SCIENTIFIC NOTATION

Scientific notation is simply a more efficient way to write numbers that are very large or very small. It's efficient because it shows magnitude very easily and usually eliminates a lot of zeroes.

Standard Form ⟶ Scientific Notation

EXAMPLE: *5,878,600,000,000*

Step 1

Change the number to a decimal between 1 and 10.

5,878,600,000,000
becomes
5.878600000000

Step 2

Because the decimal was moved to the left 12 times, multiply the new number by 10 to the power of 12.

5.878600000000
becomes
$5.8786 \cdot 10^{12}$

These steps can also be applied when working with a small number. If you want to change 0.00000055 to scientific notation, change the number to be between 1 and 10 (5.5). Then, because the decimal was moved 7 places to the right, we multiply by 10^{-7} to get $5.5 \cdot 10^{-7}$.

Scientific Notation ⟶ Standard Form

EXAMPLE 1: $7.38 \cdot 10^{9}$

Because the exponent is **positive**, move the decimal **to the right** the same number of times as the exponent (9 times in this case).

7.38
becomes
7,380,000,000

EXAMPLE 2: $5.76 \cdot 10^{-8}$

Because the exponent is **negative**, move the decimal **to the left** the same number of times as the exponent (8 times in this case).

5.76
becomes
0.0000000576