

LESSON 8.1 Practice B
For use with pages 488-494

Simplify the expression. Write your answer using exponents.

1. $5^4 \cdot 5^8$ 5^{12}
2. $(-4)^7 \cdot (-4)^3$ $(-4)^{10}$
3. $(-10)^5 \cdot (-10)^2$ $(-10)^7$
4. $8^2 \cdot 8^4 \cdot 8$ 8^7
5. $2^5 \cdot 2 \cdot 2^4$ 2^{10}
6. $(3^5)^2$ 3^{10}
7. $(9^3)^7$ 9^{21}
8. $(15^2)^4$ 15^8
9. $[(-4)^5]^9$ $(-4)^{45}$
10. $(13 \cdot 19)^4$ $13^4 \cdot 19^4$
11. $(48 \cdot 27)^6$ $48^6 \cdot 27^6$
12. $(135 \cdot 8)^5$ $135^5 \cdot 8^5$

Simplify the expression.

13. $x^5 \cdot x^2$ x^7
14. $y^3 \cdot y \cdot y^4$ y^8
15. $a^{10} \cdot a^2 \cdot a^6$ a^{18}
16. $(z^5)^5$ z^{25}
17. $(b^7)^2$ b^{14}
18. $[(b+1)^2]^3$ $(b+1)^6$
19. $(-3x)^4 (-3)^4 x^4 = 81x^4$
20. $-(3x)^4 - 1 \cdot 3^4 x^4 = -81x^4$
21. $(2ab)^5 2^5 a^5 b^5 = 32a^5 b^5$
22. $(2x^3y)^6 2^6 x^{18} y^6 = 64x^{18} y^6$
23. $(3m^7)^4 \cdot m^3 3^4 m^{28} m^3 = 81m^{31}$
24. $4p^2 \cdot (3p^5)^2 4p^2 \cdot 3^2 p^{10} = 36p^{12}$

Find the missing exponent.

25. $x^6 \cdot x^? = x^{12}$ 6
26. $(x^4)^? = x^{12}$ 3
27. $(3z^2)^3 = 27z^{18}$ 6

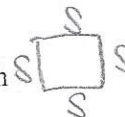
28. Newspaper Circulation In 1996, the newspaper circulation in the country of Algeria was approximately 10^3 times the newspaper circulation in the country of Mauritania. The newspaper circulation in Mauritania was 10^3 . What was the newspaper circulation in Algeria?

$$10^3 \cdot 10^3 = 10^6$$

29. Metric System 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. $10^2 \cdot 10^2 = 10^4$
- b. One teraton is 10^9 times the weight of a kiloton. One kiloton is 10^3 ton. Write one teraton in tons. $10^9 \cdot 10^3 = 10^{12}$
- c. One exaton is 10^6 times the weight of a teraton. Use your answer to part (b) to write one exaton in tons. $10^6 \cdot 10^{12} = 10^{18}$

30. Wall Mural 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. $A = (x^2)^2$
- b. Find the area of a mural square when $x = 5$. $A = (5^2)^2 = 5^4 = 625 u^2$
- c. Find the area of a mural square when $x = 10$.

$$A = (10^2)^2 = 10^4 = 10000 u^2$$