

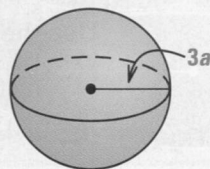
NCLS Math 7 Lesson 4 Homework

SIMPLIFYING EXPRESSIONS Simplify, if possible. Write your answer as a power or as a product of powers.

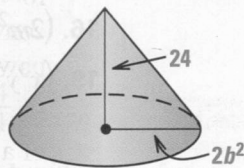
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|--------------------------------|----------------------------|------------------------------|---------------------|
| 22. $3^4 \cdot 3^6$ | 23. $5^8 \cdot 5^3$ | 24. $(2^3)^2$ | 25. $(7^4)^2$ |
| 26. $x \cdot x^6$ | 27. $(3 \cdot 7)^2$ | 28. $(2x)^2$ | 29. $(-5a)^3$ |
| 30. $(-2m^4n^6)^2$ | 31. $[(-4)^2]^3$ | 32. $[(-5xy)^2]^5$ | 33. $[(5 + x)^3]^6$ |
| 34. $[(2x + 3)^3]^2$ | 35. $(3b)^3 \cdot b$ | 36. $5^3 \cdot (5a^4)^2$ | |
| 37. $4x \cdot (x \cdot x^3)^2$ | 38. $(-3a)^5 \cdot (4a)^2$ | 39. $-(3x)^2 \cdot (7x^4)^2$ | |
| 40. $2x^3 \cdot (3x)^2$ | 41. $3y^2 \cdot (2y)^3$ | 42. $(-ab)(a^2b)^2$ | |

P453, #22 - 42

- 75. GEOMETRY CONNECTION** The volume of a sphere is given by $V = \frac{4}{3}\pi r^3$, where r is the radius and π is approximately 3.14. What is the volume of the sphere in terms of a ?



- 76. GEOMETRY CONNECTION** The volume of a cone is given by $V = \frac{1}{3}\pi r^2h$, where r is the radius of the base, h is the height, and $\pi \approx 3.14$. What is the volume of the cone in terms of b ?



P454, #75 - 76

SIMPLIFYING EXPRESSIONS Rewrite the expression with positive exponents.

- | | | | |
|-------------------|------------------------|-------------------------------|---|
| 30. x^{-5} | 31. $3x^{-4}$ | 32. $\frac{1}{2x^{-5}}$ | 33. $x^{-2}y^4$ |
| 34. x^4y^{-7} | 35. $8x^{-2}y^{-6}$ | 36. $\frac{1}{9x^{-3}y^{-1}}$ | 37. $\frac{1}{4x^{-10}y^{14}}$ |
| 38. $(-9)^0x$ | 39. $(-4x)^{-3}$ | 40. $(-10a)^0$ | 41. $(3xy)^{-2}$ |
| 42. $(6a^{-3})^3$ | 43. $\frac{8}{m^{-2}}$ | 44. $\frac{1}{(4x)^{-5}}$ | 45. $\left(\frac{-4x^2}{2x^{-1}}\right)^{-1}$ |

P459, #30 - 45

- 61. VISUAL THINKING** Sketch the graphs of $y = 2^x$ and $y = \left(\frac{1}{2}\right)^x$. How are the graphs related?
- 62. CRITICAL THINKING** Sketch the graphs of $y = 3^x$ and $y = \left(\frac{1}{3}\right)^x$. Use these graphs and the ones you sketched in Exercise 61 to predict how the graphs of $y = b^x$ and $y = \left(\frac{1}{b}\right)^x$ are related.
- 63. COMMON POINTS** What point do all graphs of the form $y = a^x$ have in common? Is there a point that all graphs of the form $y = 2(a)^x$ have in common? If so, name the point.
- 64. SAVINGS ACCOUNT** You started a savings account in 1990. The balance A is modeled by $A = 450(1.06)^t$, where $t = 0$ represents the year 2000. What is the balance in the account in 1990? in 2000? in 2010?

P460, #61 - 64