

Answers for Lesson 9-1, pp. 497–498 Exercises

1. 1 2. 3 3. 0
4. 10 5. 4 6. 0
7. 4 8. 0
9. quadratic trinomial
10. linear binomial
11. cubic trinomial
12. not a polynomial
13. constant monomial
14. quadratic binomial
15. $-3x^2 + 4x$; quadratic binomial
16. $4x + 9$; linear binomial
17. $c^2 + 4c - 2$; quadratic trinomial
18. $-2z^2 + 5z - 5$; quadratic trinomial
19. $15y^8 - 7y^3 + y$; eighth degree trinomial
20. $4q^4 + 3q^2 - 8q - 10$; fourth degree polynomial with 4 terms
21. $8m^2 + 15$ 22. $10k + 4$
23. $8w^2 - 3w + 4$ 24. $20x^2 + 7$
25. $10g^4 + 11g$ 26. $6a^2 - 7a + 21$
27. $8y^4 + 7y^3 + 4y$ 28. $2c - 14$
29. $b + 1$ 30. $4h^2 + 6h - 18$
31. $7n^4 + n^3$ 32. $15x^5 + x$
33. $5w^2 - 4w + 10$ 34. $-5x^4 - x^3 - 7x^2 + x$
35. $18y^2 + 8y$ 36. $-6x^3 + 3x^2 - 4$

Answers for Lesson 9-1, pp. 497–498 Exercises (cont.)

37. $-7z^3 + 6z^2 + 2z - 5$

38. $7a^3 + 11a^2 - 4a - 4$

39. $28c - 16$

40. $39x - 7$

41. Kwan did not take the opposite of each term in the polynomial being subtracted.

42. a. *monogram*: a design composed of one or more letters, typically the initials of a name; used as an identifying mark

binocular: relating to, used by, or involving both eyes at the same time

tricuspid: having three cusps, usually said of a molar tooth

polyglot: a person with a speaking, reading, or writing knowledge of several languages

b. Answers may vary. Sample: monopoly, biathlon, tripod, polychrome

c. yes

43. $-x^4 + x^3 + 15x$

44. $-7g^8 - 2g^3 - 11g^2 + 2g$

45. $-h^{10} - 5h^9 + 8h^5 + 2h^4$

46. $t^4 + 4t + 6$

47. $-5b^9 + 3b^8 - 4b^7 + 8b$

48. $-5k^4 + k^3 - k^2 + 11$

49. $5x + 18$

50. $9a - 6$

51. No; both terms of a binomial cannot be constants.

52. a. $y = 2x - 1$; $y = 0.5x + 3$

b. $D(x) = 1.5x - 4$

c. $\frac{8}{3}$ or $2\frac{2}{3}$

d. The lines intersect at $x = 2\frac{2}{3}$.

53. $5a^3b - 5ab$

54. $-p^4q^4 - 11p^4q + 14pq^6$

Answers for Lesson 9-1, pp. 497–498 Exercises (cont.)

55. a. $p(t) = 57t + 2332.3$

b. 2,617,300

c. the difference between the number of men and the number of women enrolled in a college

