8-1 Skills Practice: *Apply Exponent Properties Involving Products*   Alg 1

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

    a. $5^4 \cdot 5^8$ **b.** $(-4)^7 \cdot (-4)^3$

    c. $(-10)^5 \cdot (-10)^2$ **d.** $8^2 \cdot 8^4 \cdot 8$

    e. $2^5 \cdot 2 \cdot 2^4$ **f.** $(3^5)^2$

    g. $(9^3)^7$ **h.** $(15^2)^4$

    i. $[(-4)^5]^9$ **j.** $(13 \cdot 19)^4$

    k. $(48 \cdot 27)^6$ **l.** $(135 \cdot 8)^5$

2. **Simplify the expression.**

                                                    b. $y^3 \cdot y \cdot y^4$

    a. $x^5 \cdot x^2$

    c. $a^{10} \cdot a^2 \cdot a^6$ **d.** $(z^5)^5$

    e. $(b^7)^2$ **f.** $[(b+1)^2]^3$

    g. $(-3x)^4$ **h.** $-(3x)^4$

i. $(2ab)^5$

j. $(2x^3y)^6$

k. $(3m^7)^4 \cdot m^3$

l. $4p^2 \cdot (3p^5)^2$

3. **Find the missing exponent.**

   a. $x^6 \cdot x^7 = x^{12}$

   b. $(x^4)^? = x^{12}$

   c. $(3z^?)^3 = 27z^{18}$

4. 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?

5. 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.

6. 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 $x = 10$.