



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. $(\frac{1}{3})^{-1}$
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. $(\frac{-12x^{-5}}{4x^{-5}})^{-4}$

25. Complete the table.

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

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.

	1990	1995	2000	2010
t	$(t = -5)$	$(t = 0)$	$(t = 5)$	$(t = 15)$
$P = 1200(0.999)^t$				

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.

	1960	1970	1980	1990
t	$(t = -20)$	$(t = -10)$	$(t = 0)$	$(t = 10)$
$P = 2000(1.0034)^t$				

