Lesson 7-2

(pages 366–373)

Simplify. Assume that no denominator is equal to zero.

1. $\frac{6^{10}}{6^7}$ 6^3 or 216
2. $\frac{b^6c^5}{b^3c^2}$ b^3c^3
3. $\frac{(-a)^4b^8}{a^4b^7}$ b
4. $\frac{(-x)^3y^3}{x^3y^6}$ $-\frac{1}{y^3}$
5. $\frac{12ab^5}{4a^4b^3}$ $\frac{3b^2}{a^3}$
6. $\frac{24x^5}{-8x^2}$ $-3x^3$
7. $\frac{-9h^2k^4}{18h^5j^3k^4}$ $-\frac{1}{2h^3j^3}$
8. $\left(\frac{2a^2b^4}{3a^3b}\right)^2$ $\frac{4b^6}{9a^2}$
9. $a^5b^0a^{-7}$ $\frac{1}{a^2}$
10. $\frac{(-u^{-3}v^3)^2}{(u^3v)^{-3}}$ u^9v^9
11. $\left(\frac{a^3}{b^2}\right)^{-3}$ $\frac{b^6}{a^9}$
12. $\left(\frac{2x}{y^{-3}}\right)^{-2}$ $\frac{1}{4x^2y^6}$
13. $\frac{(-r)s^5}{r^{-3}s^{-4}}$ $-r^4s^9$
14. $\frac{28a^{-4}b^0}{14a^3b^{-1}}$ $\frac{2b}{a^7}$
15. $\frac{(j^2k^3m)^4}{(jk^4)^{-1}}$ $j^9k^{16}m^4$
16. $\left(\frac{-2x^4y}{4y^2}\right)^0$ 1
17. $\left(\frac{-18x^0a^{-3}}{-6x^{-2}a^{-3}}\right)$ $3x^2$
18. $\left(\frac{2a^3b^{-2}}{2^{-1}a^{-5}b^3}\right)^{-1}$ $\frac{b^5}{4a^8}$
19. $\left(\frac{5n^{-1}m^2}{2nm^{-2}}\right)^0$ 1
20. $\frac{(3ab^2c)^{-3}}{(2a^2bc^2)^2}$ $\frac{1}{108a^7b^8c^7}$

Lesson 7-3

(pages 376–381)

State whether each expression is a polynomial. If the expression is a polynomial, identify it as a *monomial*, a *binomial*, or a *trinomial*.

1. $5x^2y + 3xy - 7$ yes; trinomial
2. 0 yes; monomial
3. $\frac{5}{k} - k^2y$ no
4. $3a^2x - 5a$ yes; binomial

Find the degree of each polynomial.

5. $a + 5c$ 1
6. $14abcd - 6d^3$ 4
7. $\frac{a^3}{4}$ 3
8. 10 0
9. $-4h^5$ 5
10. $\frac{x^2}{3} - \frac{x}{2} + \frac{1}{5}$ 2
11. -6 0
12. $a^2b^3 - a^3b^2$ 5

Arrange the terms of each polynomial so that the powers of x are in ascending order. 13–18. See Student Handbook Answer Appendix.

13. $2x^2 - 3x + 4x^3 - x^5$
14. $x^3 - x^2 + x - 1$
15. $2a + 3ax^2 - 4ax$
16. $-5bx^3 - 2bx + 4x^2 - b^3$
17. $x^8 + 2x^2 - x^6 + 1$
18. $cdx^2 - c^2d^2x + d^3$

Arrange the terms of each polynomial so that the powers of x are in descending order. 19–24. See Student Handbook Answer Appendix.

19. $5x^2 - 3x^3 + 7 + 2x$
20. $-6x + x^5 + 4x^3 - 20$
21. $5b + b^3x^2 + \frac{2}{3}bx$
22. $21p^2x + 3px^3 + p^4$
23. $3ax^2 - 6a^2x^3 + 7a^3 - 8x$
24. $\frac{1}{3}s^2x^3 + 4x^4 - \frac{2}{5}s^4x^2$

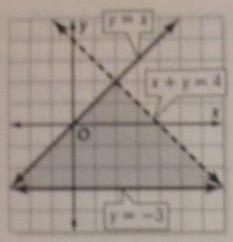
Lesson 7-4

(pages 384–388)

Find each sum or difference. 5–12. See Student Handbook Answer Appendix.

