

1.6 Algebra 2

Scientific Notation

A number is written in **scientific notation** when it is of the form $c \times 10^n$ where $1 \leq c < 10$ and n is an integer.

Number	Standard form	Scientific notation
Two million	2,000,000	2×10^6
Five thousandths	0.005	5×10^{-3}

GUIDED PRACTICE for Examples 1 and 2

- Write the number 539,000 in scientific notation. Then write the number 4.5×10^{-4} in standard form.

5.39×10^5
 $.00045$

EXAMPLE 1 Write numbers in scientific notation

- a. 42,590,000 b. 0.0000574
- 4.259×10^7 5.74×10^{-5}

EXAMPLE 2 Write numbers in standard form

- a. 2.0075×10^6 1.685×10^{-4}
- $2,007,500$ $.0001685$

EXAMPLE 3 Order numbers in scientific notation

Order 103,400,000, 7.8×10^8 , and 80,760,000 from least to greatest.

1.034×10^8 7.8×10^8 8.076×10^7

$80,760,000; 103,400,000; 7.8 \times 10^8$

EXAMPLE 4 Compute with numbers in scientific notation

Evaluate the expression. Write your answer in scientific notation.

- a. $(8.5 \times 10^2)(1.7 \times 10^6)$ b. $(1.5 \times 10^{-3})^2$ c. $\frac{1.2 \times 10^4}{1.6 \times 10^3}$
- $8.5 \times 10^2 \cdot 1.7 \times 10^6$ $.0000225$ 7.5
- 1445000000 2.25×10^{-6} 7.5×10^0
- 1.445×10^9

GUIDED PRACTICE for Examples 3 and 4

1. Order 2.7×10^6 , 3.401×10^6 , and 27,500 from least to greatest.

③ 2.7×10^6 ② 3.401×10^6 ① 27,500

2. Evaluate the expression. Write your answer in scientific notation.

3. $(1.3 \times 10^{-5})^2$
 1.69×10^{-10}

4. $\frac{4.5 \times 10^8}{1.5 \times 10^{-2}}$
 30000000
 3×10^7

5. $(1.1 \times 10^7)(4.2 \times 10^2)$
 462000000
 4.62×10^9

Homework

Worksheet