In Exercises 1–14, solve the equation. Check your solution. ▶ *Examples 1 and 2*

1. $15 - 2x = 3x$

2. $26 - 4s = 9s$

3. $5p - 9 = 2p + 12$

4. $8g + 10 = 35 + 3g$

5. $5t + 16 = 6 - 5t$

6. $-3r + 10 = 15r - 8$

7. $7 + 3x - 12x = 3x + 1$

8. $w - 2 + 2w = 6 + 5w$

9. $10(g + 5) = 2(g + 9)$

10. $-9(t - 2) = 4(t - 15)$

11. $\frac{2}{3}(3x + 9) = -2(2x + 6)$

12. $2(2t + 4) = \frac{3}{4}(24 - 8t)$

13. $1.5(3y + 2) - y = 2(8y - 6)$

14. $\frac{1}{2}(4x + 5) = 9x - 12(x - 1)$

In Exercises 15–22, solve the equation. ▶ *Example 3*

15. $3t + 4 = 12 + 3t$

16. $6d + 8 = 14 + 3d$

17. $2(h + 1) = 5h - 7$

18. $12y + 6 = 6(2y + 1)$

19. $-\dfrac{w}{5} = \dfrac{w}{5} - \dfrac{1}{10}$

20. $\dfrac{x}{12} + 1 = \dfrac{x}{3} - \dfrac{x}{4}$

21. $3(4g + 6) = 2(6g + 9)$

22. $5(1 + 2m) = \dfrac{1}{2}(8 + 20m)$

23. **MODELING REAL LIFE** You and your friend drive toward each other. The equation $50h = 190 - 45h$ represents the number h of hours until you and your friend meet. After how many hours will you meet?

24. **ERROR ANALYSIS** Describe and correct the error in solving the equation.

✗
$6(2y + 6) = 4(9 + 3y)$
$12y + 36 = 36 + 12y$
$12y = 12y$
$0 = 0$
The equation has no solution.

25. **MODELING REAL LIFE** A cheetah that is running 90 feet per second is 120 feet behind an antelope that is running 60 feet per second. How long will it take the cheetah to catch up to the antelope? ▶ *Example 4*

26. **MAKING AN ARGUMENT** A cheetah can run at top speed for only about 20 seconds. If an antelope is too far away for a cheetah to catch it in 20 seconds, the antelope is probably safe. Your friend claims the antelope in Exercise 25 will not be safe if the cheetah starts running 650 feet behind it. Is your friend correct? Explain.

27. **MODELING REAL LIFE** You want to create a piece of pottery at an art studio. The total cost is the cost of the piece plus an hourly studio fee. The costs at two studios are shown.

Studio A
Vase: $10.49
Studio Fee: $8 per hour

Studio B
Vase: $14.99
Studio Fee: $6.50 per hour

a. After how many hours are the total costs the same at both studios? Justify your answer.

b. Studio B increases its hourly studio fee by $1.50. How does this affect your answer in part (a)? Explain.

28. **MP PROBLEM SOLVING** One serving of granola provides 4% of the protein you need daily. You must get the remaining 48 grams of protein from other sources. How many grams of protein do you need daily?

MP REASONING **In Exercises 29 and 30, find the value of a for which the equation is an identity. Explain your reasoning.**

29. $a(2x + 3) = 9x + 15 + x$

30. $8x - 8 + 3ax = 5ax - 2a$

31. **DIG DEEPER** Two times the greater of two consecutive integers is 9 less than three times the lesser integer. What are the integers?