9.8 EXERCISES

HOMEWORK KEY

= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 13, 23, and

= **TAKS PRACTICE AND 69** Exs. 12, 41, 71, 73, 75, and 76

SKILL PRACTICE

1. **VOCABULARY** What does it mean for a polynomial to be factored completely?

2. **WRITING** *Explain* how you know if a polynomial is unfactorable.

EXAMPLE 1 on p. 606 for Exs. 3–12

BINOMIAL FACTORS **Factor the expression.**

3. $x(x - 8) + (x - 8)$
4. $5y(y + 3) - 2(y + 3)$
5. $6z(z - 4) - 7($
6. $10(a - 6) - 3a(a - 6)$
7. $b^2(b + 5) - 3(b + 5)$
8. $7c^2(c + 9) + 2($
9. $x(13 + x) - (x + 13)$
10. $y^2(y - 4) + 5(4 - y)$
11. $12(z - 1) - 5z$

12. **TAKS REASONING** Which is the correct factorization of $x^2(x - 8) + 5(8 - x)$?

(A) $(x^2 + 5)(x - 8)$ (B) $(x^2 + 5)(8 - x)$

(C) $(x^2 - 5)(x - 8)$ (D) $(x^2 - 5)(8 - x)$

EXAMPLES 2 and 3 on pp. 606–607 for Exs. 13–22

FACTORING BY GROUPING **Factor the polynomial.**

13. $x^3 + x^2 + 2x + 2$
14. $y^3 - 9y^2 + y - 9$
15. $z^3 - 4z^2 + 3z -$
16. $c^3 + 7c^2 + 5c + 35$
17. $a^3 + 13a^2 - 5a - 65$
18. $2s^3 - 3s^2 + 18$
19. $5n^3 - 4n^2 + 25n - 20$
20. $x^2 + 8x - xy - 8y$
21. $y^2 + y + 5xy +$

22. **ERROR ANALYSIS** *Describe* and correct the error in factoring.

$$a^3 + 8a^2 - 6a - 48 = a^2(a + 8) + 6(a + 8)$$
$$= (a + 8)(a^2 + 6)$$

EXAMPLE 4 on p. 608 for Exs. 23–42

FACTORING COMPLETELY **Factor the polynomial completely.**

23. $x^4 - x^2$
24. $36a^4 - 4a^2$
25. $3n^5 - 48n^3$
26. $4y^6 - 16y^4$
27. $75c^9 - 3c^7$
28. $72p - 2p^3$
29. $32s^4 - 8s^2$
30. $80z^8 - 45z^6$
31. $m^2 - 5m - 35$
32. $6g^3 - 24g^2 + 24g$
33. $3w^4 + 24w^3 + 48w^2$
34. $3r^5 + 3r^4 - 90$
35. $b^3 - 5b^2 - 4b + 20$
36. $h^3 + 4h^2 - 25h - 100$
37. $9t^3 + 18t - t^2 - 2$
38. $2x^5y - 162x^3y$
39. $7a^3b^3 - 63ab^3$
40. $-4s^3t^3 + 24s^2t^2 - 36st$

41. **TAKS REASONING** What is the completely factored form of $3x^6 - 75x^4$?

(A) $3x^4(x^2 - 25)$ (B) $3x^4(x - 5)^2$ (C) $3x^4(x + 5)^2$ (D) $3x^4(x - 5)(x + 5)$

42. **ERROR ANALYSIS** *Describe* and correct the error in factoring the polynomial completely.

$$x^3 - 6x^2 - 9x + 54 = x^2(x - 6) - 9(x - 6)$$
$$= (x - 6)(x^2 - 9)$$