

Name: _____



PRACTICE



TUTORIAL

1-6 Additional Practice

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Leveled Practice In 1–4, use the properties of exponents to write an equivalent expression for each given expression.

1. $5^3 \cdot 5^4 = 5^3 \square^4$
 $= \square \square$

2. $\frac{4^9}{4^3} = 4^9 \square^3$
 $= \square \square$

3. $(7^2)^6 = 7^2 \square^6$
 $= \square \square$

4. $2^4 \cdot 6^4 = (\square \cdot \square)^4$
 $= \square \square$

5. Simplify the expression $(x^{12})^3$.

6. Simplify the expression $(-12c^5)(3c^4)$.

7. Use the properties of exponents to simplify the expression $\frac{5^{22}}{5^{13}}$.

8. Use the properties of exponents to write an equivalent expression for $(3 \cdot 6)^2$.

9. Make Sense and Persevere Compare the two expressions. ©MP.1

a. Is the expression $a^{12} \cdot a^4$ equivalent to $a^8 \cdot a^8$? Explain.

b. Does $a^{12} \cdot a^4 = a^8 \cdot a^8$ for all values of a ? Explain.



10. A company manufactures photo cells. It uses the expression $(2x^3)^3$ millimeters per second to calculate the maximum capacity of a photo cell with area x^3 square millimeters. Use a property of exponents to simplify this expression.

11. a. Use a property of exponents to write $(2m)^4$ as a product of powers.

b. **Generalize** Describe the property of exponents that you used. © MP.7

12. **Higher Order Thinking** Find the two integers, m and n , that make the equation $(2x^n y^2)^m = 4x^6 y^4$ true.

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13. Simplify the expression $(4x^5)(5x^6)$.

14. You are given the expression $\frac{12^8}{12^4}$ to simplify.

PART A

Which equation shows the correct property of exponents to use?

- (A) $\frac{a^m}{a^n} = a^{m+n}$ (C) $\frac{a^m}{a^n} = a^{m-a}$
(B) $\frac{a^m}{a^n} = a^{m-n}$ (D) $\frac{a^m}{a^n} = a^{n-m}$

PART B

Simplify the expression. Write your answer using exponential notation.