1. $(3a^2 + 5) + (4a^2 - 1)$ $7a^2 + 4$
2. $(5x - 3) + (-2x + 1)$ $3x - 2$
3. $(6z + 2) - (9z + 3)$ $-3z - 1$
4. $(-4n + 7) - (-7n - 8)$ $3n + 15$
5. $(-7t^2 + 4ts - 6s^2) + (-5t^2 - 12ts + 3s^2)$
6. $(6a^2 - 7ab - 4b^2) - (2a^2 + 5ab + 6b^2)$
7. $(4a^2 - 10b^2 + 7c^2) + (-5a^2 + 2c^2 + 2b)$
8. $(z^2 + 6z - 8) - (4z^2 - 7z - 5)$
9. $(4d + 3e - 8f) - (-3d + 10e - 5f + 6)$
10. $(7g + 8h - 9) + (-g - 3h - 6k)$
11. $(9x^2 - 11xy - 3y^2) - (x^2 - 16xy + 12y^2)$
12. $(-3m + 9mn - 5n) + (14m - 5mn - 2n)$
13. $(6 - 7y + 3y^2) + (3 - 5y - 2y^2) + (-12 - 8y + y^2)$ $2y^2 - 20y - 3$
14. $(-7c^2 - 2c - 5) + (9c - 6) + (16c^2 + 3) + (-9c^2 - 7c + 7)$ -1

Extra Practice

9. 

Page 730, Extra Practice, Lesson 7-1

1. It shows subtraction, not multiplication of variables.
2. It is a real number and therefore a monomial.
3. It is a product of a number and two variables.
4. It shows subtraction, not multiplication of variables.

Page 731, Extra Practice, Lesson 7-3

13. $-3x + 2x^2 + 4x^3 - x^5$
14. $-1 + x - x^2 + x^3$
15. $2a - 4ax + 3ax^2$
16. $-b^3 - 2bx + 4x^2 - 5bx^3$
17. $1 + 2x^2 - x^6 + x^8$
18. $d^3 - c^2d^2x + cdx^2$
19. $-3x^3 + 5x^2 + 2x + 7$
20. $x^5 + 4x^3 - 6x - 20$
21. $b^3x^2 + \frac{2}{3}bx + 5b$
22. $3px^3 + 21p^2x + p^4$
23. $-6a^2x^3 + 3ax^2 - 8x + 7a^3$
24. $4x^4 + \frac{1}{3}s^2x^3 - \frac{2}{5}s^4x^2$

Page 731, Extra Practice, Lesson 7-4

5. $-12t^2 - 8ts - 3s^2$
6. $4a^2 - 12ab - 10b^2$
7. $-a^2 - 10b^2 + 9c^2 + 2b$
8. $-3z^2 + 13z - 3$
9. $7d - 7e - 3f - 6$
10. $6g + 5h - 9 - 6k$
11. $8x^2 + 5xy - 15y^2$
12. $11m + 4mn - 7n$

Page 732, Extra Practice, Lesson 7-5

7. $-3ab^3 - 4a^2b^2 + 6a^3b$
8. $36m^4n + 4m^3n - 20m^2n^2$
9. $-16s^3t^5 + 28s^6t^2 - 12s^2t^5$
10. $-6a^2 + 41a$
11. $72b^2 - 33b - 14$
12. $2x^2 - 6x$
13. $2n^2 + 55n - 33$
14. $-2x^2 - 3x + 9$
15. $4mn - 4m - 5n^2 - 5n$

