Scientific Notation

What is Scientific Notation?

Scientific Notation – an efficient way of writing very large or very small numbers.

A number is written in scientific notation when a number greater than or equal to 1 but smaller than 10 is multiplied by a power of 10. There should only be one non-zero digit to the left of the decimal point.

Examples:

$1.27\ x\ 10^{5}$

This is an example of a large number because the sign on the exponent is positive.

$5.438\ x\ 10^{-4}$

This is an example of a small number because the sign on the exponent is negative.

How do you convert a number into scientific notation?

Step 1: Identify where the decimal point currently is in the number (even if it isn't shown)

Step 2: Starting from the left, identify the first "non-zero" digit.

Step 3: Identify how many positions the decimal point needs to be moved in order to place/relocate it immediately to the right of the first non-zero digit.

Step 4: Re-write the number by moving the decimal point to the desired location and adding " $x\ 10^{p}$ " to the right of the number. The "p" is the exponent and represents the number of places that the decimal point was moved. **"p" is positive if the decimal was moved to the left, and "p" is negative if the decimal was moved to the right.**

Examples: *Write the following numbers in scientific notation.*

General Form	234,576	0.0000030429	967.42	$45.2\ x10^{3}$
Scientific Not.	$2.34576\ x10^{5}$	$3.0429\ x10^{-6}$	$9.6742\ x10^{2}$	$4.52\ x10^{4}$

Note: Converting a number into scientific notation should not affect the number of significant figures it has.