

SKILL PRACTICE

A 1. **VOCABULARY** What are the coefficients of the expression $4x + 8 - 9x + 2$? **4, -9**

2. **★ WRITING** Are the expressions $2(x + 1)$ and $2x + 1$ equivalent? *Explain.*
No; the 2 was not distributed to the 1, $2(x + 1) = 2x + 2$.

ERROR ANALYSIS Describe and correct the error in simplifying the expression.

3. **The negative was not distributed to the -8; $5y - (2y - 8) = 5y - 2y + 8 = 3y + 8$.**

$$\begin{aligned} 3. \quad 5y - (2y - 8) &= 5y - 2y - 8 \\ &= 3y - 8 \end{aligned}$$

$$\begin{aligned} 4. \quad \theta + 2(4 + 3x) &= \theta + \theta + 6x \\ &= 2\theta + 6x \end{aligned}$$

4. **Unlike terms cannot be combined; $8 + 2(4 + 3x) = 8 + 8 + 6x = 16 + 6x$.**

USING THE DISTRIBUTIVE PROPERTY Use the distributive property to write an equivalent expression.

5. $4(x + 3)$

6. $8(y + 2)$

7. $(m + 5)5$

8. $(n + 6)3$

9. $(p - 3)(-8)$

10. $-4(q - 4)$

11. $2(2r - 3)$

12. $(s - 9)9$

13. $6v(v + 1)$

14. $-w(2w + 7)$

15. $-2x(3 - x)$

16. $3y(y - 6)$

17. $\frac{1}{2}(\frac{1}{2}m - 4)$

18. $-\frac{3}{4}(p - 1)$

19. $\frac{2}{3}(6n - 9)$

20. $\frac{5}{6}r(r - 1)$

$\frac{1}{4}m - 2$

$-\frac{3}{4}p + \frac{3}{4}$

$4n - 6$

$\frac{5}{6}r^2 - \frac{5}{6}r$

EXAMPLES 1 and 2

on pp. 96–97
for Exs. 5–20

EXAMPLE 3

on p. 97
for Exs. 21–26

EXAMPLE 4

on p. 98
for Exs. 28–39

IDENTIFYING PARTS OF AN EXPRESSION Identify the terms, like terms, coefficients, and constant terms of the expression. **21–26. See margin.**

21. $-7 + 13x + 2x + 8$

22. $9 + 7y - 2 - 5y$

23. $7x^2 - 10 - 2x^2 + 5$

24. $-3y^2 + 3y^2 - 7 + 9$

25. $2 + 3xy - 4xy + 6$

26. $6xy - 11xy + 2xy - 4xy + 7xy$

27. **★ MULTIPLE CHOICE** Which two terms are like terms? **B**

(A) $-2, -5x$

(B) $4x, -x$

(C) $-2, -2y$

(D) $5x, -3y$

SIMPLIFYING EXPRESSIONS Simplify the expression.

28. $7x + (-11x)$ **$-4x$**

29. $6y - y$ **$5y$**

30. $5 + 2n + 2$ **$2n + 7$**

31. $(4a - 1)2 + a$ **$9a - 2$**

32. $3(2 - c) - c$ **$6 - 4c$**

33. $6r + 2(r + 4)$ **$8r + 8$**

34. $15t - (t - 4)$ **$14t + 4$**

35. $3(m + 5) - 10$ **$3m + 5$**

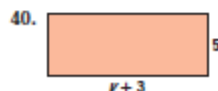
36. $-6(v + 1) + v$ **$-5v - 6$**

37. $7(w - 5) + 3w$ **$10w - 35$**

38. $6(5 - z) + 2z$ **$30 - 4z$**

39. $(s - 3)(-2) + 17s$ **$15s + 6$**

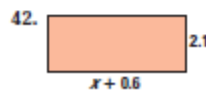
B **GEOMETRY** Find the perimeter and area of the rectangle.



$2r + 16; 5r + 15$



$34 - 24w; 72 - 108w$



$2x + 5.4; 2.1x + 1.26$

USING MENTAL MATH In Exercises 43–46, use the example below to find the total cost.

EXAMPLE Use the distributive property and mental math

Use the distributive property and mental math to find the total cost of 5 picture frames at \$1.99 each.

Total cost = $5(1.99)$	Write expression for total cost.
= $5(2 - 0.01)$	Rewrite 1.99 as $2 - 0.01$.
= $5(2) - 5(0.01)$	Distributive property
= $10 - 0.05$	Multiply using mental math.
= 9.95	Subtract. The total cost is \$9.95.

43. 3 CDs at \$12.99 each **\$38.97** 44. 5 magazines at \$3.99 each **\$19.95**
 45. 6 pairs of socks at \$1.98 per pair **\$11.88** 46. 25 baseballs at \$2.98 each **\$74.50**

TRANSLATING PHRASES In Exercises 47 and 48, translate the verbal phrase into an expression. Then simplify the expression.

47. Twice the sum of 6 and x , increased by 5 less than x
 $2(6 + x) + (x - 5)$; $3x + 7$
 48. Three times the difference of x and 2, decreased by the sum of x and 10
 $3(x - 2) - (x + 10)$; $2x - 16$

- C** 49. **CHALLENGE** How can you use $a(b + c) = ab + ac$ to show that $(b + c)a = ba + ca$ is also true? Justify your steps.
 $(b + c)a = a(b + c)$, Commutative property of multiplication; $= ab + ac$, Given statement;
 $= ba + ca$, Commutative property of multiplication

PROBLEM SOLVING

EXAMPLE 5 **A**
 on p. 98
 for Exs. 50–52

52. $C = 2.5 + 0.1(m - 10)$; 10 minutes today and 15 minutes tomorrow; the cost of using the phone 10 minutes today and 15 minutes tomorrow is $2.5 + 2.5 + 0.1(5) = \$5.50$; the cost of using the phone for 25 minutes today is $2.5 + 0.1(15) = \$4$.

50. **SPORTS** An archer shoots 6 arrows at a target. Some arrows hit the 9 point ring, and the rest hit the 10 point bull's-eye. Write an equation that gives the score s as a function of the number a of arrows that hit the 9 point ring. Then find the score if 2 arrows hit the 9 point ring. $s = -a + 60$; **58**

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- 51. MOVIES** You have a coupon for \$2 off the regular cost per movie rental. You rent 3 movies, and the regular cost of each rental is the same. Write an equation that gives the total cost C (in dollars) as a function of the regular cost r (in dollars) of a rental. Then find the total cost if a rental regularly costs \$3.99. $C = 3r - 6$; **\$5.97**

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52. **★ SHORT RESPONSE** Each day you use your pay-as-you-go cell phone you pay \$.25 per minute for the first 10 minutes and \$.10 per minute for any time over 10 minutes. Write an equation that gives the daily cost C (in dollars) as a function of the time t (in minutes) when usage exceeds 10 minutes. Which costs more, using the phone for 10 minutes today and 15 minutes tomorrow, or using the phone for 25 minutes today? Explain.



