



Scientific notation

The exponent counts tens

- Today: what the power of ten is actually telling you.

The form

- One non-zero digit, then the point.
- 3.4×10^5 ✓ 34×10^4 ✗

Both equal 340 000. Only one is in the form.

Negative powers are SMALL

- $2 \times 10^{-3} = 0.002$.
- Not -2000 . Not negative at all.

Multiplying: add the exponents

- $(2 \times 10^3)(4 \times 10^5)$
- $= 8 \times 10^8.$

Coefficients multiply, powers add.

ADDING is different

- $3 \times 10^5 + 4 \times 10^5 = 7 \times 10^5$.
- NOT 7×10^{10} .

Same power? Just add the fronts. The power does not move.

Why not

- $300\,000 + 400\,000 = 700\,000$.
- $70\,000\,000\,000$ is a hundred thousand times too big.

The adding law does not exist. Check against real numbers.

How many times as much?

- 8×10^9 against 2×10^6 .
- Divide: $4 \times 10^3 = 4000$ times.

Your turn

- Write 5 400 000 and 0.00072 in the form.
- Then find how many times as much.

Count the tens. Do not count the digits.