Answers for Lesson 9-2, pp. 501–503 Exercises

1. $8m^2 + 48m$
2. $3x^2 + 30x$
3. $63k^2 + 36k$
4. $-5a^2 + 5a$
5. $18x^2 + 2x^3$
6. $-p^3 + 11p^2$
7. $12x^4 - 2x^3 + 10x^2$
8. $36y^5 + 32y^4 - 44y^2$
9. $-45c^5 + 40c^4 + 25c^3$
10. $-42q^7 + 14q^3 + 49q^2$
11. $-3g^{11} + 18g^9 - 15g^7$
12. $-40x^9 - 12x^8 + 28x^6$
13. 3
14. $2a$
15. 12
16. x
17. 5
18. $3x$
19. $2(3x - 2)$
20. $v(v + 4)$
21. $5(2x^3 - 5x^2 + 4)$
22. $2t^2(1 - 5t^2)$
23. $3n(5n^2 - n + 4)$
24. $6p^3(p^3 + 4p^2 + 3)$
25. Karla; Kevin multiplied $-2x$ by 3 instead of -3 .
26. Answers may vary. Sample: $8x^3 + 12x^2 + 24x$;
 $4x(2x^2 + 3x + 6)$
27. $-12a^3 + 15a^2 - 27a$
28. $14p^5 - 35p^3$
29. $-60c^3 + 36c^2 - 48c$
30. $-4y^2 + 13y$
31. $x^2 + x$
32. $12t^3 - 23t^2$
33. a. $A = 16\pi x^2 - 4x^2$
b. $A = 4x^2(4\pi - 1)$
34. $9m^5(m^7 - 4m^2 + 9)$
35. $24x(x^2 - 4x + 2)$
36. $16n(n^2 + 3n - 5)$
37. $x^2(5x^2 + 4x + 3)$
38. $13ab^3(1 + 3ab)$
39. $7g^2k^2(k - 5g^3)$
40. 25; $5^2 = 25$

Answers for Lesson 9-2, pp. 501–503 Exercises (cont.)

41. a. $n(n - 1)$

b. Always; the product of two consecutive integers is always even since one of the integers is even.

42. a. 1; 2; 3; 4; $\frac{n}{2}(n + 1)$

b. 5050

43. a. 6; 3

b. $n - 3$

c. $\frac{1}{2}n^2 - \frac{3}{2}n$

d. 20

44. a. $V = 64s^3$

b. $V = 48\pi s^2$

c. $V = 64s^3 - 48\pi s^2$

d. $V = 16s^2(4s - 3\pi)$

e. about 182,071 in.³

Answers for Lesson 9-3, pp. 507–509 Exercises

1. 30
2. 35
3. 7
4. 13
5. $x^2 + 7x + 10$
6. $h^2 + 7h + 12$
7. $k^2 + k - 42$
8. $a^2 - 17a + 72$
9. $2x^2 + 3x - 2$
10. $2y^2 - y - 15$
11. $r^2 + 2r - 24$
12. $5y^2 + 12y - 32$
13. $x^2 - x - 42$
14. $m^2 - 15m + 54$
15. $4b^2 + 10b - 6$
16. $8w^2 + 42w + 10$
17. $x^2 + 2x - 63$
18. $a^2 + 16a + 55$
19. $p^2 + 9p - 10$
20. $8x + 6$
21. $-2x^2 + 5x + 48$
22. $x^3 + 5x^2 - 35x + 9$
23. $a^3 - 6a^2 + 9a - 4$
24. $2g^3 - 3g^2 - 6g - 9$
25. $3k^3 + 19k^2 - 33k + 56$
26. $9x^3 + 15x^2 + 3x - 3$
27. $2t^3 - 17t^2 + 36t - 15$
28. $56p^3 + 103p^2 + 37p - 9$
29. $48w^3 - 28w^2 - 2w + 2$
30. $p^2 + p - 56$
31. $p^2 + p - 56$
32. $p^3 + 8p^2 - 7p - 56$
33. $25c^2 - 40c - 9$
34. $n^3 + 11n^2 + 3n + 33$
35. $15k^4 + 3k^3 + 10k^2 + 2k$
36. $24h^3 + 2h^2 + 17h - 3$
37. $9y^4 - 9y^3 - 7y^2 - 2y - 2$
38. $48q^3 - 16q^2 + 4q - 4$
39. a. $2x^2 + 12x + 16$
b. $12x + 16$
c. 10 ft by 5 ft
40. Answers may vary. Sample: $(x + 2)(x^2 + 3x + 4);$
 $x^3 + 5x^2 + 10x + 8$

Answers for Lesson 9-3, pp. 507–509 Exercises (cont.)

