equations

Solve each equation.

1) $6a + 5a = -11$

{-1}

2) $-6n - 2n = 16$

{-2}

3) $4x + 6 + 3 = 17$

{2}

4) $0 = -5n - 2n$

{0}

5) $6r - 1 + 6r = 11$

{1}

6) $r + 11 + 8r = 29$

{2}

7) $-10 = -14v + 14v$

No solution.

8) $-10p + 9p = 12$

{-12}

9) $42 = 8m + 13m$

{2}

10) $a - 2 + 3 = -2$

{-3}

11) $18 = 3(3x - 6)$

{4}

12) $30 = -5(6n + 6)$

{-2}

$$13) \ 37 = -3 + 5(x + 6)$$

{2}

$$14) \ -13 = 5(1 + 4m) - 2m$$

{-1}

$$15) \ 4(-x + 4) = 12$$

{1}

$$16) \ -2 = -(n - 8)$$

{10}

$$17) \ -6(1 - 5v) = 54$$

{2}

$$18) \ 8 = 8v - 4(v + 8)$$

{10}

$$19) \ 10(1 + 3b) = -20$$

{-1}

$$20) \ -5n - 8(1 + 7n) = -8$$

{0}

$$21) \ 8(4k - 4) = -5k - 32$$

{0}

$$22) \ -8(-8x - 6) = -6x - 22$$

{-1}

$$23) \ 8(1 + 5x) + 5 = 13 + 5x$$

{0}

$$24) \ -11 - 5a = 6(5a + 4)$$

{-1}

$$25) \ -5(4x - 2) = -2(3 + 6x)$$

{2}

$$26) \ 5(2x + 6) = -4(-5 - 2x) + 3x$$

{10}

Selected Answers

Chapter 1

Lesson 1-1 Try This

- a. 17 b. 8 c. 11 d. 3 e. 18 f. 9 g. 10 h. 12
 i. 6 j. 2 k. 15 l. 16 m. 4 n. 21 o. 15 p. 11
 q. 2

Exercise Set 1-1

1. 13 3. 10 5. 35 7. 7 9. 17 11. 2 13. 48
 15. 27 17. 6 19. 3 21. 9 23. 9 25. 16 27. 19
 29. 9 31. 26 33. 16 35. 14 37. 30 39. 2
 41. 3 43. 1 45. 3 47. 5 49. 6 51. 9
 53. 12 and 5 55. 72 57. 57 59. 14.1 61. $1\frac{1}{28}$
 63. $2\frac{1}{6}$ 65. $\frac{15}{28}$

Lesson 1-2 Try This

- a. $9 + x$ b. qp c. $yx + t, t + xy$, or $t + yx$
 d. $\frac{28}{20}$ e. $\frac{15}{40}$ f. $\frac{yz}{2xz}$ g. $\frac{2mp}{np}$ h. $\frac{2}{3}$ i. $\frac{8}{3}$ j. $\frac{8}{7}$ k. $\frac{1}{2}$
 l. 4 m. $\frac{5y}{3}$ n. $\frac{1}{8n}$ o. $2a$

Exercise Set 1-2

1. $8 + y$ 3. nm 5. $9 + yx$ 7. $ba + c$ 9. $\frac{40}{48}$
 11. $\frac{600}{700}$ 13. $\frac{st}{20t}$ 15. $\frac{1}{8}$ 17. 12 19. $\frac{a}{9}$ 21. $\frac{1}{8p}$
 23. $\frac{9}{17q}$ 25. $\frac{3}{s}$ 27. $\frac{13r}{3b}$ 29. 8 31. No 33. No
 35. Yes 37. $\frac{r}{g}$ 41. 16 43. 42 45. $\frac{15}{16}$ 47. 0.48

Lesson 1-3 Try This

- a. $5 \cdot 5 \cdot 5 \cdot 5$ b. $b \cdot b \cdot b$ c. $2 \cdot x \cdot x \cdot x$
 d. $12 \cdot y \cdot y \cdot y \cdot y$ e. 9^3 f. y^5 g. $4n^5$ h. $15x^4$
 i. $10b^3$ j. 100 k. 32 l. 0 m. 29 n. 40 o. 64
 p. 1000 q. 27 r. 48

Exercise Set 1-3

1. $2 \cdot 2 \cdot 2 \cdot 2$ 3. 3 5. $1 \cdot 1 \cdot 1$ 7. $a \cdot a \cdot a$ 9. $3 \cdot x \cdot x$
 11. $2 \cdot m \cdot m \cdot m$ 13. 10^6 15. x^5 17. $5m^4$ 19. 27
 21. 19 23. 248 25. 66 27. 3 29. 32 31. 1296

33. 20736 35. 0 37. 10^5 39. 8^4 43. 9 45. 81
 47. $\frac{7}{8}$ 49. $12\frac{1}{2}$ 51. 10 53. 8 55. $\frac{9}{y}$

