

What is scientific notation and when do we use it?

### Scientific Notation

Shorthand way of writing very large or very small numbers

27,500,000,000

$$2.75 \times 10^{10}$$

decimal between  
1st and 2nd digits

exponent tells how  
many spaces the  
decimal has been  
moved

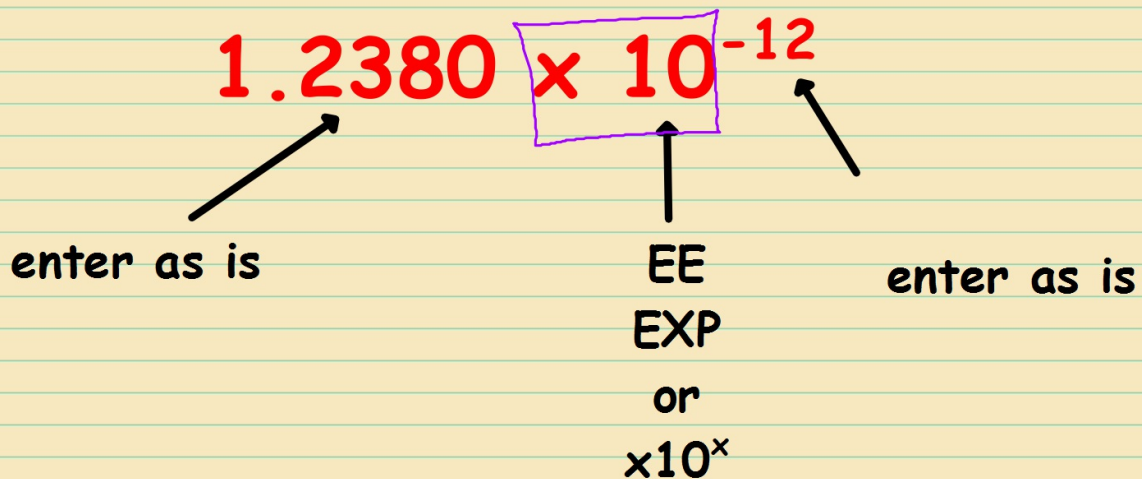
0.00000000000012380

$$1.2380 \times 10^{-12}$$

Everything here  
should be a sig fig

Negative exponents  
mean small numbers

## Entering Scientific Notation into your calculator:



**1.2380e-12**

We will be using scientific notation when we talk about numbers of particles of an element.

for example: How many atoms of gold are there in one Olympic medal?

You will need to know how to do math with scientific notation.

$$\frac{1.806 \times 10^{24}}{6.02 \times 10^{23}} = 3$$

↓

$$.3 \times 10^1 = 3$$

$$6.02 \times 10^{23} \times 15 = 9.03 \times 10^{24}$$

multiply

$$90.3 \times 10^{23}$$

make smaller ↓ ↓ make exponent larger

$$9.03 \times 10^{24}$$