Page 732, Extra Practice, Lesson 7-6

1. $d^2 + 7d + 10$
2. $z^2 + 3z - 28$
3. $m^2 - 13m + 40$
4. $a^2 - 17a - 38$
5. $c^2 + 12c - 45$
6. $x^2 - xy - 2y^2$
7. $2x^2 + 7x - 30$
8. $14a^2 - 43a + 20$
9. $8x^2 - 10xy - 3y^2$
10. $7v^2 + 31v + 12$
11. $21s^2 - 38s + 16$
12. $8g^2 - 14gh - 15h^2$
13. $8a^2 + 2a - 3$
14. $14y^2 - 23y + 3$
15. $8x^2 + 16xy + 6y^2$
16. $60r^2 + 76rs - 32s^2$
17. $3a^2 - a - 2$
18. $-6n^2 + 8n + 8$
19. $x^3 - 8$
20. $6x^3 - 5x^2 + 8x + 55$
21. $12s^3 + 47s^2 + 4s - 45$
22. $-25x^3 + 20x^2 + 31x - 14$
23. $2n^3 - 5n^2 + 3n - 2$
24. $2x^4 - 17x^3 + 23x^2 + 30x - 24$
25. $x^4 - x^2 - 2x - 1$
26. $a^4 - a^3 - 8a^2 - 29a - 35$
27. $5x^6 - 25x^5 + 13x^4 + 10x^3 - 5x^2 - 5x + 3$

Page 732, Extra Practice, Lesson 7-7

16. $\frac{1}{4}x^2 - 100$
17. $\frac{1}{9}n^2 - m^2$
18. $a^3 - 3a^2 + 3a - 1$
19. $2x^3 + 5x^2 - 8x - 20$
20. $16x^3 - 64x^2 - x + 4$
21. $x^4 - 41x^2 + 400$

Page 733, Extra Practice, Lesson 8-1

1. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot m \cdot n$
2. $-1 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot a \cdot a \cdot a \cdot b$
3. $-1 \cdot 2 \cdot 13 \cdot x \cdot y \cdot y$
4. $-1 \cdot 3 \cdot 7 \cdot 11 \cdot x \cdot y \cdot y \cdot z$
5. $2 \cdot 2 \cdot 11 \cdot r \cdot s \cdot s \cdot t \cdot t \cdot t$
6. $-1 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 7 \cdot m \cdot m \cdot n \cdot n$

Page 733, Extra Practice, Lesson 8-2

1. $10a(a + 4)$
2. $5wx(3 - 7x)$
3. $9b(3a^2 + b^2)$
4. $11x(1 + 4xy)$
5. $8y(2y + 1)$
6. $2mn(7n + 1)$
7. $5ab^2(5a + 6b)$
8. $2mn(m^2n - 8n + 4)$
9. $(2x + b)(a + 3c)$
10. $(2m + r)(3x - 2)$
11. $(3x - 4)(a - 2b)$
12. $(a + 1)(a - 2b)$
13. $(2a + b)(4c - d)$
14. $2(e^2 + f)(g + 2h)$
15. $(x - y)(x - y)$

Page 733, Extra Practice, Lesson 8-3

1. $(x - 7)(x - 2)$
2. $(a - 12)(a + 3)$
3. $(x + 5)(x - 3)$
4. $(n - 5)(n - 3)$

Extra Practice

Lesson 7-5

(pages 390–395)

Find each product. 6. $5y^3 - 15y^2 + 30y$ 7–9. See Student Handbook Answer Appendix.

1. $-3(8x + 5)$ $-24x - 15$
2. $3b(5b + 8)$ $15b^2 + 24b$
3. $1.1a(2a + 7)$ $2.2a^2 + 7.7a$
4. $\frac{1}{2}x(8x - 6)$ $4x^2 - 3x$
5. $7xy(5x^2 - y^2)$ $35x^3y - 7xy^3$
6. $5y(y^2 - 3y + 6)$
7. $-ab(3b^2 + 4ab - 6a^2)$
8. $4m^2(9m^2n + mn - 5n^2)$
9. $4st^2(-4s^2t^3 + 7s^5 - 3st^3)$

Simplify. 10–15. See Student Handbook Answer Appendix.

