Chapter 8 ■ Skills Practice

Lesson 8-1

Write the prime factorization of each number.

1. 24 **2.** 78 **3.** 88 **4.** 63

5. 128 **6.** 102 **7.** 71 **8.** 125

Find the GCF of each pair of numbers.

9. 18 and 66 **10.** 24 and 104 **11.** 30 and 75

12. 24 and 120 **13.** 36 and 99 **14.** 42 and 72

Find the GCF of each pair of monomials.

15. $4a^3$ and $9a^4$ **16.** $6q^2$ and $15q^5$ **17.** $6x^2$ and $14y^3$

18. $4z^2$ and $10z^5$ **19.** $5g^3$ and $9g$ **20.** $12x^2$ and $21y^2$

Lesson 8-2

Factor each polynomial. Check your answer.

21. $6b^2 - 15b^3$ **22.** $11t^4 - 9t^3$ **23.** $10v^3 - 25v$

24. $12r + 16r^3$ **25.** $17a^4 - 35a^2$ **26.** $9f + 18f^5 + 12f^2$

Factor each expression.

27. $3(a + 3) + 4a(a + 3)$ **28.** $5(k - 4) - 2k(k - 4)$ **29.** $5(c - 3) + 4c^2(c - 3)$

30. $3(t - 4) + t(t - 4)$ **31.** $5(2r - 1) - s(2r - 1)$ **32.** $7(3d + 4) - 2e(3d + 4)$

Factor each polynomial by grouping. Check your answer.

33. $2x^3 + 6x^2 - 2x - 6$ **34.** $2m^3 - 3m^2 + 8m - 12$ **35.** $3k^3 - k^2 + 15k - 5$

36. $18r^3 + 30r^2 - 6r - 10$ **37.** $12n^3 - 6n^2 - 10n + 5$ **38.** $4z^3 - 3x^2 + 4z - 3$

39. $2k^2 - 3k + 12 - 8k$ **40.** $3p^2 - 2p + 8 - 12p$ **41.** $10d^2 - 6d + 9 - 15d$

42. $6a^3 - 4a^2 + 10 - 15a$ **43.** $12s^3 - 2s^2 + 3 - 18s$ **44.** $4c^3 - 3c^2 + 15 - 20c$

Lesson 8-3

Factor each trinomial. Check your answer.

45. $x^2 + 15x + 36$ **46.** $x^2 + 13x + 40$ **47.** $x^2 + 10x + 16$

48. $x^2 - 9x + 18$ **49.** $x^2 - 11x + 28$ **50.** $x^2 - 13x + 42$

51. $x^2 + 4x - 21$ **52.** $x^2 - 5x - 36$ **53.** $x^2 - 7x - 30$

54. Factor $c^2 - 2c - 48$. Show that the original polynomial and the factored form describe the same sequence of values for $c = 0, 1, 2, 3$, and 4.

Complete the table.

	$x^2 + bx + c$	Sign of c	Binomial factors	Sign of Numbers in Binomials
	$x^2 + 9x + 20$	Positive	$(x + 4)(x + 5)$	Both positive
55.	$x^2 - x - 20$	?	$(x + ?)(x + ?)$	?
56.	$x^2 - 2x - 8$	?	$(x + ?)(x + ?)$	?
57.	$x^2 - 6x + 8$	?	$(x + ?)(x + ?)$	?

Lesson 8-4

Factor each trinomial. Check your answer.

58. $2x^2 + 13x + 15$ **59.** $2x^2 + 12x + 16$ **60.** $8x^2 - 16x + 6$

61. $6x^2 + 11x + 4$ **62.** $3x^2 - 11x + 6$ **63.** $10x^2 - 31x + 15$

64. $6x^2 - 10x - 4$ **65.** $8x^2 - 14x - 15$ **66.** $4x^2 - 14x + 6$

67. $12x^2 - 13x + 3$ **68.** $6x^2 - 7x - 10$ **69.** $6x^2 + 7x - 3$

70. $2x^2 + 5x - 12$ **71.** $6x^2 - 5x - 6$ **72.** $8x^2 + 10x - 3$

73. $10x^2 - 11x - 6$ **74.** $4x^2 - x - 5$ **75.** $6x^2 - 7x - 20$

76. $-2x^2 + 11x - 5$ **77.** $-6x^2 - x + 12$ **78.** $-8x^2 - 10x - 3$

79. $-4x^2 + 16x - 15$ **80.** $-10x^2 + 21x + 10$ **81.** $-3x^2 + 13x - 14$

Lesson 8-5

Determine whether each trinomial is a perfect square. If so, factor. If not, explain why.

82. $x^2 - 8x + 16$ **83.** $4x^2 - 4x + 1$ **84.** $x^2 - 8x + 9$

85. $9x^2 - 14x + 4$ **86.** $4x^2 + 12x + 9$ **87.** $x^2 + 8x - 16$

88. $9x^2 - 42x + 49$ **89.** $4x^2 + 18x + 25$ **90.** $16x^2 - 24x + 9$

Determine whether each trinomial is the difference of two squares. If so, factor. If not, explain why.

91. $4 - 16x^4$ **92.** $-t^2 - 35$ **93.** $c^2 - 25$

94. $g^5 - 9$ **95.** $v^4 - 64$ **96.** $x^2 - 120$

97. $x^2 - 36$ **98.** $9m^2 - 15$ **99.** $25c^2 - 16$

Find the missing term in each perfect-square trinomial.

100. $4x^2 - 20x +$ ▢ **101.** $9x^2 +$ ▢ $+ 1$ **102.** ▢ $- 56x + 49$

103. $9b^2 -$ ▢ $+ 25$ **104.** ▢ $+ 28a + 49$ **105.** $4a^2 + 4a +$ ▢

Lesson 8-6

Tell whether each polynomial is completely factored. If not, factor.

106. $5(16x^2 + 4)$ **107.** $3r(4x^2 - 9)$ **108.** $(9d - 6)(2d - 7)$

109. $(5 - h)(6 - 5h)$ **110.** $12y^2 - 2y - 24$ **111.** $3f(2f^2 + 5fg + 2g^2)$

Factor each polynomial completely. Check your answer.

112. $12b^3 - 48b$ **113.** $24w^4 - 20w^3 - 16w^2$ **114.** $18k^3 - 32k$

115. $4a^3 + 12a^2 - a^2b - 15ab$ **116.** $3x^3y - 6x^2y^2 + 3xy^3$ **117.** $36p^2q - 64q^3$

118. $32a^4 - 8a^2$ **119.** $m^3 + 5m^2n + 6mn^2$ **120.** $4x^2 - 3x^2 - 16x + 48x$

121. $18d^2 + 3d - 6$ **122.** $2r^2 - 9r - 18$ **123.** $8y^2 + 2y - 4y - 4$

124. $81 - 36u^2$ **125.** $8x^4 + 12x^2 - 20$ **126.** $10j^3 + 15j^2 - 70j$

127. $27z^3 - 18z^2 + 3z$ **128.** $4b^2 + 2b - 72$ **129.** $3f^2 - 3g^2$