41. Answers may vary. Sample: vertical method, so you can keep terms aligned
42. $7.5x + 15$
43. $1.5x^2 + 2.5x - 1$
44. a. $x^2 + 2x + 1, 121$
 $x^2 + 3x + 2, 132$
 $x^2 + 4x + 3, 143$
- b. For $ax^2 + bx + c$, a corresponds to the hundreds place, b to the tens place, and c to the ones place.
45. $n^3 + 15n^2 + 56n$ 46. D
47. $6x^2 + 36x + 54$ 48. $96t^2 + 48t + 6$
49. $24w^4 + 168w^2 + 294$
50. a. $V(t) = 10.56t^2 + 1318.1t + 39,250$
b. 46,104.5 million lb
51. a. $2000r^3 + 6000r^2 + 6000r + 2000$
b. \$2185.45
52. 1008 53. 4611
54. 5824 55. 2432

Answers for Lesson 9-4, pp. 515–517 Exercises

1. $c^2 + 2c + 1$
2. $x^2 + 8x + 16$
3. $4v^2 + 44v + 121$
4. $9m^2 + 42m + 49$
5. $w^2 - 24w + 144$
6. $b^2 - 10b + 25$
7. $36x^2 - 96x + 64$
8. $81j^2 - 36j + 4$
9. a. $\frac{1}{16}C^2 + \frac{3}{8}CD + \frac{9}{16}D^2$
b. $\frac{1}{16}$
c. It is the coefficient of C^2 .
10. 3721
11. 9801
12. 2304
13. 91,204
14. 249,001
15. $x^2 - 16$
16. $a^2 - 64$
17. $d^2 - 49$
18. $h^2 - 225$
19. $y^2 - 144$
20. $k^2 - 25$
21. 899
22. 8099
23. 2496
24. 39,991
25. 89,999
26. $(6x + 9)$ units²
27. $(10x + 15)$ units²
28. $x^2 + 6xy + 9y^2$
29. $25p^2 - 10pq + q^2$
30. $36m^2 + 12mn + n^2$
31. $x^2 - 14xy + 49y^2$
32. $16k^2 + 56kj + 49j^2$
33. $4y^2 - 36xy + 81x^2$
34. $9w^2 + 60wt + 100t^2$
35. $36a^2 + 132ab + 121b^2$
36. $25p^2 - 60pq + 36q^2$
37. $36h^2 - 96hp + 64p^2$
38. $y^{10} - 18x^4y^5 + 81x^8$
39. $64k^2 + 64kh + 16h^2$

Answers for Lesson 9-4, pp. 515–517 Exercises (cont.)

40. a. $\left(\frac{1}{2}R + \frac{1}{2}W\right)^2 = \frac{1}{4}R^2 + \frac{1}{2}RW + \frac{1}{4}W^2$

b. $\frac{1}{2}$

c. $\left(\frac{1}{2}R + \frac{1}{2}W\right)(R) = \frac{1}{2}R^2 + \frac{1}{2}RW$

d. 0

41. a.

$4^2 = 16$	$3 \cdot 5 = 15$
$5^2 = 25$	$4 \cdot 6 = 24$
$6^2 = 36$	$5 \cdot 7 = 35$
$7^2 = 49$	$6 \cdot 8 = 48$

b. n^2 is one more than the product $(n - 1)(n + 1)$.

c. The product $(n - 1)(n + 1)$ is $n^2 - 1$.

42. Answers may vary. Sample: $(2 + 2)^2 \stackrel{?}{=} 2^2 + 2^2$
 $16 \neq 8$

43. No; $\left(3\frac{1}{2}\right)^2 = \left(3 + \frac{1}{2}\right)^2 = \left(3 + \frac{1}{2}\right)\left(3 + \frac{1}{2}\right) =$
 $3^2 + 2(3)\left(\frac{1}{2}\right) + \left(\frac{1}{2}\right)^2 = 9 + 3 + \frac{1}{4} = 12\frac{1}{4} \neq 9\frac{1}{4}$.

