Name _____ Class _____ Date _____

Reteaching 8-3

Multiplication Properties of Exponents

OBJECTIVE: Multiplying powers with the same base

MATERIALS: None

- A power is an expression in the form a^n.
- To multiply powers with the same base, add the exponents
  $a^m \cdot a^n = a^{m+n}$

Example

Simplify $4^6 \cdot 4^3$.

$4^6 \cdot 4^3$

$= 4^{6+3}$ ← **Rewrite as one base with the exponents added.**

$= 4^9$ ← **Add the exponents.**

So $4^6 \cdot 4^3 = 4^9$.

Exercises

Complete each equation.

1. $8^2 \cdot 8^3 = 8^{\square}$
2. $2^{\square} \cdot 2^6 = 2^9$
3. $a^{12} \cdot a^{\square} = a^{15}$
4. $x^{\square} \cdot x^5 = x^6$
5. $b^{-4} \cdot b^3 = b^{\square}$
6. $6^4 \cdot 6^{\square} = 6^2$
7. $3^4 \cdot 3^8 = 3^{\square}$
8. $c^{\square} \cdot c^{-7} = c^{11}$
9. $10^{-6} \cdot 10^{-3} = 10^{\square}$

Simplify each expression.

10. $3x^2 \cdot 4x \cdot 2x^3$
11. $m^2 \cdot 3m^4 \cdot 6a \cdot a^{-3}$
12. $p^3q^{-1} \cdot p^2q^{-8}$
13. $5x^2 \cdot 3x \cdot 8x^4$
14. $x^2 \cdot y^5 \cdot 8x^5 \cdot y^{-2}$
15. $7y^2 \cdot 3x^2 \cdot 9$
16. $2y^2 \cdot 3y^2 \cdot 4y^5$
17. $x^4 \cdot x^{-5} \cdot x^4$
18. $x^{12} \cdot x^{-8} \cdot y^{-2} \cdot y^3$
19. $6a^2 \cdot b \cdot 2a^{-1}$
20. $r^6 \cdot s^{-3} \cdot r^{-2} \cdot s$
21. $3p^{-2} \cdot q^3 \cdot p^3 \cdot q^{-2}$