

LESSON
8.1
Practice C
For use with pages 488–494
Simplify the expression. Write your answer using exponents.

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| 1. $(-9)^{10} \cdot (-9)^4$ | 2. $10^3 \cdot 10^5 \cdot 10$ | 3. $(-7) \cdot (-7)^3 \cdot (-7)^4$ |
| 4. $(4^8)^7$ | 5. $(11^3)^9$ | 6. $[(-6)^6]^3$ |
| 7. $(20 \cdot 31)^5$ | 8. $(125 \cdot 8)^8$ | 9. $[(-16) \cdot 26]^6$ |

Simplify the expression.

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| 10. $x^4 \cdot x \cdot x^7$ | 11. $[(c + 5)^3]^6$ |
| 12. $(-4c^7)^3$ | 13. $-(4c^7)^3$ |
| 14. $(5x^8y^5)^4$ | 15. $(-10a^7b)^5$ |
| 16. $(5p^3)^3 \cdot 2p^4$ | 17. $10m^4 \cdot (2m^5)^6$ |
| 18. $(6x^3)^2(-4x^5)^3$ | 19. $-(4n^4)^3(-12n^5)$ |
| 20. $\left(\frac{1}{3}z^4\right)^3(3z^2)^4$ | 21. $(-10c)^3(-2c^2)^5$ |

Find the missing exponent.

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| 22. $(5d^4)^? = 625d^{16}$ | 23. $(2a^4)^? \cdot 3a^5 = 96a^{25}$ | 24. $5a^6 \cdot (10a^5)^? = 5000a^{21}$ |
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25. Write three expressions that involve products of powers, powers of powers, or powers of products and are equivalent to $24x^{12}$.
26. **Personal Computers** In 2001, there were 10^3 personal computers in use in Samoa. The number of personal computers in use in Bahrain in 2001 was 10 times the number used in Samoa. The number of personal computers in use in Australia in 2001 was 10 times the number used in Bahrain. How many personal computers were in use in Australia in 2001? *Explain* how you got your answer.
27. **Bananas** In 1999, Venezuela produced approximately 10^6 metric tons of bananas. This is 10^2 times the number of bananas produced in Samoa in 1999. How many metric tons of bananas were produced in Samoa in 1999? *Explain* how you got your answer.
28. **Storage Cubes** You are designing open storage cubes that will hang on the walls of your room. These cubes will be artistic as well as functional. One of the requirements of your design is that the side length of the cube be a perfect square.
- If you represent the side length of a cube as x^2 , write an expression for the volume of a wall cube.
 - Find the volume of a wall cube when $x = 5$.
 - Find the volume of a wall cube when $x = 10$.