NAME

## **Practice** A

For use with pages 456-461

#### Complete the table.

LESSON

8.2

	Exponent, n	3	2	1	Ō	-1	-2	-3
1.	Power, $2^n$	8						
<sup>•</sup> 2.	Power, 3 <sup>n</sup>	27						
3.	Power, 4 <sup>n</sup>	64						

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

<b>4.</b> 3 <sup>-3</sup>	<b>5.</b> 2 <sup>-5</sup>	<b>6.</b> 5 <sup>0</sup>
<b>7.</b> $8^{0} \cdot 2^{-3}$	8. $3^5 \cdot 3^{-4}$	<b>9.</b> $5^{-7} \cdot 5^{9}$
<b>10.</b> $(2^3)^{-2}$	<b>11</b> . (6 <sup>-1</sup> ) <sup>2</sup>	<b>12.</b> $(-2^3)^{-1}$

Rewrite the expression with positive exponents.

<b>13.</b> $x^{-8}$	<b>14.</b> $3x^{-5}$	<b>15.</b> $\frac{7}{x^{-2}}$
<b>16.</b> $\frac{9}{x^{-4}}$	<b>17.</b> $8x^{-7}y^{-8}$	<b>18</b> . 3 <i>a</i> <sup>-3</sup>
<b>19.</b> $\frac{3x^0}{y^{-3}}$	<b>20.</b> $(4x)^{-2}$	<b>21</b> . (-2x) <sup>-4</sup>
<b>22.</b> $(5x)^0y^{-2}$	<b>23.</b> $\frac{1}{(3x)^{-3}}$	<b>24.</b> $(2x)^{-2} \cdot 3y$

**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 B

For use with pages 456-461

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

<b>1.</b> 5 <sup>-3</sup>	<b>2.</b> $\left(\frac{1}{3}\right)^{-1}$	<b>3</b> . 6(6 <sup>-4</sup> )
4. $-2^{\circ} \cdot \frac{1}{4^{-2}}$	5. $3^5 \cdot 3^{-7}$	<b>6</b> . $7^3 \cdot 0^{-2}$
7. $10^{-2} \cdot 10^{2}$	8. $-2 \cdot (-2)^{-5}$	<b>9</b> . (8 <sup>2</sup> ) <sup>-1</sup>
<b>10.</b> $9^{-2} \cdot 12^{0}$	<b>11.</b> $(-4^{-3})^{-1}$	<b>12</b> . 1 • 1 <sup>-8</sup>

### Rewrite the expression with positive exponents.

<b>14.</b> $\frac{1}{3x^{-4}}$	<b>15.</b> $x^3y^{-6}$
<b>17.</b> $\frac{1}{11x^{-2}y^{-7}}$	<b>18.</b> $(-12)^0 y^{-2}$
<b>20.</b> $(2x^3y^{-8})^{-3}$	<b>21.</b> $(2^{-1}x^{-10})^7$
<b>23.</b> $\frac{1}{(8x^2)^{-3}}$	<b>24.</b> $\left(\frac{-12x^{-5}}{4x^{-5}}\right)^{-4}$
	14. $\frac{1}{3x^{-4}}$ 17. $\frac{1}{11x^{-2}y^{-7}}$ 20. $(2x^3y^{-8})^{-3}$ 23. $\frac{1}{(8x^2)^{-3}}$

**25.** Complete the table.

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

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)', 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)
$P = 1200(0.999)^{\prime}$				

**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)'				



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