

## 8.4 Use Scientific Notation

pp. 512–518

### EXAMPLE

Write the number in scientific notation.

a.  $2097 = 2.097 \times 10^3$       Move decimal point left 3 places. Exponent is 3.

b.  $0.00032 = 3.2 \times 10^{-4}$       Move decimal point right 4 places. Exponent is  $-4$ .

Write the number in standard form.

a.  $4.3201 \times 10^2 = 432.01$       Exponent is 2. Move decimal point right 2 places.

b.  $2.068 \times 10^{-3} = 0.002068$       Exponent is  $-3$ . Move decimal point left 3 places.

### EXERCISES

30. Write 78,120 in scientific notation.      31. Write  $7.5 \times 10^{-5}$  in standard form.

Evaluate the expression. Write your answer in scientific notation.

32.  $(6.3 \times 10^3)(1.9 \times 10^{-5})$

33.  $\frac{6.5 \times 10^9}{1.6 \times 10^{-4}}$

34. **MASS** The mass  $m_1$  of a gate of the Thames Barrier in London is about  $1.5 \times 10^6$  kilograms. The mass  $m_2$  of the Great Pyramid of Giza is about  $6 \times 10^9$  kilograms. Find the ratio of  $m_1$  to  $m_2$ . What does the ratio tell you?

### EXAMPLES 1, 2, 4, and 5

on pp. 512–514  
for Exs. 30–34

## 8.5 Write and Graph Exponential Growth Functions

pp. 520–527

### EXAMPLE

Graph the function  $y = 4^x$  and identify its domain and range.

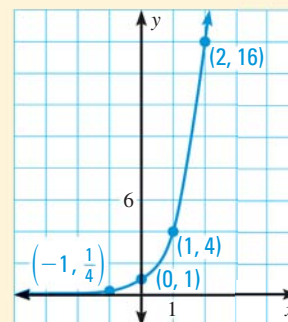
**STEP 1** Make a table. The domain is all real numbers.

$x$	$-1$	$0$	$1$	$2$
$y$	$\frac{1}{4}$	$1$	$4$	$16$

**STEP 2** Plot the points.

**STEP 3** Draw a smooth curve through the points.

**STEP 4** Identify the range. As you can see from the graph, the range is all positive real numbers.



### EXERCISES

Graph the function and identify its domain and range.

35.  $y = 6^x$

36.  $y = (1.1)^x$

37.  $y = (3.5)^x$

38.  $y = \left(\frac{5}{2}\right)^x$

39. Graph the function  $y = -5 \cdot 2^x$ . Compare the graph with the graph of  $y = 2^x$ .

### EXAMPLES 2 and 3

on p. 521  
for Exs. 35–39