



Scientific Notation

Please work silently on the Do Now. Thanks!

Do Now

If $2^7 \times 5^3$ is multiplied out, what is the sum of the digits in the product?



Do Now

How many kilograms do you think the Sun weighs?

How many meters wide do you think a hydrogen atom is?



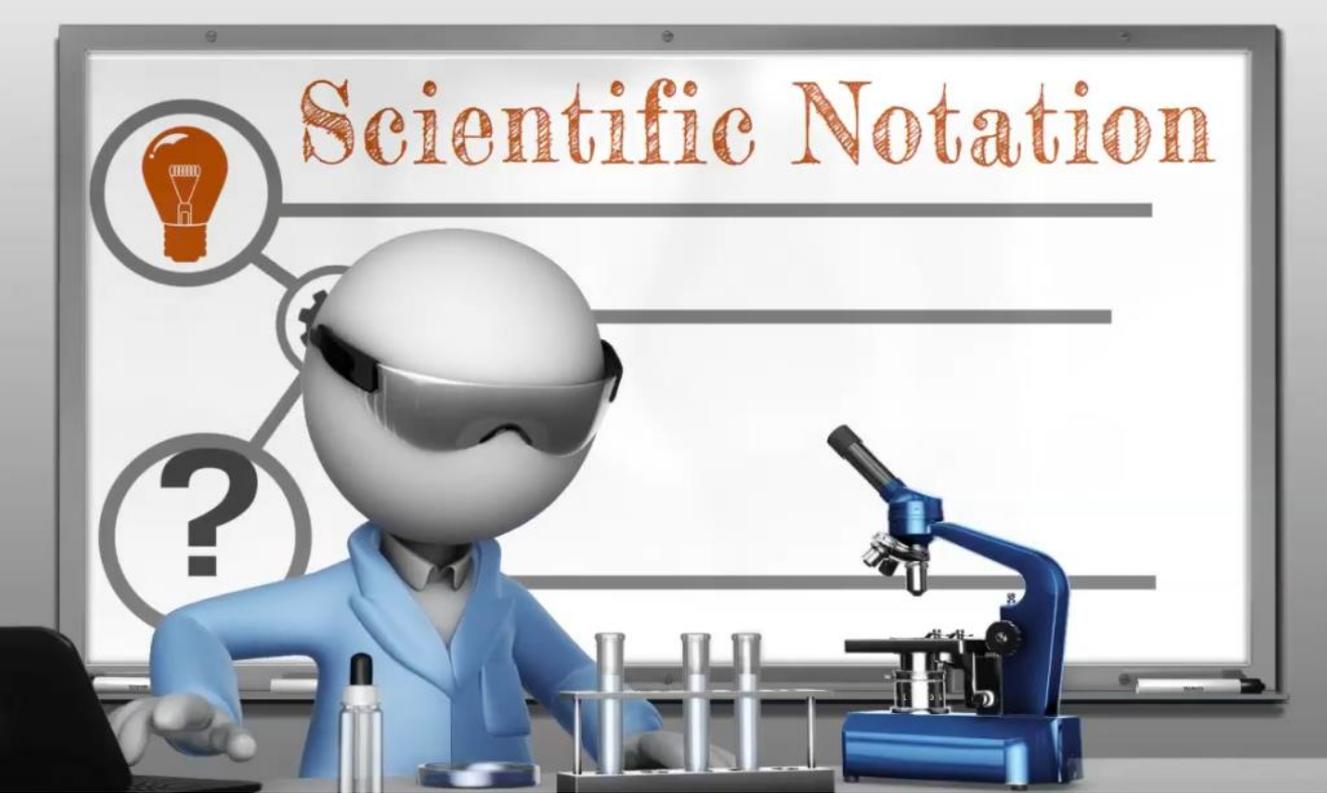
Scientific Notation: Numbers written as the product of two factors. One of the factors must be greater than or equal to 1 and less than 10. The other factor must be a power of 10.

