Name _____ Date _____

LESSON 8.1

Practice B

For use with pages 488–494

Simplify the expression. Write your answer using exponents.

1. $5^4 \cdot 5^8$
2. $(-4)^7 \cdot (-4)^3$
3. $(-10)^5 \cdot (-10)^2$
4. $8^2 \cdot 8^4 \cdot 8$
5. $2^5 \cdot 2 \cdot 2^4$
6. $(3^5)^2$
7. $(9^3)^7$
8. $(15^2)^4$
9. $[(-4)^5]^9$
10. $(13 \cdot 19)^4$
11. $(48 \cdot 27)^6$
12. $(135 \cdot 8)^5$

Simplify the expression.

13. $x^5 \cdot x^2$
14. $y^3 \cdot y \cdot y^4$
15. $a^{10} \cdot a^2 \cdot a^6$
16. $(z^5)^5$
17. $(b^7)^2$
18. $[(b + 1)^2]^3$
19. $(-3x)^4$
20. $-(3x)^4$
21. $(2ab)^5$
22. $(2x^3y)^6$
23. $(3m^7)^4 \cdot m^3$
24. $4p^2 \cdot (3p^5)^2$

Find the missing exponent.

25. $x^6 \cdot x^? = x^{12}$
26. $(x^4)^? = x^{12}$
27. $(3z^?)^3 = 27z^{18}$

28. **Newspaper Circulation** In 1996, the newspaper circulation in the country of Algeria was approximately 10^3 times the newspaper circulation in the country of Mauritania. The newspaper circulation in Mauritania was 10^3. What was the newspaper circulation in Algeria?

29. **Metric System** The metric system has names for very large weights.
    - **a.** One gigaton is 10^2 times the weight of a hectaton. One hectaton is 10^2 ton. Write one gigaton in tons.
    - **b.** One teraton is 10^9 times the weight of a kiloton. One kiloton is 10^3 ton. Write one teraton in tons.
    - **c.** One exaton is 10^6 times the weight of a teraton. Use your answer to part (b) to write one exaton in tons.

30. **Wall Mural** You are designing a wall mural that will be composed of squares of different sizes. One of the requirements of your design is that the side length of each square is itself a perfect square.
    - **a.** If you represent the side length of a square as x^2, write an expression for the area of a mural square.
    - **b.** Find the area of a mural square when $x = 5$.
    - **c.** Find the area of a mural square when $x = 10$.