

Practice A

For use with Pages 449–454

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.

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
3^x							

26. In Exercise 25, as the value of x increases, what happens to the value of 3^x ?

27. Complete the table.

x	-3	-2	-1	0	1	2	3
2^{-x}							

28. In Exercise 27, as the value of x increases, what happens to the value of 2^{-x} ?

Practice B

For use with Pages 449-454

Evaluate the exponential expression.

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
$y = (-2)^x$					

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

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