Chapter 7 Review Exercises

Fill in each blank with word that correctly completes the sentence.

1. A number is in factored form when it is the _____ of two or more numbers. **(7.1)**

2. Sometimes, a quadrinomial can be factored using a method called _____ _____ _____ . **(7.2)**

3. When a polynomial is not factorable, we say that it is _____ . **(7.2)**

4. Trinomials of the form $ax^2 + bx + c$, where a, b, and c are integers, are called _____ trinomials. **(7.3)**

5. When using the Factor Game to factor a trinomial, if there is no winning combination, then the trinomial is _____ . **(7.3)**

6. The difference of squares, $a^2 - b^2$, factors into a pair of _____ . **(7.5)**

Section 7.1

Identify the GCF of each group of terms.

7. $40c^3$ and $24c^2$

8. $18a^4b^3$, $27a^3b^4$ and $9a^2b^5$

Factor out the GCF from each polynomial. If the GCF is 1, write "prime."

9. $21x^2 - 14x$

10. $y^4 - 6y^2$

11. $9w^3 + 81w^2$

12. $-11m + 33$

13. $-p^3 + 8p$

14. $-28x^3 - 14x^2$

15. $15x^3 - 6x^2 + 3x$

16. $-10y^3 - 5y^2 + 25y$

Section 7.2

Use factor by grouping to factor each quadrinomial. If a quadrinomial is not factorable, write prime.

17. $15ab - 24a + 5b - 8$

18. $3p^2 + 8mp + 6p + 16m$

19. $x^2 - 3xy - 2x + 6y$

20. $4b^3 + 9b^2 - 6b - 8$

21. $5w^2 - 4w - 1 + 20w^3$

22. $10y - 9y^2 - 18 + 5y^3$

Factor each quadrinomial completely.

23. $18x^3 + 6x^2 + 36x + 12$

24. $-25y^4 + 10y^3 + 50y^2 - 20y$

Find the winning combination for the given Product number and Sum number.

25. Product # = 16, Sum # = 10

26. Product # = 30, Sum # = -12

27. Product # = 60, Sum # = 17

28. Product # = 36, Sum # = -12

29. Product # = -48, Sum # = 13

30. Product # = -36, Sum # = -16

Section 7.3

Factor each trinomial. If the trinomial is a perfect square trinomial, then write the factorization as (binomial)^2. If a trinomial is not factorable, then write "prime."

31. $4x^2 + 3x - 10$

32. $2m^2 + 11m + 15$

33. $4w^2 - 12w + 9$

34. $5x^2 - 14x + 8$

35. $4y^2 + 9y - 9$

36. $12v^2 + 8v + 1$

37. $4p^2 - 20p + 25$

38. $6m^2 - 13m - 5$

Factor completely.

39. $6k^3 - 5k^2 + k$

40. $48r^2 + 4r - 2$

41. $9x^2y + 3xy - 2y$

42. $-20v^2 - 8v + 12$

Section 7.4

Factor each trinomial. If the trinomial is a perfect square trinomial, then write the factorization as (binomial)^2. If a trinomial is not factorable, then write "prime."

43. $x^2 + 3x - 18$

44. $y^2 - 5y - 6$

45. $p^2 + 14p + 24$

46. $x^2 + 4x - 24$

47. $y^2 - 16y + 60$

48. $v^2 - v - 30$

49. $y^2 + 6y - 40$

50. $x^2 + 16x + 64$

Factor completely.

51. $3x^2 + 21x - 90$

52. $p^4 - 12p^3 + 27p^2$

53. $-3w^3 + 3w^2 + 60w$

54. $-2x^2y + 16xy - 32y$

Section 7.5

Factor each binomial, if possible. If a binomials not factorable, then write "prime."

55. $x^2 - 49$

56. $4p^2 - 81$

57. $9y^2 + 16$

58. $m^4 - 25p^2$

59. $121 + x^2$

60. $-100 + 49x^2$

61. $81 - y^2$

62. $9 - 4v^2$

Factor completely.

63. $3p^3 - 75p$

64. $w^4 - 1$

65. $-60 + 26x - 2x^2$

66. $-18y - 4y^2 + 10$