44. $9y^2 - 25w^2$ 45. $p^2 - 81q^2$ 46. $4d^2 - 49g^2$

47. $49b^2 - 64c^2$ 48. $g^2 - 49h^2$ 49. $g^6 - 49h^4$

50. $4a^4 - b^2$ 51. $121x^2 - y^6$ 52. $16k^2 - 9h^4$

53. $a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$

54. a. $\frac{1}{8}H^3 + \frac{3}{8}H^2T + \frac{3}{8}HT^2 + \frac{1}{8}T^3$

b. $\frac{3}{8}$

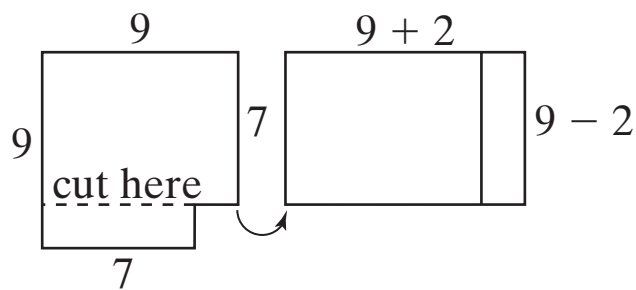
55. a. $(3n + 1)^2 = (3n + 1)(3n + 1) = 9n^2 + 6n + 1 =$
 $3(3n^2 + 2n) + 1$; since $3n^2 + 2n$ is an integer, then
 $3(3n^2 + 2n)$ is a multiple of three and $3(3n^2 + 2n) + 1$
 is one more than a multiple of three.

b. No; its square is one more than a multiple of three.

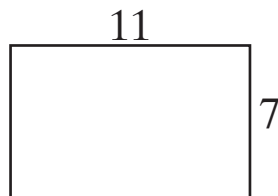
Answers for Lesson 9-4, pp. 515–517 Exercises (cont.)

56. $V = \frac{4}{3}\pi r^3 + 12\pi r^2 + 36\pi r + 36\pi$

57. a.



b.



Answers for Lesson 9-5, pp. 521–522 Exercises

- | | |
|------------------------|-------------------------|
| 1. 5 | 2. 9 |
| 3. 7 | 4. 6 |
| 5. $(r + 3)(r + 1)$ | 6. $(n - 2)(n - 1)$ |
| 7. $(k + 3)(k + 2)$ | 8. $(y + 4)(y + 2)$ |
| 9. $(x - 1)(x - 1)$ | 10. $(p + 18)(p + 1)$ |
| 11. $(k - 14)(k - 2)$ | 12. $(w + 5)(w + 1)$ |
| 13. $(m - 1)(m - 8)$ | 14. $(d + 19)(d + 2)$ |
| 15. $(t - 7)(t - 6)$ | 16. $(q - 15)(q - 3)$ |
| 17. 5 | 18. 6 |
| 19. 9 | 20. 6 |
| 21. $(x + 4)(x - 1)$ | 22. $(q - 4)(q + 2)$ |
| 23. $(y + 5)(y - 4)$ | 24. $(h + 17)(h - 1)$ |
| 25. $(x - 16)(x + 2)$ | 26. $(d + 10)(d - 4)$ |
| 27. $(m + 2)(m - 15)$ | 28. $(p - 6)(p + 9)$ |
| 29. $(p + 3)(p - 18)$ | 30. A |
| 31. B | 32. B |
| 33. $(t + 9v)(t - 2v)$ | 34. $(x + 7y)(x + 5y)$ |
| 35. $(p - 8q)(p - 2q)$ | 36. $(m - 9n)(m + 6n)$ |
| 37. $(h + 17j)(h + j)$ | 38. $(x - 13y)(x + 3y)$ |

39–41. Answers may vary. Samples are given.

39. 18; $(x - 6)(x + 3)$
28; $(x - 7)(x + 4)$
10; $(x - 5)(x + 2)$

Answers for Lesson 9-5, pp. 521–522 Exercises (cont.)

40. $12; (x + 4)(x - 3)$
 $2; (x + 2)(x - 1)$
 $20; (x + 5)(x - 4)$

41. $7; (x + 4)(x + 3)$
 $8; (x + 6)(x + 2)$
 $13; (x + 12)(x + 1)$

42. a. Factors contain the same operation.
b. Factors contain opposite operations.