Lesson 1-4 Try This

- a. 225 b. 75 c. 32 d. 512 e. 8 f. 36 g. 16
 h. 4 i. 139 j. 120 k. $2\frac{3}{10}$ l. 8 m. 63
 n. $(a + b) + 2$ o. $(3 \cdot v) \cdot w$ p. Ex. $4 \cdot (u \cdot t)$ or
 $u \cdot (4 \cdot t)$ or $t \cdot (4 \cdot u)$ q. Ex. $r + (s + 2)$ or
 $(2 + s) + r$ or $(r + s) + 2$

Exercise Set 1-4

1. 400 3. 80 5. 11 7. 81 9. 9 11. 1 13. 4
 15. 125 17. 76 19. 925 21. 66 23. 343 25. 60
 27. $\frac{4}{5}$ 29. 1 31. $a + (b + 3)$ 33. $(3 \cdot a) \cdot b$
 35. $(2 + b) + a, (2 + a) + b, b + (a + 2)$
 37. $v + (w + 5), (5 + w) + v, w + (5 + v)$
 39. $(y \cdot 3) \cdot x, x \cdot (3 \cdot y), y \cdot (x \cdot 3)$ 41. $a \cdot (b \cdot 7),$
 $(a \cdot 7) \cdot b, b \cdot (7 \cdot a)$ 43. $c \cdot (2 \cdot d), d \cdot (c \cdot 2), 2 \cdot (d \cdot c)$
 45. $7 \cdot (n \cdot m) + 3, 3 + m \cdot (7 \cdot n)$ 47. $6(mp)n,$
 $m(6n)p$ 49. $(3 + 5) + 7y + 4, 5 + 3 + (4 + 7y)$
 51. Any number except 0 or -2 53. Any number
 except 1. 0 is not acceptable. 55. 9; 1; No, $9 \neq 1$
 57. a. No b. No 59. $9\frac{1}{10}$ 61. $1\frac{5}{12}$ 63. $\frac{8}{5}$ or $1\frac{3}{5}$
 65. $\frac{6}{7y}$ 67. $\frac{6n}{11t}$ 69. 3375 71. 7 73. 30 75. 2
 77. 4

Lesson 1-5 Try This

- a. $4x + 4y + 4z$ b. $5y + 15$ c. $16a + 6$
 d. $6x + 12y + 30$ e. $5(x + 2)$ f. $3(4 + x)$
 g. $3(2x + 4 + 3y)$ h. $5(x + 2y + 1)$ i. $3(3x + y)$
 j. $5(1 + 2x + 3y)$ k. $8y$ l. $11x + 8y$
 m. $14p + 13q$ n. $8x^2$

Exercise Set 1-5

1. $2b + 10$ 3. $7 + 7t$ 5. $3x + 3$ 7. $4 + 4y$
 9. $30x + 12$ 11. $7x + 28 + 42y$ 13. $2(x + 2)$
 15. $5(6 + y)$ 17. $7(2x + 3y)$ 19. $5(x + 2 + 3y)$
 21. $7(2c + 9d + 1)$ 23. $9(r + 3s + 2)$
 25. $9(x + 3)$ 27. $3(3x + y)$ 29. $8(a + 2b + 8)$
 31. $11(x + 4y + 11)$ 33. $5(x + 2y + 9z)$ 35. $19a$
 37. $11a$ 39. $8x + 9z$ 41. $7x + 15y^2$
 43. $101a + 92$ 45. $11a + 11b$
 47. $14u^2 + 13t + 2$ 49. $50 + 6t + 8y$ 51. 1b or b
 53. $\frac{13}{4}y$ or $3\frac{1}{4}y$ 55. $10x + 5y$ 57. $12p^2 + 6p$
 59. $9xy + 6x + 3y$ 61. $9x + 27$ 63. $12a + 16b$
 65. $P(1 + rt)$ 69. $\frac{4}{3}$ 71. $q(1 + r + rs + rst)$
 73. $a + ab + abc + abcd$ 75. 48 77. 0 79. $\frac{1}{3a}$
 81. $8x$ 83. 24 85. 15

Bonus Topic

1. $0.\overline{36}$ 3. $2.\overline{5}$ 5. $0.\overline{4}$

Problem Solving: Application

3. 600 lb 5. The fulcrum would have to be 60 cm from the 10-kg weight and 40 cm from the 15-kg weight.

