

Scientific Notation

Scientific notation is a useful way of expressing very large or very small numbers. Writing numbers in scientific notation is an important piece of your science education and it is necessary for you to be comfortable with this skill.

Examples:

Write the following numbers in *scientific notation*.

- 15,545,000 kg =
- 0.000132 m =

Write the following numbers in *standard notation* (i.e.: take it out of scientific notation):

- 6.67×10^{11} N =
- 4.3×10^{-3} g =

A positive exponent means:

A negative exponent means:

Complete each of the following exercises. Include units.

1. Scientists have estimated that the area of Earth covered by water is 70.98% or 362,031,100 km². Express this value in scientific notation.
2. The brightest comet on record, the Great Comet of 1843, had a tail that trailed for 205,000,000 miles. Express this distance in scientific notation.
3. Mount Everest, an eastern Himalayan peak on the Tibet-Nepal border was discovered to be the world's highest mountain in March of 1856. The Survey Department of the Government of India computed its height to be 29,002 feet. Express this height in scientific notation.
4. The speed of light in outer space is about 300,000,000 m/s. What is this speed expressed in scientific notation?
5. One of the smallest of all free-living organisms, *Mycoplasma laidlawii*, was first discovered in sewage in 1936. During its early existence, its diameter can be as small as only 0.0000001 m. Express this diameter in scientific notation.
6. The speed with which the shutter of a camera opens and shuts can be changed on certain models of cameras. On most 35 mm cameras, the fastest shutter speed is 0.001 seconds. Express this time in scientific notation.