Examples:

The mass of the Sun, written above, may be written as 2×10^{30} .

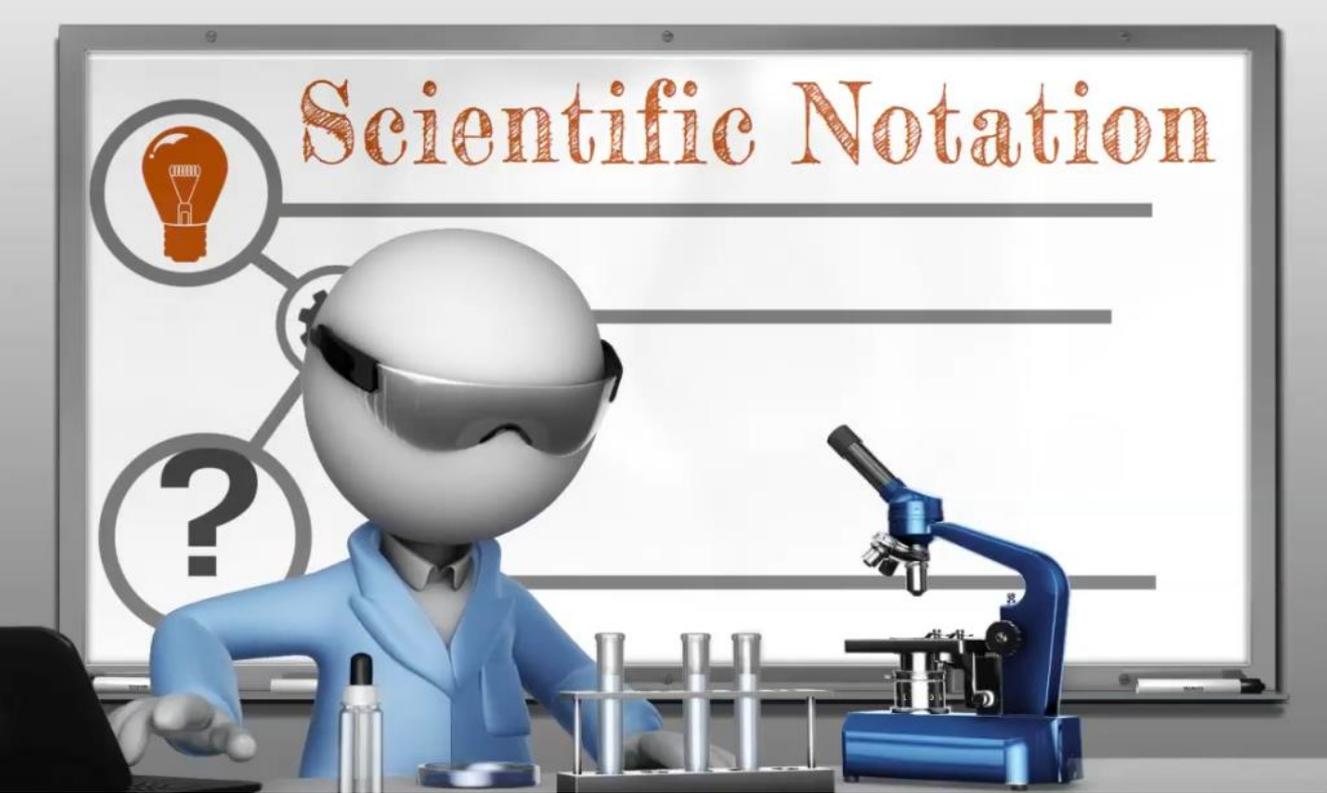
The width of a Hydrogen atom, written above, may be written as 1×10^{-10} .