Lesson 2-7 Try This

- a. $8y - 56$ b. $\frac{5}{6}x - \frac{5}{6}y + \frac{35}{6}z$
 c. $-5x + 15y - 40z$ d. $4(x - 2)$
 e. $3(x - 2y - 5)$ f. $b(x - y + z)$
 g. $-2(y - 4z + 1)$ or $2(-y + 4z - 1)$
 h. $4(3z - 4x - 1)$ i. $5a, -4b, 3$ j. $-5y, -3x, 5z$
 k. $3x$ l. $6y$ m. $0.56m$ n. $3x + 3y$
 o. $-4x - 5y - 15$

Exercise Set 2-7

1. $7x - 14$ 3. $-7y + 14$ 5. $45x + 54y - 72$
 7. $-4x + 12y + 8z$ 9. $-3.72x + 9.92y - 3.41$
 11. $2a - 4b + 6$ 13. $\frac{2}{5}x - \frac{8}{15}y + \frac{4}{5}$ 15. $8(x - 3)$
 17. $4(8 - y)$ 19. $2(4x + 5y - 11)$ 21. $a(x - 7)$
 23. $a(x - y - z)$ 25. $\frac{1}{4}(3x - y - 1)$ 27. $4x, 3z$
 29. $7x, 8y, -9z$ 31. $12x, -13.2y, \frac{5}{8}z, -4.5$
 33. $-2x$ 35. $5n$ 37. $4x + 2y$ 39. $7x + y$
 41. $0.8x + 0.5y$ 43. $-2y - 3x$ 45. $-9t + 5p$
 47. $32a - 17b - 17c$ 49. $8.5d + 3a$ 51. $\frac{3}{5}x + \frac{3}{5}y$
 53. $8(x - y)$ 55. $3(a + b) - 7a$ or $3b - 4a$
 59. $\$18,292.50$ 61. $-\frac{11}{6}$ 63. $3c$ 65. $12x$
 67. $-\frac{3}{16}$ 69. 2

Lesson 2-8 Try This

- a. $-x - 2$ b. $-5x - 2y - 8$ c. $-a + 7$
 d. $-3c + 4d - 1$ e. $-6 + t$ f. $4a - 3t + 10$
 g. $-18 + m + 2n - 4t$ h. $2x - 9$
 i. $8x - 4y + 4$ j. $-9x - 8y$ k. $-16a + 18$
 l. -1 m. 4 n. $2x - y + 4$

Exercise Set 2-8

1. $-2x - 7$ 3. $-5x + 8$ 5. $-4a + 3b - 7c$
 7. $-6x + 8y - 5$ 9. $-3x + 5y + 6$
 11. $8x + 6y + 43$ 13. $5x - 3$ 15. $-3a + 9$
 17. $5x - 6$ 19. $-19x + 2y$ 21. $9y - 25z$
 23. $-2x + 6y$ 25. $3m - 6n$ 27. 0 29. $a + 4b$
 31. 7 33. -40 35. 19 37. $12x + 30$
 39. $3x + 30$ 41. $x - (y + a + b)$
 43. $6m - (-3n + 5m - 4b)$ 45. $2a + 4$
 49. $-2x - t$ 51. $5y - 4$ 53. $2(a - 3b + 6)$

55. 54 57. 50 59. -8 61. $-\frac{7}{45}$ 63. $2x^2 + x$

65. $3x - 5$

Problem Set 2-9

1. (B) or (C) 3. (A) or (B) 5. (B) or (C)

Problems 7–24: Answers may vary.

7. $127 + d = 318$ 9. $12c = 3.12$

11. $80c = 53,400$ 13. $2.5t = 16.6$

15. $b + 13.5 = 78.3$ 17. $391d = 150,000,000$

19. $325 = 50t$ 21. $7q = 45$ 23. $1087t = 10,000$

Lesson 2-10 Try This

- a. Associative property of addition b. Inverse property of multiplication c. Inverse property of addition d. Commutative property of multiplication e. Reflexive f. Transitive g. Symmetric h. 2. Distributive property 3. Distributive property i. 4. Distributive property 6. Multiplicative identity 7. Additive inverses

Exercise Set 2-10

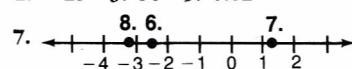
1. Commutative property of addition 3. Distributive property of multiplication over addition 5. Additive inverses 7. Additive inverses 9. Associative property of multiplication 11. Distributive property of multiplication over addition 13. Multiplicative inverse 15. Reflexive property of equality 17. Commutative property of multiplication 19. Reflexive property of equality 21. 1. Additive identity 3. Associative property of addition 5. Distributive property 7. Mult. property of zero 8. Additive identity 23. No. $1 + 3 = 4$. 4 is not in the set of odd whole numbers.

25. Yes

Statement	Reason
1. $-(a - b)$	Subtraction rule
$= -[a + (-b)]$	
2. $= -a + -(-b)$	Inverse of a sum
3. $= -a + b$	Inverse of inverse
4. $= b + -a$	Comm. property of addition
5. $= b - a$	Subtraction rule
6. $= -(a - b)$	Transitive property of equality
$= b - a$	
29. $16(a - 3)$ 31. $15(3 - n)$ 33. $9 - 17c$	

Chapter 2 Summary and Review

1. -25 3. 38 5. 0.02



9. $>$ 11. $<$ 13. $\frac{8}{5}$ 15. -19 17. 3.5 19. -6.4

21. 7.45 23. 34 25. 8 yd gain 27. -4 29. 19

31. 4000 ft 33. -24 35. 210 37. 5 39. $12x - 2$
 41. $-6a + 9b - 3c$ 43. $8(x - 4y - 1)$ 45. $7x$