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We come across large numbers in our day to day life .we can express large number conveniently expressed using exponents. Every large number can be expressed as k x 10â•¿ , where k is some natural number .however , for the sake of uniformity , we write the number in the form k x 10â•¿ where k is terminating decimal number greater than or equal to 1 and less than 10 and n is a natural number .To express large number into standard form is scientific notation.

A number expressed in scientific notation - http://www.tutornext.com/math/scientific-notation.html is based on powers of 10. If n is a positive integer, then the mantissa of the scientific notation is multiplied by n factors of 10. If n is a negative integer, then the mantissa of the scientific notation is divided by n factors of 10.

Scientific notation rules

1) For the positive number, move the decimal point to the left to bring non-zero digit to the left of the decimal point.

Example of scientific notation: To express 41460. 5 in the standard form of decimal, we have to move decimal point 4 places on the left to get 4.14605 , so 41460.5 in the standard form of decimal is 4.14605 x 10â•´.

2) If the given number is less than one, then move the decimal point to the right to obtain one non â€“zero digit to the left of the decimal point. If the decimal point is moved p places to the right ,then multiply the new number by 10^-n to express the given number in the standard form of decimal

Example of scientific notation : To Express 0.03453 in the standard form of decimal we will have to move the decimal poit 2 places on the right to get 3.453 .so , 0.03453 in the standard form of decimal is 3.453 x 10^-2

Scientific notation word problems

Example 1: A lake covers an area of about 3.5*10^5 square feet and its average depth of lake is about 16 feet.Â Â Â Calculate the cubic feet of water in the lake.

Solution1) Volume of lake = area x depth

= 3.5 *10^5 x 16 cubic feet

= 56 *10^5 cubicfeet

= 5.6 x 10^6 cubic feet

Expanded form : The expanded form of a number can also be expressed in term of powers of 10 by using

10^0 = 1 , 10^1 = 10 , 10^2 = 100

Example of expanded form :

1) 6467 = 6 x1000+ 4 x 100+ 6 x10 + 7

2) 7465267= 7 x 1000000+ 4 x100000+6x10000+5x1000+2x100+6x10+7

= 7x10^6+4x10^5+6x10^4+x10^3+2x10^2+6x10^1+7x10^0

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