

2-10**Study Guide and Intervention****Scientific Notation**

A number in scientific notation is written as the product of a factor that is at least one but less than ten and a power of ten.

Example 1 Write 8.65×10^7 in standard form.

$$\begin{aligned} 8.65 \times 10^7 &= 8.65 \times 10,000,000 & 10^7 &= 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \text{ or } 10,000,000 \\ &= \underline{86,500,000} & & \text{Move the decimal point 7 places to the right.} \end{aligned}$$

Example 2 Write 9.2×10^{-3} in standard form.

$$\begin{aligned} 9.2 \times 10^{-3} &= 9.2 \times \frac{1}{10^3} & 10^{-3} &= \frac{1}{10^3} \\ &= 9.2 \times 0.001 & \frac{1}{10^3} &= \frac{1}{1,000} \text{ or } 0.001 \\ &= \underline{0.0092} & & \text{Move the decimal point 3 places to the left.} \end{aligned}$$

Example 3 Write 76,250 in scientific notation.

$$\begin{aligned} \underline{76,250} &= 7.625 \times 10,000 & \text{The decimal point moves 4 places.} \\ &= 7.625 \times 10^4 & \text{The exponent is positive.} \end{aligned}$$

Example 4 Write 0.00157 in scientific notation.

$$\begin{aligned} \underline{0.00157} &= 1.57 \times 0.001 & \text{The decimal point moves 3 places.} \\ &= 1.57 \times 10^{-3} & \text{The exponent is negative.} \end{aligned}$$

Exercises

Write each number in standard form.

1. 5.3×10^1

2. 9.4×10^3

3. 7.07×10^5

4. 2.6×10^{-3}

5. 8.651×10^{-2}

6. 6.7×10^{-6}

Write each number in scientific notation.

7. 561

8. 14

9. 56,400,000

10. 0.752

11. 0.0064

12. 0.000581

2-10**Practice****Scientific Notation**

Write each number in standard form.

1. 9.03×10^2

2. 7.89×10^3

3. 4.115×10^5

4. 3.201×10^6

5. 5.1×10^{-2}

6. 7.7×10^{-5}

7. 3.85×10^{-4}

8. 1.04×10^{-3}

Write each number in scientific notation.

9. 4,400

10. 75,000

11. 69,900,000

12. 575,000,000

13. 0.084

14. 0.0099

15. 0.000000515

16. 0.0000307

17. Which number is greater: 3.5×10^4 or 2.1×10^6 ?

18. Which number is less: 7.2×10^7 or 9.9×10^5 ?

19. **POPULATION** The table lists the populations of five countries. List the countries from least to greatest population.

Country	Population
Australia	2.0×10^7
Brazil	1.9×10^8
Egypt	7.7×10^7
Luxembourg	4.7×10^5
Singapore	4.4×10^6

Source: The World Factbook

20. **SOLAR SYSTEM** Pluto is 3.67×10^9 miles from the Sun. Write this number in standard form.

21. **MEASUREMENT** One centimeter is equal to about 0.0000062 mile. Write this number in scientific notation.

22. **DISASTERS** In 2005, Hurricane Katrina caused over \$125 billion in damage in the southern United States. Write \$125 billion in scientific notation.