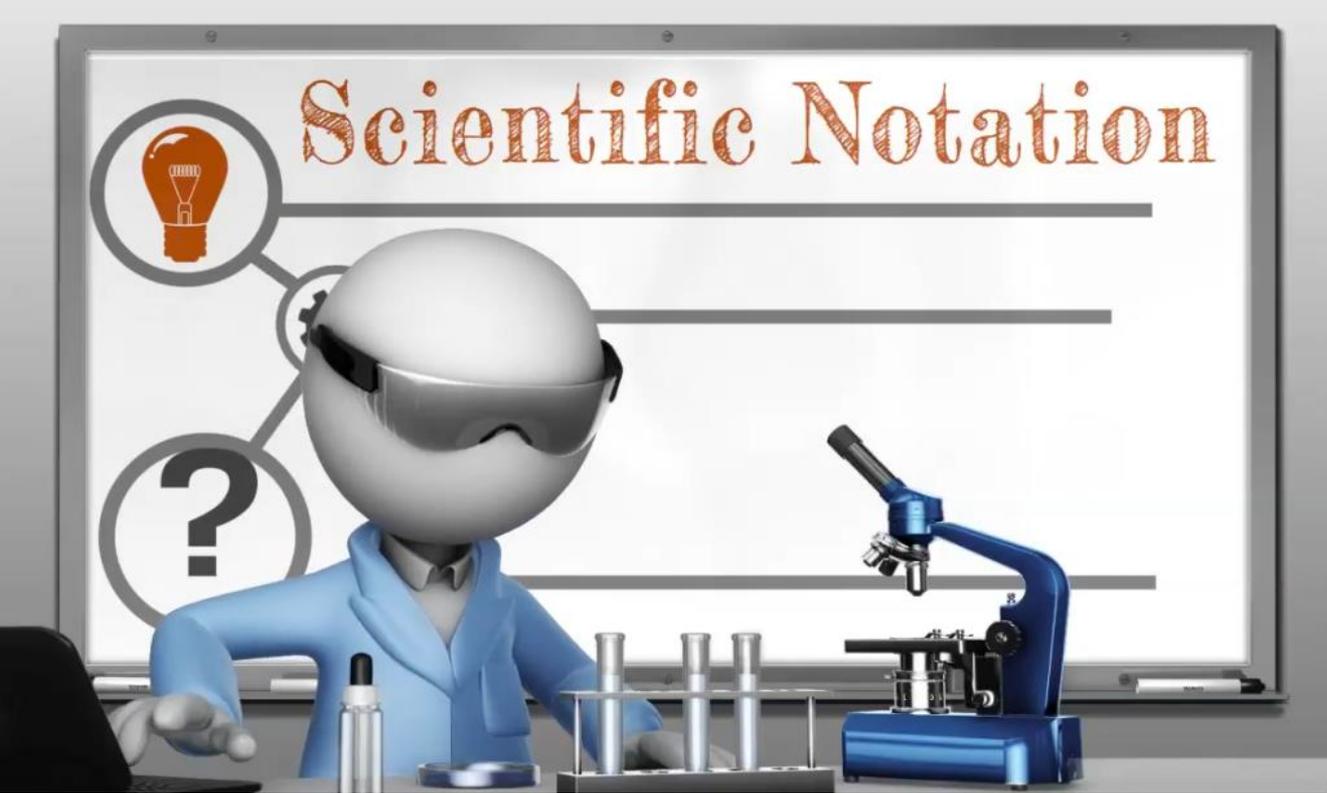
Yes
or
No?
...and
WHY????

