

Exponential Notation

Scientific Notation



Scientific Notation is used to **express the very large and the very small numbers so that problem solving will be made easier.**

Examples:

The mass of one gold atom is

.000 000 000 000 000 000 000 000 327 grams.



One gram of hydrogen contains

602 000 000 000 000 000 000 000 hydrogen atoms.



Scientists can work with very large and very small numbers more more easily if the numbers are written in scientific notation.

How wide is our universe?

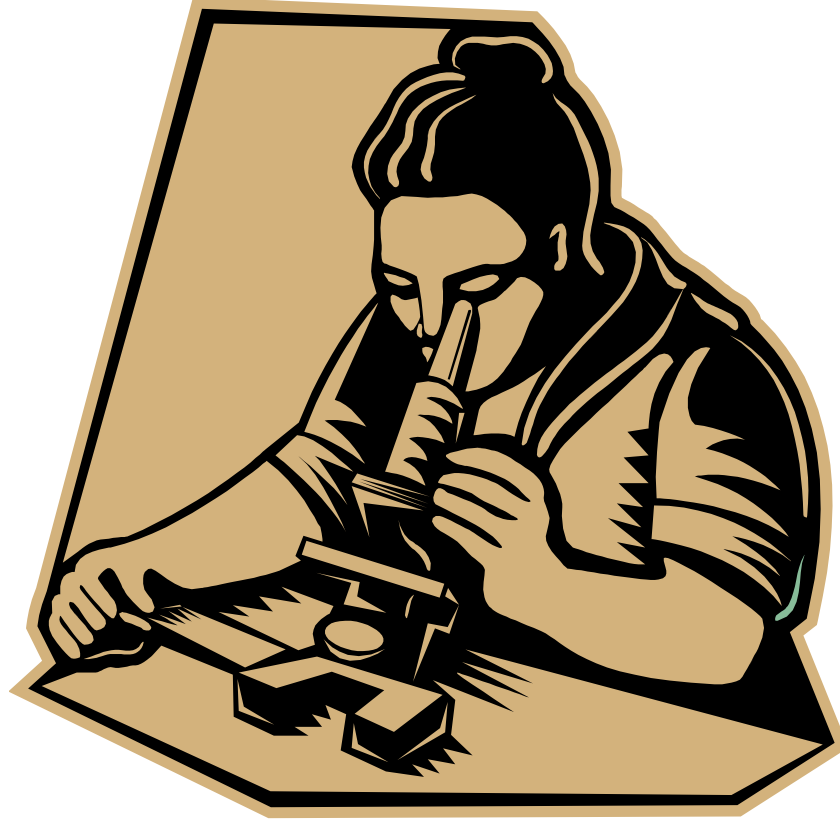
210,000,000,000,000,000,000 miles
(22 zeros)

This number is written in decimal notation. When numbers get this large, it is easier to write them in scientific notation.

The nucleus of a human cell is about 7×10^{-6} meters in diameter. What is the length in standard notation?

.000007





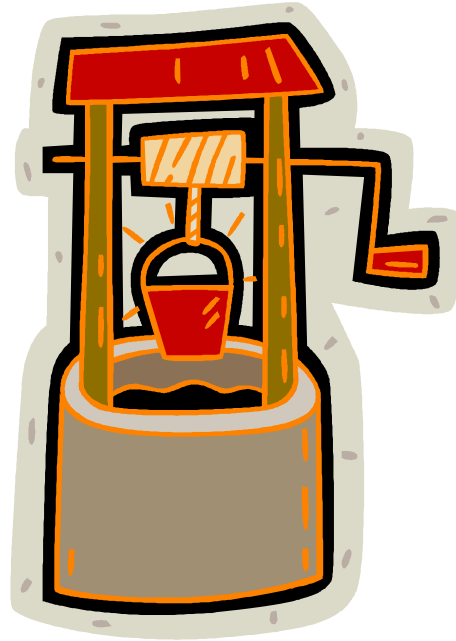
A ribosome, another part of a cell, is about 0.000000003 of a meter in diameter. Write the length in scientific notation.

$$3 \times 10^{-9}$$

- The U.S. has a total of 1.2916×10^7 acres of land reserved for state parks. Write this in standard form.



12,916,000 acres



In the United States, 15,000,000 households use private wells for their water supply. Write this number in scientific notation.

$$1.5 \times 10^7$$