43. $(k + 2)(k + 8)$

44. $(m - 2)(m + 12)$

45. $(n - 4)(n + 14)$

46. $(g + 12)(g + 8)$

47. $(x - 5)(x + 13)$

48. $(t + 3)(t + 25)$

49. $(x - 14)(x + 3)$

50. $(k + 21)(k + 2)$

51. $(m - 3)(m + 17)$

52. $(x + 25y)(x + 4y)$

53. $(t - 15)(t + 5)$

54. $(d - 16e)(d - 3e)$

55. $4x^2 + 12x + 5; (2x + 1)(2x + 5)$

56. $6x^2 + 13x + 6; (3x + 2)(2x + 3)$

57. a. The signs of a and b must be opposite.
b. Since the middle term is negative, the number with the larger absolute value must be negative. Therefore, a must be a negative integer.

58. a. The signs of a and b must be opposite.
b. Since the middle term is positive, the number with the larger absolute value must be positive. Therefore, b is a negative integer.

59. $(x^6 + 7)(x^6 + 5)$

60. $(t^4 + 8)(t^4 - 3)$

61. $(r^3 - 16)(r^3 - 5)$

62. $(m^5 + 17)(m^5 + 1)$

63. $(x^6 - 24)(x^6 + 5)$

64. $(p^3 - 4)(p^3 + 18)$

Answers for Lesson 9-6, pp. 525–526 Exercises

1. $(2n + 1)(n + 7)$
2. $(7d + 1)(d + 7)$
3. $(11w - 3)(w - 1)$
4. $(3x - 2)(x - 5)$
5. $(3t + 11)(2t + 1)$
6. $(3d - 5)(d - 4)$
7. $(2m + 1)(8m + 9)$
8. $(p - 1)(15p - 11)$
9. $(2y + 1)(4y + 13)$
10. $(2y + 1)(y + 17)$
11. $(x - 3)(7x - 9)$
12. $(4x + 3)(2x + 3)$
13. $(2t - 3)(t + 1)$
14. $(4y + 1)(2y - 3)$
15. $(2q + 3)(q - 7)$
16. $(7x + 1)(x - 3)$
17. $(13p - 5)(p + 1)$
18. $(5k - 7)(k + 1)$
19. $(5w + 8)(2w - 1)$
20. $(4d + 5)(3d - 4)$
21. $(7n + 15)(2n - 1)$
22. $8(3m - 1)(m - 1)$
23. $7(3v - 7)(v - 1)$
24. $2(3t + 4)(t + 3)$
25. $5(5x + 3)(x - 1)$
26. $11(p + 1)(p + 6)$
27. $2(4v + 3)(3v - 1)$
28. Answers may vary. Sample:
41; $(4g + 1)(g + 10)$
14; $(4g + 10)(g + 1)$
22; $(2g + 1)(2g + 10)$
29. Answers may vary. Sample:
18; $(5m - 4)(3m + 6)$
54; $(5m - 2)(3m + 12)$
117; $(5m - 1)(3m + 24)$
30. Answers may vary. Sample:
8; $(7g - 4)(5g + 4)$
559; $(35g - 1)(g + 16)$
46; $(7g - 2)(5g + 8)$

Answers for Lesson 9-6, pp. 525–526 Exercises (cont.)

- 31. a.** $(2x + 2)(x + 2)$; $(x + 1)(2x + 4)$
b. $2x^2 + 6x + 4$; $2x^2 + 6x + 4$; yes
c. Answers may vary. Sample: Neither factoring is complete. Each one has a common factor, 2.
- 32.** Answers may vary. Sample: Factor out the GCF, 2, first. Look at the factors of 25 and 8 to find a combination that will give you a sum of -45 . $2(25x^2 - 45x + 8) = 2(5x - 1)(5x - 8)$.
- 33.** $(9p + 4)(6p + 7)$ **34.** $3(11r + 4)(2r + 1)$
- 35.** $(7x - 2)(2x - 7)$ **36.** $28(m - 1)(m + 2)$
- 37.** $3(7h - 4)(h + 4)$ **38.** $(11n - 6)(5n - 2)$
- 39.** $2(6y - 1)(3y + 10)$ **40.** $(9w - 5)(7w - 6)$
- 41.** $(9q - 1)(11q - 9)$ **42.** 2
- 43.** Answers may vary. Sample: $5x^2 - 12x + 4 = (5x - 2)(x - 2)$; $9x^2 - 12x + 3 = 3(3x - 1)(x - 1)$; $16x^2 - 12x + 2 = 2(4x - 1)(2x - 1)$
- 44.** $x(8x + 5)(7x + 1)$
- 45.** $(7p - 3q)(7p + 12q)$
- 46.** $54h(2g - 1)(g - 1)$
- 47. a.** -2 and -3
b. $(x + 2)(x + 3)$
c. Answers may vary. Sample: Each x -intercept is the opposite of the last term in a binomial factor.

