EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

Practice and Problem Solving

A Practice by Example

Example 1 (page 431)

GO for Help

Simplify each expression.

1. $-(2.57)^0$
2. 4^{-2}
3. $(-5)^{-2}$
4. -5^{-2}
5. $(-4)^{-2}$
6. -3^{-4}
7. 2^{-6}
8. -12^{-1}
9. $\frac{1}{2^0}$
10. 78^{-1}
11. $(-4)^{-3}$
12. -4^{-3}

Example 2 (page 431)

Copy and complete each equation.

13. $4n^{\blacksquare} = \frac{4}{n^2}$
14. $\frac{x^{\blacksquare}}{2y^{\blacksquare}} = \frac{1}{2x^{-3}y^4}$
15. $\frac{a^{\blacksquare}}{3b^{\blacksquare}} = \frac{b^3}{3}$
16. $3xy^{\blacksquare} = \frac{3x}{y^5}$

Simplify each expression.

17. $3ab^0$
18. $5x^{-4}$
19. $\frac{1}{x^{-7}}$
20. $\frac{1}{c^{-1}}$
21. $\frac{5^{-2}}{p}$
22. $a^{-4}c^0$
23. $\frac{3x^{-2}}{y}$
24. $\frac{7ab^{-2}}{3w}$
25. $x^{-5}y^{-7}$
26. $x^{-5}y^7$
27. $\frac{8}{2c^{-3}}$
28. $\frac{7s}{5t^{-3}}$
29. $\frac{6a^{-1}c^{-3}}{d^0}$
30. $2^{-3}x^2z^{-7}$
31. $9^0y^7t^{-11}$
32. $\frac{7s^0t^{-5}}{2^{-1}m^2}$

Example 3 (page 432)

Evaluate each expression for $r = -3$ and $s = 5$.

33. s^{-2}
34. r^{-2}
35. $-r^{-2}$
36. s^0
37. $3s^{-2}$
38. $(2s)^{-2}$
39. $r^{-4}s^2$
40. $\frac{1}{r^{-4}s^2}$
41. s^2r^{-3}
42. r^0s^{-2}
43. $5r^3s^{-1}$
44. $2^{-4}r^3s^{-2}$

Example 4 (page 432)

45. **a.** Suppose your allowance doubles every week. This week you receive \$2.56. How much will your allowance be three weeks from now? How much was your allowance three weeks ago?

b. Critical Thinking From a parent's point of view, is doubling your allowance each week a good plan? Explain.

B Apply Your Skills

Mental Math **Is the value of each expression *positive* or *negative*?**

46. -2^2
47. $(-2)^2$
48. 2^{-2}
49. $(-2)^3$
50. $(-2)^{-3}$

Write each number as a power of 10 using negative exponents.

51. $\frac{1}{10}$
52. $\frac{1}{100}$
53. $\frac{1}{1000}$
54. $\frac{1}{10{,}000}$
55. $\frac{1}{100{,}000}$

Write each expression as a decimal.

56. 10^{-3}
57. 10^{-6}
58. $7 \cdot 10^{-1}$
59. $3 \cdot 10^{-2}$
60. $5 \cdot 10^{-4}$

61. **a. Patterns** Complete the pattern using powers of 5.

$\frac{1}{5^2} = \blacksquare$ $\frac{1}{5^1} = \blacksquare$ $\frac{1}{5^0} = \blacksquare$ $\frac{1}{5^{-1}} = \blacksquare$ $\frac{1}{5^{-2}} = \blacksquare$

b. Write $\frac{1}{5^{-4}}$ using a positive exponent.

c. Rewrite $\frac{1}{a^{-n}}$ so that the power of a is in the numerator.

62. **Multiple Choice** Which expression is equivalent to $\frac{3x^{-2}y^3}{9x^3y^{-5}}$?

(A) $\frac{3x^{-5}}{y^8}$ (B) $\frac{xy^2}{3}$ (C) $3xy^2$ (D) $\frac{y^8}{3x^5}$