

**LESSON**  
**8.2****Practice C**

For use with pages 495–501

**Simplify the expression. Write your answer using exponents.**

1.  $\frac{15^2 \cdot 15^9}{15^6}$

2.  $\frac{6^{13}}{6^4 \cdot 6^5}$

3.  $\left(-\frac{8}{9}\right)^7$

4.  $8^{13} \cdot \frac{1}{8^6}$

5.  $\left(\frac{1}{5}\right)^7 \cdot 5^{17}$

6.  $10^8 \cdot \left(-\frac{1}{10}\right)^3$

**Simplify the expression.**

7.  $\left(-\frac{a}{b}\right)^7$

8.  $\left(\frac{3x^6}{y^9}\right)^4$

9.  $\left(\frac{m^7}{2n^{10}}\right)^6$

10.  $\left(\frac{4a^2}{5b^3}\right)^3$

11.  $\left(\frac{7x^3}{8y^7}\right)^2$

12.  $\left(\frac{3x^5}{10y^2}\right)^3 \cdot \frac{5}{x^4}$

13.  $\frac{1}{4x^5} \cdot \left(\frac{2x^2}{y^3}\right)^5$

14.  $\frac{3y^3}{5} \cdot \left(\frac{10x^7}{9y^8}\right)^2$

15.  $\left(-\frac{6}{x}\right)^3 \cdot \left(\frac{x^4}{3y^7}\right)^5$

16. Find the values of  $x$  and  $y$  if you know that  $\frac{b^x}{b^y} = b^5$  and  $\frac{b^{x+2}}{b^{2y}} = b^4$ . Explain how you found your answer.

17. **U.S. Postal Service** In 2004, the U.S. Postal Service handled 97,926,396 pieces of first class mail and 848,633 pieces of priority mail. Use order of magnitude to estimate how many times greater a volume of first class mail the U.S. Postal Service handled than the volume of priority mail.

18. **Large Numbers** Very large numbers are named differently in the American and British systems. In the American system, one quintillion is the name for the number  $10^{18}$ . In the British system, one quintillion is the name for the number  $10^{30}$ . How many times larger is one quintillion in the British system than in the American system?

19. **Lawn Ornaments** You have learned how to make lightweight plant containers using a mixture of peat, sand, and cement. You are going to take these skills and make lawn ornaments in the shapes of spheres. Use the formula for volume  $V = \frac{4}{3}\pi r^3$  to write an expression for the volume of each sphere shown.

