

### GUIDED PRACTICE

1. **Vocabulary** Explain how you can tell whether a number is written in *scientific notation*.

**SEE EXAMPLE 1** Find the value of each power of 10.

p. 452    2.  $10^6$                       3.  $10^{-5}$                       4.  $10^{-4}$                       5.  $10^8$

**SEE EXAMPLE 2** Write each number as a power of 10.

p. 453    6. 10,000                      7. 0.000001                      8. 100,000,000,000,000,000

**SEE EXAMPLE 3** Find the value of each expression.

p. 453    9.  $650.3 \times 10^6$                       10.  $48.3 \times 10^{-4}$                       11.  $92 \times 10^{-3}$

**SEE EXAMPLE 4** 12. **Astronomy** A light-year is the distance that light travels in a year and is equivalent to  $9.461 \times 10^{12}$  km. Write this distance in standard form.

p. 454

**SEE EXAMPLE 5** 13. Order the list of numbers from least to greatest.  
 $8.5 \times 10^{-1}$ ,  $3.6 \times 10^8$ ,  $5.85 \times 10^{-3}$ ,  $2.5 \times 10^{-1}$ ,  $8.5 \times 10^8$

p. 454

### PRACTICE AND PROBLEM SOLVING

#### Independent Practice

For Exercises	See Example
14–17	1
18–20	2
21–24	3
25–26	4
27	5

Find the value of each power of 10.

14.  $10^3$                       15.  $10^{-9}$                       16.  $10^{-12}$                       17.  $10^{14}$

Write each number as a power of 10.

18. 0.01                      19. 1,000,000                      20. 0.0000000000000001

Find the value of each expression.

21.  $9.2 \times 10^4$                       22.  $1.25 \times 10^{-7}$                       23.  $42 \times 10^{-5}$                       24.  $0.05 \times 10^7$

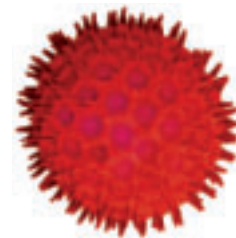
25. **Biology** The human body is made of about  $1 \times 10^{13}$  cells. Write this number in standard form.

26. **Statistics** At the beginning of the twenty-first century, the population of China was about 1,287,000,000. Write this number in scientific notation.

27. Order the list of numbers from least to greatest.  
 $2.13 \times 10^{-1}$ ,  $3.12 \times 10^2$ ,  $1.23 \times 10^{-3}$ ,  $2.13 \times 10^1$ ,  $1.32 \times 10^{-3}$ ,  $3.12 \times 10^{-3}$

28. **Health** Donnell is allergic to pollen. The diameter of a grain of pollen is between  $1.2 \times 10^{-5}$  m and  $9 \times 10^{-5}$  m. Donnell's air conditioner has a filter that removes particles larger than  $3 \times 10^{-7}$  m. Will the filter remove pollen? Explain.

29. **Entertainment** In the United States, a CD is certified platinum if it sells 1,000,000 copies. A CD that has gone 2 times platinum has sold 2,000,000 copies. How many copies has a CD sold if it has gone 27 times platinum? Write your answer in scientific notation.



Grain of pollen, enlarged 1050 times

Write each number in scientific notation.

30. 40,080,000                      31. 235,000                      32. 170,000,000,000  
 33. 0.0000006                      34. 0.000077                      35. 0.0412

#### Extra Practice

Skills Practice p. S16

Application Practice p. S34