

10.5 Reading Scientific Notation

Study Tip
 Scientific notation is used to write very small and very large numbers.

PRIOR KNOWLEDGE

Evaluate each expression.

1. 10^3

2. 10^{-4}

3. 10^5

4. 10^{-2}

5. 10^{10}

6. 10^{-5}

Scientific Notation

A number is written in **scientific notation** when it is represented as the product of a factor and a power of 10. The factor must be greater than or equal to 1 and less than 10.

The factor is greater than or equal to 1 and less than 10.

8.3×10^{-7}

The power of 10 has an integer exponent.

SCIENTIFIC NOTATION
 (A number greater than or equal to 1 & less than 10) X (a power of 10)

EXAMPLE 1

Tell whether the number is written in scientific notation. Explain.

a. 2.5×10^{-9}

b. 0.5×10^6

Examples of Scientific Notation	Non-Examples of Scientific Notation

Key Idea

Writing Numbers in Standard Form

The absolute value of the exponent indicates how many places to move the decimal point.

- If the exponent is negative, move the decimal point to the left.
- If the exponent is positive, move the decimal point to the right.

EXAMPLE 2

Write each number in standard form.

a. 3.22×10^{-4}

b. 7.9×10^5

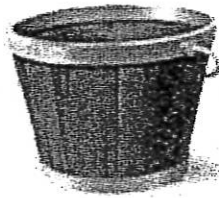
EXAMPLE 3

An object with a lesser density than water will float. An object with a greater density than water will sink. Use each given density (in kilograms per cubic meter) to explain what happens when you place a brick and an apple in water.

Water: 1.0×10^3

Brick: 1.84×10^3

Apple: 6.41×10^2



EXAMPLE 4

A female flea consumes about 1.4×10^{-5} liter of blood per day. A dog has 100 female fleas. How much blood do the fleas consume per day?

MINI ASSESSMENT

Write the numbers below in standard form.

a. 5×10^{-4}

b. 1.66×10^3

c. 3.89×10^{-5}

d. 4.567×10^8