LESSON 9.8 **Practice C**
For use with pages 606–613

Factor the polynomial completely.

**1.** $13a - 26a^2$

2. $30xy - 45x^2$

3. $-2m^2 - 16m - 14$

4. $14p^2 - 35p + 21$

5. $r^3 + 10r^2 + 25r$

6. $5b^4 + 40b^3 + 80b^2$

7. $4n^5 + 4n^4 - 120n^3$

8. $7c^3 - 28c^2 + 28c$

9. $-10t^2 - 5t + 75$

10. $x^2 + 9x - xy - 9y$

11. $x^3 + 5x^2 - 8x - 40$

12. $9x^2 - 64y^2$

13. $3x^5y - 243x^3y$

14. $8r^3s^4 - 72rs^4$

15. $25x^3y - 100x^2y$

Solve the equation.

16. $5x^3 + 20x^2 + 15x = 0$

17. $-19x^2 + 76 = 0$

18. $-18p^3 - 21p^2 + 15p = 0$

19. $48p^2 - 675 = 0$

20. $14x^3 - 68x^2 - 10x = 0$

21. $-3n^4 - 36n^3 - 108n^2 = 0$

22. $20t^4 + 28t^3 = 24t^2$

23. $64t = 12t^2 + 45$

24. $900x^2 = 625$

25. $16m^4 - 81m^2 = 0$

26. $16x + 280 = 8x^2$

27. $2r^2 + 392 = 56r$

28. $75a^3 + 90a^2 + 27a = 0$

29. $2p^2 = 12p + 54$

30. $81x^3 = 100x$

31. Use factoring by grouping to show that a trinomial of the form $a^2 - 2ab + b^2$ can be factored as $(a - b)^2$. *Justify* your steps.

32. **Work Bench** You are drilling holes into your work bench that will hold caddies for some of your gardening equipment. The area of the entire work bench before the holes are drilled is given by $24x^2 + 5x$. The area of one hole is given by $3x^2 + x + 3$. Write an expression for the area in factored form of the work bench that is left after the holes are drilled.
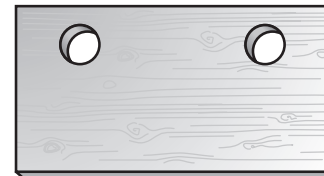
33. **Poster Tube** A poster tube in the shape of a cylinder has a height of 2 feet and a volume of $\frac{1}{2}\pi$ cubic feet.

a. Write an equation for the volume of the poster tube.

b. What is the radius of the poster tube?

34. **Moon** On the moon, the vertical motion model is given by $h = -\frac{16}{6}t^2 + vt + s$

where h is the height (in feet), v is the initial velocity (in feet per second), t is the time (in seconds), and s is the initial height (in feet). On the moon, an astronaut tosses a baseball from a height of 64 feet with an initial upward velocity of $23\frac{2}{3}$ feet per second. How long does it take the ball to reach the ground?