Answers for Lesson 9-7, pp. 531–532 Exercises

1. $(c + 5)^2$
2. $(x - 1)^2$
3. $(h + 6)^2$
4. $(m - 12)^2$
5. $(k - 8)^2$
6. $(t - 7)^2$
7. $(2m + 5)$
8. $(7d + 2)$
9. $(5g - 4)$
10. $(5g - 3)^2$
11. $(8r - 9)^2$
12. $(10v - 11)^2$
13. $(x + 2)(x - 2)$
14. $(y + 9)(y - 9)$
15. $(k + 14)(k - 14)$
16. $(r + 12)(r - 12)$
17. $(h + 10)(h - 10)$
18. $(m + 15)(m - 15)$
19. $(w + 16)(w - 16)$
20. $(x + 20)(x - 20)$
21. $(y + 30)(y - 30)$
22. $(5q + 3)(5q - 3)$
23. $(7y + 2)(7y - 2)$
24. $(3c + 8)(3c - 8)$
25. $(2m + 9)(2m - 9)$
26. $(4k + 7)(4k - 7)$
27. $(12p + 1)(12p - 1)$
28. $(9v + 10)(9v - 10)$
29. $(20n + 11)(20n - 11)$
30. $(5w + 14)(5w - 14)$
31. $3(m + 2)(m - 2)$
32. $5(k + 7)(k - 7)$
33. $3(x + 8)^2$
34. $2(t - 9)^2$
35. $6r(r + 5)(r - 5)$
36. $7(h - 4)^2$
37. Answers may vary. Sample: Rewrite the first and last terms as a square. Check to see if the middle term is $2ab$. Factor as a square binomial: $4x^2 + 12x + 9 = (2x)^2 + 12x + 3^2 = (2x)^2 + 2(2x)(3) + 3^2 = (2x + 3)^2$; $9x^2 - 30x + 25 = (3x)^2 - 30x + 5^2 = (3x)^2 - 2(3x)(5) + 5^2 = (3x - 5)^2$.
38. $4x^2 - 121$ is the difference of two squares. So the answer should be $(2x + 11)(2x - 11)$.

Answers for Lesson 9-7, pp. 531–532 Exercises (cont.)

39. 11, 9

40. 13, 7

41. 15, 5

42. 13, 9

43. 16, 14

44. a. Answers may vary. Sample: $4x^2 + 24x + 36$

b. because $(2x)^2 = 4x^2$, $2(2x \cdot 6) = 24x$, and $6^2 = 36$

45. $25(2v + w)(2v - w)$

46. $4(2p - 3q)^2$

47. $7(2c + 5d)^2$

48. $(\frac{1}{2}m + \frac{1}{3})(\frac{1}{2}m - \frac{1}{3})$

49. $(x + \frac{1}{2})^2$

50. $16(2g - 3h)^2$

51. $(\frac{1}{2}p - 2)^2$

52. $(\frac{1}{3}n + \frac{1}{5})(\frac{1}{3}n - \frac{1}{5})$

53. $(\frac{1}{5}k + 3)^2$

54. a. $3.14n^2 - 3.14m^2 = 3.14(n + m)(n - m)$

b. 285.74 in.^2

55. a. $4(x + 5)(x - 5)$

b. $4(x + 5)(x - 5)$

c. The polynomial has a GCF that has two identical factors.

d. $3(x + 5)(x - 5)$; no, because 3 does not have a pair of identical factors.

