Slides from Scientific Notation: Basics (Tutorial 1)

Scientific Notation
What, Why, and How

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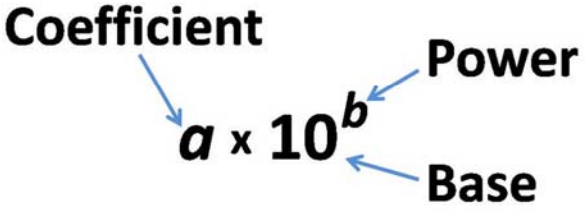
This handout contains selected slides to use when reviewing this tutorial topic with or without the video. To access all slides, open thumbnail link on the tutorial interface.

What Is Scientific Notation?

Scientific notation is used to write very large or very small numbers.

Scientific Notation



A number is in scientific notation if it is in the form of

$a \times 10^b$

where $1 \leq a < 10$

and b **is an integer.**

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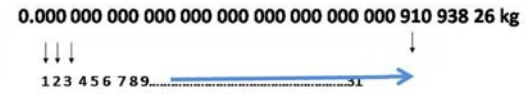
Standard ⟹ Scientific Notation

0.000 000 000 000 000 000 000 000 000 000 910 938 26 kg



$9.1093826 \times 10^{-31}$

Scientific Notation to Standard Form

$a \times 10^b$ If the power is positive, move the decimal to the right

$a \times 10^b$ If the power is negative, move the decimal to the left

Powers of 10

$10^{-3} = \frac{1}{1000}$ or 0.001

$10^{-2} = \frac{1}{100}$ or 0.01

Powers of 10

$10^1 = 10$

$10^2 = 100$

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Standard ⟹ Scientific Notation

5,973,600,000,000,000,000,000,000

5.9736×10^{24}

Standard ⟹ Scientific Notation

0.00621

6.21×10^{-3}

Standard ⟹ Scientific Notation

0.00621

6.21×10^{-3}

6.21×0.001

0.00621

Scientific ⟹ Standard Notation

4.327×10^{-3}

0.004327

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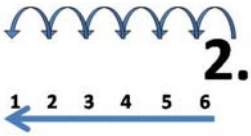
Scientific ⟹ Standard Notation



2.31×10^{-6}

1 2 3 4 5 6

0.00000231

Scientific ⟹ Standard Notation

2.36×10^{5}

$2.36 \times 100{,}000$

236,000

Scientific ⟹ Standard Notation

$2.36 \times 100{,}000$

236,000

2.36×10^{5}

236,000

Summary

Scientific notation is used to write very large or very small numbers as the product of two factors

$a \times 10^{b}$

where $1 \le a < 10$ and b is an integer.