

Practice C

For use with pages 456–461

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

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|-------------------------------------|---------------------------|---------------------------|
| 1. 12^{-2} | 2. $(\frac{2}{5})^{-3}$ | 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.

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|-----------------------------------|-----------------------------------|---|
| 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. $(\frac{-10x^{-15}}{x^{-15}})^{-5}$ |

25. Complete the table.

x	-2	-1	0	1	2
$y = (0.40)^x$					

26. Graph the table of values in Exercise 25.

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

28. Endangered Species Between 1990 and 2000, the population of an endangered species decreased at a rate of 0.1% per year. The population P in year t is given by $P = 1200(0.999)^t$, where $t = 0$ corresponds to 1995. Find the population of the species in 1990, 1995, 2000, and the projected population in 2010.

29. Town Population Between 1960 and 1990, the population of a town increased at a rate of 0.34% per year. The population P in year t is given by $P = 2000(1.0034)^t$, where $t = 0$ corresponds to 1980. Find the population of the town in 1960, 1970, 1980, and 1990.

30. Radium Isotope The half-life of the radium isotope Ra^{226} is about 1620 years. If there were initially 100 grams of Ra^{226} , then the number of grams remaining after h half-life periods is $W = 100(\frac{1}{2})^h$. Complete the table.

<i>Half-life period, h</i>	0	1	2	3	4	5	6
<i>Grams, W</i>							

31. Savings Account You started a savings account in 1990. The balance A is modeled by $A = 600(1.07)^t$, where $t = 0$ represents the year 2000. What is the balance in the account in 1990? in 2000? in 2010?