$$1.6 \times 10^5$$



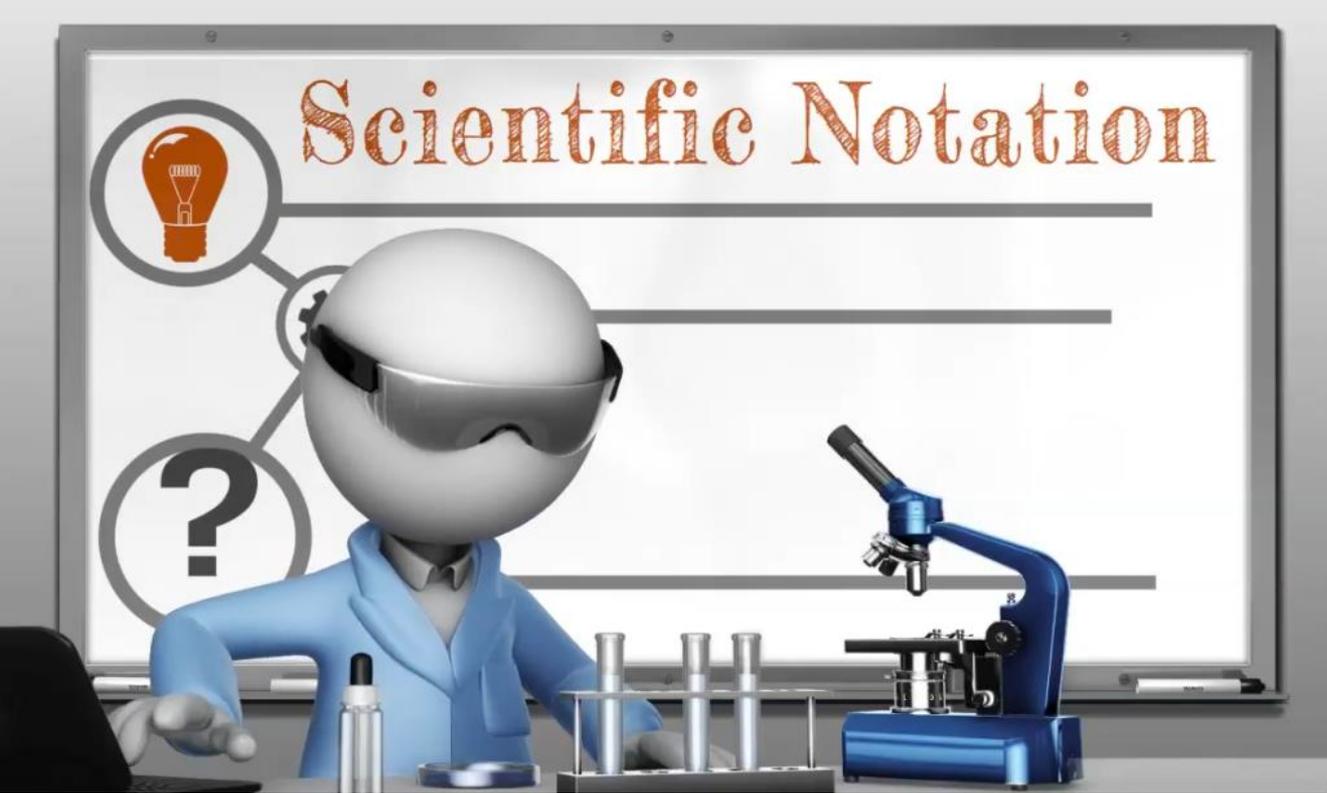
Yes
or
No?
...and
WHY????