10. $-3a(2a - 12) + 5a$
11. $6(12b^2 - 2b) + 7(-2 - 3b)$
12. $x(x - 6) + x(x - 2) + 2x$
13. $11(n - 3) + 2(n^2 + 22n)$
14. $-2x(x + 3) + 3(x + 3)$
15. $4m(n - 1) - 5n(n + 1)$

Solve each equation. 23. -1.5

16. $-6(11 - 2x) = 7(-2 - 2x)$ 2
17. $11(n - 3) + 5 = 2n + 44$ 8
18. $a(a - 6) + 2a = 3 + a(a - 2)$ -1.5
19. $q(2q + 3) + 20 = 2q(q - 3)$ $-\frac{20}{9}$
20. $w(w + 12) = w(w + 14) + 12$ -6
21. $x(x - 3) + 4x - 3 = 8x + x(3 + x)$ $-\frac{3}{10}$
22. $-3(x + 5) + x(x - 1) = x(x + 2) - 3$ -2
23. $n(n - 5) + n(n + 2) = 2n(n - 1) + 1.5$

Lesson 7-6

(pages 398–403)

Find each product. 1–27. See Student Handbook Answer Appendix.

1. $(d + 2)(d + 5)$
2. $(z + 7)(z - 4)$
3. $(m - 8)(m - 5)$
4. $(a + 2)(a - 19)$
5. $(c + 15)(c - 3)$
6. $(x + y)(x - 2y)$
7. $(2x - 5)(x + 6)$
8. $(7a - 4)(2a - 5)$
9. $(4x + y)(2x - 3y)$
10. $(7v + 3)(v + 4)$
11. $(7s - 8)(3s - 2)$
12. $(4g + 3h)(2g - 5h)$
13. $(4a + 3)(2a - 1)$
14. $(7y - 1)(2y - 3)$
15. $(2x + 3y)(4x + 2y)$
16. $(12r - 4s)(5r + 8s)$
17. $(-a + 1)(-3a - 2)$
18. $(2n - 4)(-3n - 2)$
19. $(x - 2)(x^2 + 2x + 4)$
20. $(3x + 5)(2x^2 - 5x + 11)$
21. $(4s + 5)(3s^2 + 8s - 9)$
22. $(5x - 2)(-5x^2 + 2x + 7)$
23. $(-n + 2)(-2n^2 + n - 1)$
24. $(x^2 - 7x + 4)(2x^2 - 3x - 6)$
25. $(x^2 + x + 1)(x^2 - x - 1)$
26. $(a^2 + 2a + 5)(a^2 - 3a - 7)$
27. $(5x^4 - 2x^2 + 1)(x^2 - 5x + 3)$

Lesson 7-7

4. $100x^2 - 121y^2$ 6. $4b^2 - 16d^2$ 9. $36m^2 + 24mn + 4n^2$ (pages 404–409)

Find each product. 16–21. See Student Handbook Answer Appendix.

1. $(t + 7)^2$ $t^2 + 14t + 49$
2. $(w - 12)(w + 12)$ $w^2 - 144$
3. $(q - 4h)^2$ $q^2 - 8qh + 16h^2$
4. $(10x + 11y)(10x - 11y)$
5. $(4p + 3)^2$ $16p^2 + 24p + 9$
6. $(2b - 4d)(2b + 4d)$
7. $(a + 2b)^2$ $a^2 + 4ab + 4b^2$
8. $(3x + y)^2$ $9x^2 + 6xy + y^2$
9. $(6m + 2n)^2$
10. $(3m - 7d)^2$ $9m^2 - 42md + 49d^2$
11. $(5b - 6)(5b + 6)$ $25b^2 - 36$
12. $(1 + x)^2$ $1 + 2x + x^2$
13. $(5x - 9y)^2$ $25x^2 - 90xy + 81y^2$
14. $(8a - 2b)(8a + 2b)$ $64a^2 - 4b^2$
15. $\left(\frac{1}{4}x + 4\right)^2$ $\frac{1}{16}x^2 + 2x + 16$