Scientific Notation

Scientific Notation is used for very large and very small numbers.

Scientific notation is a number x 10^n . The number is greater than 1 and less than 10 and so has only 1 digit to the left of the decimal. The exponent of 10, n, is any integer (positive or negative)

Example 2.345×10^9 5.1×10^{-7}

To write a scientific notation number in decimal form: move the decimal point the number of places in the exponent of 10: to the right if the exponent is positive and to the left if the exponent is negative.

Example: Write in decimal form:
8.342×10^7 The exponent of 10 is +7 so move the decimal 7 places to the right to get 83,420,000 We needed to add 0's as we moved right

2.448×10^{-5} The exponent of 10 is -5 so move the decimal 5 places to the left to get .00002448 We needed to add 0's as we moved left

To write a decimal form number in scientific notation: move the decimal point so the number is between 1 and 10. The number of places we move the decimal point is the exponent of 10. The exponent is negative if we moved right and positive if we moved left.

Example: Write in scientific notation
15,400,000 1.54×10^7 The exponent of 10 is +7 because we moved the decimal 7 places left.

.0000072 7.2×10^{-6} The exponent of 10 is -6 because we moved the decimal 6 places to the right.

Most calculators have a scientific notation function. It can look like EE or x10^n . When performing calculations of scientific notation numbers on the calculator be careful to use parentheses so the order of operations is correct.