Name _____ Date _____

LESSON 7.2

Practice C

For use with the lesson "Apply Exponent Properties Involving Quotients"

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.