Name _____ Class _____ Date _____

Reteaching 7-3

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. $3p^{-2} \cdot q^3 \cdot p^3 \cdot q^{-2}$

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