Vocabulary and Core Concept Check

1. **VOCABULARY** Is $9r + 16 = \frac{\pi}{5}$ a literal equation? Explain.

2. **DIFFERENT WORDS, SAME QUESTION** Which is different? Find "both" answers.

   Solve $3x + 6y = 24$ for x.

   Solve $24 - 3x = 6y$ for x.

   Solve $6y = 24 - 3x$ for y in terms of x.

   Solve $24 - 6y = 3x$ for x in terms of y.

Monitoring Progress and Modeling with Mathematics

In Exercises 3–12, solve the literal equation for y.
(See Example 1.)

3. $y - 3x = 13$

4. $2x + y = 7$

5. $2y - 18x = -26$

6. $20x + 5y = 15$

7. $9x - y = 45$

8. $6x - 3y = -6$

9. $4x - 5 = 7 + 4y$

10. $16x + 9 = 9y - 2x$

11. $2 + \frac{1}{6}y = 3x + 4$

12. $11 - \frac{1}{2}y = 3 + 6x$

In Exercises 13–22, solve the literal equation for x.
(See Example 2.)

13. $y = 4x + 8x$

14. $m = 10x - x$

15. $a = 2x + 6xz$

16. $y = 3bx - 7x$

17. $y = 4x + rx + 6$

18. $z = 8 + 6x - px$

19. $sx + tx = r$

20. $a = bx + cx + d$

21. $12 - 5x - 4kx = y$

22. $x - 9 + 2wx = y$

23. **MODELING WITH MATHEMATICS** The total cost C (in dollars) to participate in a ski club is given by the literal equation $C = 85x + 60$, where x is the number of ski trips you take.

    a. Solve the equation for x.

    b. How many ski trips do you take if you spend a total of $315? $485?

24. **MODELING WITH MATHEMATICS** The penny size of a nail indicates the length of the nail. The penny size d is given by the literal equation $d = 4n - 2$, where n is the length (in inches) of the nail.

    a. Solve the equation for n.

    b. Use the equation from part (a) to find the lengths of nails with the following penny sizes: 3, 6, and 10.

ERROR ANALYSIS In Exercises 25 and 26, describe and correct the error in solving the equation for x.

25.
$$12 - 2x = -2(y - x)$$
$$-2x = -2(y - x) - 12$$
$$x = (y - x) + 6$$

26.
$$10 = ax - 3b$$
$$10 = x(a - 3b)$$
$$\frac{10}{a - 3b} = x$$

In Exercises 27–30, solve the formula for the indicated variable. *(See Examples 3 and 5.)*

27. Profit: $P = R - C$; Solve for C.

28. Surface area of a cylinder: $S = 2\pi r^2 + 2\pi rh$; Solve for h.

29. Area of a trapezoid: $A = \frac{1}{2}h(b_1 + b_2)$; Solve for b_2.

30. Average acceleration of an object: $a = \frac{v_1 - v_0}{t}$; Solve for v_1.