

Multiplying by the following powers of 10 moves the decimal as follows:

- $10^4 = 10,000$ → The decimal moves to the
- $10^3 = 1,000$ → The decimal moves to the
- $10^2 = 100$ → The decimal moves to the
- $10^1 = 10$ → The decimal moves to the
- $10^0 = 1$ → The decimal does not move.
- $10^{-1} = 1/10 = 0.1$ → The decimal moves to the
- $10^{-2} = 1/100 = 0.01$ → The decimal moves to the
- $10^{-3} = 1/1,000 = 0.001$ → The decimal moves to the
- $10^{-4} = 1/10,000 = 0.0001$ → The decimal moves to the

Notice that *positive exponents* move the decimal to the *right* and *negative exponents* move the decimal to the *left*.

$$2.35 \times 10^4$$

$$-5.489 \times 10^{-8}$$

$$7.00305 \times 10^{-5}$$

Negative *5,489* hundred billionths.

700,305 ten billionths.

Note: In these examples, we are taking numbers out of scientific notation. Now we will learn how to write numbers in scientific notation!

425.89
425↓.89
4.2589

In scientific notation,
4.2589 is multiplied by
to get *425.89*.

0.0000136589
0↓.0000136589
1.36589

In scientific notation,
1.36589 is divided by
to get *0.0000136589*.

-0.005007
-0↓.005007
-5.007

In scientific notation,
-5.007 is divided by
to get *-0.005007*.

1000.0001 *m*

↓
1000.0001

1.0000001

— *or* —

1.0000001

Recall: kilo (k) means

0.00000000107 *sec*

↓
0.00000000107

1.07

— *or* —

1.07

Recall: nano means