

Lesson 4-9 Scientific Notation

Definition

- Scientific Notation is a shorthand way of writing numbers using powers of 10. Scientific notation is also written as a product of two factors

How to write:

- First Factor is always greater than or equal to one and less than 10.
- Second Factor is a power of 10
- EXAMPLE:

$$7.5 \cdot 10^{12} =$$

$$7,500,000,000,000$$

Converting Large numbers to scientific Notation

■ 4,200,000

Move decimal to left to get a decimal greater than one but less than 10.
Drop any trailing zeros
Number of moves is exponents

Sample (1) Converting

- 425,000,000
- 543,300,000,000

Converting Small numbers to scientific notation

■ 0.0000769

- Move the decimal to get a decimal > 1 but < 10
- Drop leading zeros
- Exponent is the opposite of the number of moves (negative)

Samples converting small numbers to scientific notation

- 0.00021

- 0.000000803

Writing scientific notation in expanded form

- If NEGATIVE exponents move decimal to the left
- If POSITIVE exponents move decimal to the right.

Sample converting scientific notation to standard form

- 2.53×10^{-8}

- 1.23×10^9

Multiplication and Scientific Notation

- Example: $(4 \times 10^4)(6 \times 10^6)$
- Steps:
 - Use commutative property of multiplication to multiply non powers
 - Add exponents
 - Rewrite and products that are greater than one in scientific notation

Example: $(4 \times 10^4)(6 \times 10^6)$

$$4 \times 6 \times 10^4 \times 10^6$$

Example: $(1.5 \times 10^{-10})(6 \times 10^6)$

Practice and Homework

- PB 4-9 all
- HW page 212 (14-40)
even