LESSON 8.2

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# Practice A

For use with pages 456–461

**Complete the table.**

| | *Exponent, n* | 3 | 2 | 1 | 0 | −1 | −2 | −3 |
|---|---|---|---|---|---|---|---|---|
| **1.** | Power, $2^n$ | 8 | | | | | | |
| **2.** | Power, $3^n$ | 27 | | | | | | |
| **3.** | Power, $4^n$ | 64 | | | | | | |

**Evaluate the exponential expression. Write your answer as a fraction in simplest form.**

**4.** $3^{-3}$ **5.** $2^{-5}$ **6.** $5^0$

**7.** $8^0 \cdot 2^{-3}$ **8.** $3^5 \cdot 3^{-4}$ **9.** $5^{-7} \cdot 5^9$

**10.** $(2^3)^{-2}$ **11.** $(6^{-1})^2$ **12.** $(-2^3)^{-1}$

**Rewrite the expression with positive exponents.**

**13.** $x^{-8}$ **14.** $3x^{-5}$ **15.** $\frac{7}{x^{-2}}$

**16.** $\frac{9}{x^{-4}}$ **17.** $8x^{-7}y^{-8}$ **18.** $3a^{-3}$

**19.** $\frac{3x^0}{y^{-3}}$ **20.** $(4x)^{-2}$ **21.** $(-2x)^{-4}$

**22.** $(5x)^0y^{-2}$ **23.** $\frac{1}{(3x)^{-3}}$ **24.** $(2x)^{-2} \cdot 3y^5$

**25.** Complete the table.

| $x$ | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y = 3^x$ | | | | | | | |

**26.** Graph the table of values you found in Exercise 25.

**27.** For the graph in Exercise 26, as the value of $x$ increases, what happens to the value of $y$?

**28.** Complete the table.

| $x$ | −3 | −2 | −1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y = \left(\frac{1}{2}\right)^x$ | | | | | | | |

**29.** Graph the table of values you found in Exercise 28.

**30.** For the graph in Exercise 29, as the value of $x$ increases, what happens to the value of $y$?

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# Practice C

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**Evaluate the exponential expression. Write your answer as a fraction in simplest form.**

1. $12^{-2}$
2. $\left(\frac{2}{5}\right)^{-3}$
3. $8^5(8^{-7})$
4. $(-10)^0 \cdot \frac{1}{3^{-3}}$
5. $6^{13} \cdot 6^{-10}$
6. $11^{-2} \cdot 0^{-6}$
7. $21^{-8} \cdot 21^8$
8. $-9 \cdot (-9)^{-3}$
9. $(5^3)^{-1}$
10. $10^{-3} \cdot 20^0$
11. $(-3^{-1})^{-5}$
12. $15^{-5} \cdot 0^9$

**Rewrite the expression with positive exponents.**

13. $14x^{-5}$
14. $\frac{4}{5^{-2}x^{-7}}$
15. $x^{-10}y^{21}$
16. $20x^{-8}y^{-8}$
17. $\frac{6}{18x^{-3}y^9}$
18. $(-11)^{-2}y^0$
19. $(7^{-2}x^8)^{-2}$
20. $(4x^{-4}y^{-12})^{-5}$
21. $\frac{-48x^{-6}y^4}{52x^9y^{-2}}$
22. $\frac{8^{-2}}{2^{-4}x^{-4}}$
23. $\frac{x^{-4}}{(12y^2)^{-2}}$
24. $\left(\frac{-10x^{-15}}{x^{-15}}\right)^{-5}$

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# Practice B

For use with pages 456–461

**Evaluate the exponential expression. Write your answer as a fraction in simplest form.**

1. $5^{-3}$
2. $\left(\frac{1}{3}\right)^{-1}$
3. $6(6^{-4})$
4. $-2^0 \cdot \frac{1}{4^{-2}}$
5. $3^5 \cdot 3^{-7}$
6. $7^3 \cdot 0^{-2}$
7. $10^{-2} \cdot 10^2$
8. $-2 \cdot (-2)^{-5}$
9. $(8^2)^{-1}$
10. $9^{-2} \cdot 12^0$
11. $(-4^{-3})^{-1}$
12. $1 \cdot 1^{-8}$

**Rewrite the expression with positive exponents.**

13. $4x^{-2}$
14. $\frac{1}{3x^{-4}}$
15. $x^3y^{-6}$
16. $7x^{-5}y^{-1}$
17. $\frac{1}{11x^{-2}y^{-7}}$
18. $(-12)^0y^{-2}$
19. $(9x)^{-4}$
20. $(2x^3y^{-8})^{-3}$
21. $(2^{-1}x^{-10})^7$
22. $\frac{15}{5y^{-3}}$
23. $\frac{1}{(8x^2)^{-3}}$
24. $\left(\frac{-12x^{-5}}{4x^{-5}}\right)^{-4}$

25. Complete the table.

| $x$ | $-2$ | $-1$ | $0$ | $1$ | $2$ |
|---|---|---|---|---|---|

26. Graph the table of values in Exercise 25.

27. For the graph in Exercise 26, as the value of $x$