$$50 \times 10^3$$



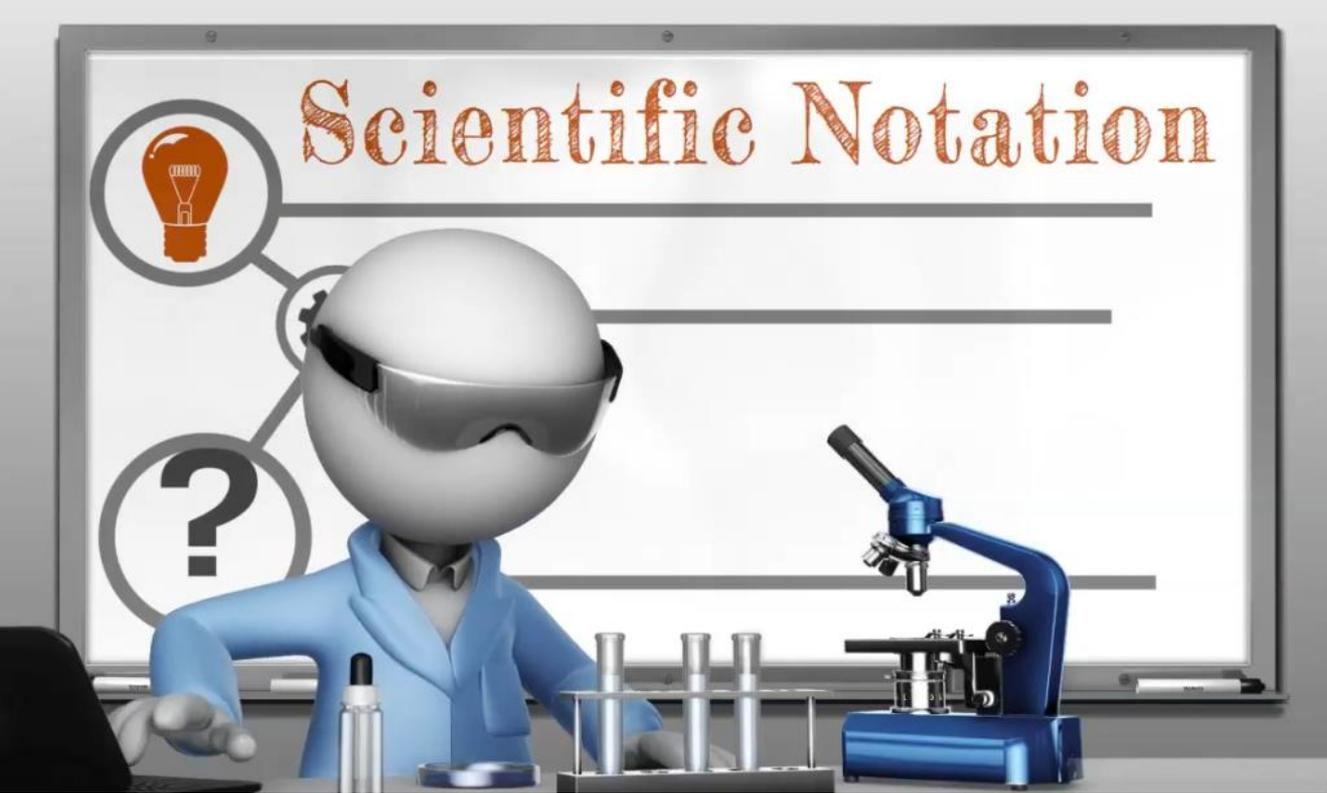
$$7 \times 10^{-9}$$

Yes
or
No?
...and
WHY????



Yes
or
No?
...and
WHY????

$$2.2 \times 8^4$$



Yes
or
No?
...and
WHY????

$$0.5 \times 10^{-7}$$

Wolfram Demo



Converting from Scientific Notation to Standard Notation:

Example: **5.24×10^7** ← Positive exponent so the number will be LARGE

3.25×10^{-5} ← Negative exponent so the number will be small



Try these on your own:

$$1.6 \times 10^5$$

$$2 \times 10^{-3}$$



Converting from Standard Notation to Scientific Notation:

The Mariana Makkar Method (MMM)

Example: **7,250,000**

Rewrite the number (exclude commas)

Place the decimal where it needs to go to give a number ≥ 1 , but < 10 .

Rewrite that number below.

Move the decimal to return the number to its original value. Represent that decimal move by multiplying by a power of 10.



Converting from Standard Notation to Scientific Notation:

The Mariana Makkar Method (MMM)

Example: **0.000314**

Rewrite the number (exclude commas)

Place the decimal where it needs to go to give a number ≥ 1 , but < 10 .

Rewrite that number below.

Move the decimal to return the number to its original value. Represent that decimal move by multiplying by a power of 10.



Try these on your own:

850,000,000

0.000002