56. $(8r^3 - 9)^2$

57. $(p^3 + 20q)^2$

58. $(6m^2 + 7)^2$

59. $(9p^5 + 11)^2$

60. $3(6m^3 - 7)(6m^3 + 7)$

61. $(x^{10} - 2y^5)^2$

Answers for Lesson 9-7, pp. 531–532 Exercises (cont.)

62. $4(8g^2 - 5h^3)(8g^2 + 5h^3)$ **63.** $5(3x^2 - 2y)^2$

64. $37(g^4 + h^4)(g^2 + h^2)(g + h)(g - h)$

65. a. $t - 3; 4$

b. $(t + 1)(t - 7)$

66. a. $(4 + 9n^2)(2 + 3n)(2 - 3n)$

b. They are squares of square terms.

c. Answers may vary. Sample: $16x^4 - 1$

Answers for Lesson 9-8, pp. 537–538 Exercises

1. $2m^2; 3$
2. $5p^2; 2$
3. $2z^2; -5$
4. $3n^2; 1$
5. $(2n^2 + 1)(3n + 4)$
6. $(7t^2 + 8)(2t + 3)$
7. $(3t + 1)(3t - 1)(3t + 5)$
8. $(y^2 + 1)(13y - 8)$
9. $(5x^2 + 1)(9x + 4)$
10. $(2w^2 - 3)(5w + 8)$
11. $2(2v^2 + 1)(3v - 8)$
12. $q(q^2 + 4)(7q - 4)$
13. $2(m^2 + 2)(10m - 9)$
14. $2x(x + 1)(x - 1)(3x + 2)$
15. $2(2y^2 + 5)(3y - 5)$
16. $3(c^2 + 2)(3c - 4)$
17. $(6p + 5)(2p + 1)$
18. $(4t + 3)^2$
19. $(6n - 1)(3n + 10)$
20. $(3w - 5)(3w - 4)$
21. $2(6m - 1)(2m + 1)$
22. $(12v - 7)(3v + 1)$
23. $(3x - 2)(2x + 5)$
24. $(4v - 1)(5v - 9)$
25. $(7q + 2)(9q - 10)$
26. $m, (3m + 1), \text{ and } (m + 2)$
27. $5k, (k + 2), \text{ and } (k + 4)$
28. $7h(h - 6)(h + 1)$
29. $2(10t^2 - 11)(3t - 10)$
30. $8(d^2 + 3)(d + 2)$
31. $4(3x - 7y)(x + 2y)$
32. $9r(3r - 1)(2r - 1)$
33. $10(5k^2 + 6)(3k + 7)$
34. a. $(7x^2 + 9)(4x - 1)$
b. $(4x - 1)(7x^2 + 9)$
c. Answers may vary. Sample: The factorings are equivalent, but the factors may appear in a different order.
35. $(7w^2 - 4)(2w + 7)$
36. $(2m^2 - 1)(m - 16)$
37. $2(2t^2 + 3)(11t - 1)$
38. $(x^2 - 2)(25x - 1)$
39. $2w, (6w + 5), \text{ and } (7w + 1)$

Answers for Lesson 9-8, pp. 537–538 Exercises (cont.)

40. Answers may vary. Sample: $30x^2 + 36x + 40x + 48$;
 $2(3x + 4)(5x + 6)$

41. Answers may vary. Sample: Split the expression into two groups. Remove the GCF from each group, and then factor again.

42. $(6m^3 - 7n^2)(5m^2 + 4n)$ 43. $(x^2 + y)(p + q^5)$

44. $(h + 2)(h - 2)(h + 11)$

45. $(w^2 + 3)(w^2 - 3)(w + 1)(w - 1)$

46. a. $2\pi x(x + 3)^2$

b. $x + 3$

47. $(2^3 + 2^0)(2^2 + 2^1 + 2^0)$; $(9)(7)$

48. $(2^4 + 2^2 + 2^0)(2^1 + 2^0)$; $(21)(3)$

49. Answers may vary. Samples are given.

a. length = $2x + 4$; width = x ; height = $x + 4$

b. $2x^3 + 12x^2 + 16x$