

**GUIDED PRACTICE** for Examples 3, 4, and 5

Simplify the expression. Tell which properties of exponents you used.

5. $x^{-6}x^5x^3$

6. $(7y^2z^5)(y^{-4}z^{-1})$

7. $\left(\frac{s^3}{t^{-4}}\right)^2$

8. $\left(\frac{x^4y^{-2}}{x^3y^6}\right)^3$

5.1 EXERCISES**HOMEWORK KEY**○ = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 17, 31, and 51🇺🇸 = **TAKS PRACTICE AND REASONING**
Exs. 36, 46, 51, 53, 55, and 56**SKILL PRACTICE**1. **VOCABULARY** State the name of the property illustrated.

a. $a^m \cdot a^n = a^{m+n}$

b. $a^{-m} = \frac{1}{a^m}, a \neq 0$

c. $(ab)^m = a^m b^m$

2. **WRITING** Is the number 25.2×10^{-3} in scientific notation? Explain.**EXAMPLE 1**on p. 330
for Exs. 3–14**EVALUATING NUMERICAL EXPRESSIONS** Evaluate the expression. Tell which properties of exponents you used.

3. $3^3 \cdot 3^2$

4. $(4^{-2})^3$

5. $(-5)(-5)^4$

6. $(2^4)^2$

7. $\frac{5^2}{5^5}$

8. $\left(\frac{3}{5}\right)^4$

9. $\left(\frac{2}{7}\right)^{-3}$

10. $9^3 \cdot 9^{-1}$

11. $\frac{3^4}{3^{-2}}$

12. $\left(\frac{2}{3}\right)^{-5} \left(\frac{2}{3}\right)^4$

13. $6^3 \cdot 6^0 \cdot 6^{-5}$

14. $\left(\left(\frac{1}{2}\right)^{-5}\right)^2$

EXAMPLE 2on p. 331
for Exs. 15–23**SCIENTIFIC NOTATION** Write the answer in scientific notation.

15. $(4.2 \times 10^3)(1.5 \times 10^6)$

16. $(1.2 \times 10^{-3})(6.7 \times 10^{-7})$

17. $(6.3 \times 10^5)(8.9 \times 10^{-12})$

18. $(7.2 \times 10^9)(9.4 \times 10^8)$

19. $(2.1 \times 10^{-4})^3$

20. $(4.0 \times 10^3)^4$

21. $\frac{8.1 \times 10^{12}}{5.4 \times 10^9}$

22. $\frac{1.1 \times 10^{-3}}{5.5 \times 10^{-8}}$

23. $\frac{(7.5 \times 10^8)(4.5 \times 10^{-4})}{1.5 \times 10^7}$

EXAMPLES 3 and 4on pp. 331–332
for Exs. 24–39**SIMPLIFYING ALGEBRAIC EXPRESSIONS** Simplify the expression. Tell which properties of exponents you used.

24. $\frac{w^{-2}}{w^6}$

25. $(2^2y^3)^5$

26. $(p^3q^2)^{-1}$

27. $(w^3x^{-2})(w^6x^{-1})$

28. $(5s^{-2}t^4)^{-3}$

29. $(3a^3b^5)^{-3}$

30. $\frac{x^{-1}y^2}{x^2y^{-1}}$

31. $\frac{3c^3d}{9cd^{-1}}$

32. $\frac{4r^4s^5}{24r^4s^{-5}}$

33. $\frac{2a^3b^{-4}}{3a^5b^{-2}}$

34. $\frac{y^{11}}{4z^3} \cdot \frac{8z^7}{y^7}$

35. $\frac{x^2y^{-3}}{3y^2} \cdot \frac{y^2}{x^{-4}}$

36. 🇺🇸 **TAKS REASONING** What is the simplified form of $\frac{2x^2y}{6xy^{-1}}$?

Ⓐ $\frac{y^2}{3}$

Ⓑ $\frac{xy^2}{3}$

Ⓒ $\frac{x}{3}$

Ⓓ $\frac{1}{3}$