

7-3

Practice B

Form K

More Multiplication Properties of Exponents

Simplify each expression.

1. $(v^4)^2$

2. $(a^5)^7$

3. $(n^4)^{-6}$

4. $h(h^{-3})^{-10}$

5. $(x^3)^{\frac{2}{3}}y^3$

6. $(3q)^5$

7. $(a^4)^6(b^5)^{-2}$

8. $(m^2)^8(n^0)^4$

9. $\left(2t^{\frac{1}{2}}\right)^{-4}$

10. $(5k^9)^{-3}$

11. $(3s^4)^3s^2$

12. $(bc^3)^{\frac{1}{5}}$

13. $\left(mn^{\frac{2}{5}}p\right)^0$

14. $\left(f^2g^{\frac{3}{2}}\right)(fg^4)^{-1}$

15. $a(a^{-3}b^{-4})^{-2}b^{-3}$

16. $(5x^{-2})^2(y^7z^{-5})^{-4}$

17. $c^{10}\left(c^{\frac{1}{4}}d^{-3}\right)^4d^3$

18. $7t^{11}u^3(-4t^{-9})^2u^{-5}$

Simplify. Write each answer in scientific notation.

19. $(4 \times 10^3)^2$

20. $(7 \times 10^8)^4$

21. $(1.4 \times 10^{-8})^3$

22. $(5 \times 10^{-7})^3$

23. $(2.5 \times 10^{10})^2$

24. $(4.8 \times 10^4)^{-2}$

25. The radius of a cylinder is 2.9×10^5 in. The height of the cylinder is 3.8×10^4 in. What is the volume of the cylinder? (Hint: $V = \pi r^2 h$)

26. The side length of a square is 9.5×10^2 cm. What is the area of the square?

Complete each equation.

27. $(n^3)^5 = n^{\square}$

28. $(a^7)^{\square} = a^{-21}$

29. $(j^{\square})^{-8} = j^{-3}$

30. $(t^{-2})^{\square} = t^{\frac{1}{2}}$

31. $(5g^4)^{\square} = \frac{1}{125g^{12}}$

32. $(m^2n^{-4})^{\square} = \frac{m^4}{n^8}$

33. **Reasoning** Demonstrate why you multiply the exponents when simplifying $(3^4)^3$.

Simplify each expression.

34. $(4.895)^{-11}(4.895)^{11}$

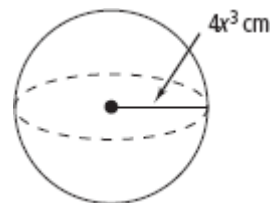
35. $-7xy^{-3}z^3(0)^{-10}$

36. $4^{\frac{3}{2}}(8d)^3$

37. $(10^8)^{-5}(3.6 \times 10^{-8})^3$

38. The volume of a sphere can be determined by the formula

$V = \frac{4}{3}\pi r^3$, where r is the radius. Find the volume of the sphere shown at the right in terms of x . Use 3.14 for π .



39. The volume of a circular cone can be determined by the formula

$V = \frac{1}{3}\pi r^2 h$, where r is the radius of the base and h is the height of the cone. Find the volume of the cone shown at the right in terms of b . Use 3.14 for π .

