

Lesson 1-6: Use Properties of Integer Exponents

1. Sample answer: The properties are shortcuts for simplifying the expression by adding, subtracting, multiplying, or dividing either the base or the exponents. The simplified expression is equivalent to the original expression.
2. 7
3. Kristin is correct. Sample answer: The Power of a Power Property says that when you raise a power to another power, you multiply the exponents. $2 \times 4 = 8$, so the exponent should be 8.
4. No; Sample answer: In the expression $2^3 \times 5^3$, the exponents are the same and the bases are different. Tyler should have used the Product of Powers Property and multiplied the bases and kept the exponent the same, 10^3 .
5. 7^{16}
6. 8^8
7. $4^2 \times 7^2 \text{ ft}^2$ and $(28)^2 \text{ ft}^2$
8. 18^5
9. +; 2^{12}
10. -; 8^4
11. x; 3^{20}
12. 3×2 ; 9
13. a. Sample answer: Keep the base and add the exponents.
 - b. Sample answer: Keep the base and subtract the exponents.
 - c. Sample answer: Keep the base and multiply the exponents.
 - d. Sample answer: Keep the exponent and multiply the bases.
14. A, B, D
15. 4^{12}
16. 3^9
17. 4^7
18. 12^4
19. Sample explanation: Alberto incorrectly divided the bases. He should have kept the base 5 and subtracted the exponents to get 5^3 .
20. No; Sample answer: The value of the first expression is $8^{1+5} = 8^6$. The value of the second expression is $(8^2)^5 = 8^{10}$.
21. Yes; Sample answer: $(3^2)^{-3} = (3^3)^{-2} = 1/3^6 = \frac{1}{729}$
22. No; Sample answer: The value of the first expression is $3^{2+(-3)} = 3^{-1} = \frac{1}{3}$. The value of the second expression is $3^{3+(-2)} = 3^1 = 3$.
23. 10^1 m
24. $(\frac{1}{2})^9$
25. $3^5 \times b^5$
26. C, F

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27. a. $2^3 = 8$
b. C