Name _____ Date _____

LESSON 8.8

Practice B

For use with the lesson "Factor Polynomials Completely"

Factor the expression.

1. $4x(x + 5) - 3(x + 5)$
2. $12(a - 3) - 2a(a - 3)$
3. $w^2(w + 8) - 5(w + 8)$
4. $2b^2(b + 6) + 3(b + 6)$
5. $y(15 + x) - (x + 15)$
6. $3x(4 + y) - 6(4 + y)$

Factor the polynomial by grouping.

7. $x^3 + x^2 + x + 1$
8. $y^3 - 14y^2 + y - 14$
9. $m^3 - 6m^2 + 2m - 12$
10. $p^3 + 9p^2 + 4p + 36$
11. $t^3 + 12t^2 - 2t - 24$
12. $3n^3 - 3n^2 + n - 1$

Factor the polynomial completely.

13. $7x^3 + 28x^2$
14. $4m^3 - 16m$
15. $-16p^3 - 2p$
16. $48r^3 - 30r^2$
17. $15y - 60y^2$
18. $18xy - 24x^2$
19. $5m^2 + 20m + 40$
20. $6x^2 + 6x - 120$
21. $4z^3 - 4z^2 - 8z$
22. $9x^3 + 36x^2 + 36$
23. $x^3 + x^2 + 5x + 5$
24. $d^3 + 4d^2 + 5d + 20$

Solve the equation.

25. $3x^2 + 18x + 24 = 0$
26. $10x^2 = 250$
27. $4m^2 - 28m + 49 = 0$
28. $12x^2 + 18x + 6 = 0$
29. $18x^2 - 48x + 32 = 0$
30. $-18x^2 - 60x - 50 = 0$

31. **Countertop** A countertop will have a hole drilled in it to hold a cylindrical container that will function as a utensil holder. The area of the entire countertop is given by $5x^2 + 12x + 7$. The area of the hole is given by $x^2 + 2x + 1$. Write an expression for the area in factored form of the countertop that is left after the hole is drilled.

32. **Film Canister** A film canister in the shape of a cylinder has a height of 8 centimeters and a volume of 32π cubic centimeters.
    - **a.** Write an equation for the volume of the film canister.
    - **b.** What is the radius of the film canister?

33. **Badminton** You hit a badminton birdie upward with a racket from a height of 2 feet with an initial velocity of 4 feet per second.
    - **a.** Write an equation that models this situation.
    - **b.** How high is the birdie at 0.1 second?
    - **c.** How high is the birdie at 0.25 second?
    - **d.** How long will it take the birdie to reach the ground?