

2-9 Scientific Notation

$$10^4 = 10 \cdot 10 \cdot 10 \cdot 10 = 10,000$$

$$10^3 = 10 \cdot 10 \cdot 10 = 1,000$$

$$10^2 = 10 \cdot 10 = 100$$

$$10^1 = 10$$

$$10^0 = 1$$

$$10^{-1} = \frac{1}{10} = 0.1$$

$$10^{-2} = \frac{1}{100} = 0.01$$

$$10^{-3} = \frac{1}{1000} = 0.001$$

positive exponents

decimal
to right.

$$7 \times 10 = 7.\underline{0}$$

$$8 \times 10^2 = 8 \times 100 = 8.\underline{00}$$

$$3 \times 10000 = 30000.$$

negative exponents

decimal to
left

$$2 \times 10^{-1} = 2 \times \frac{1}{10} = 0.2$$


$$2^{64} = 1.844674407 \boxed{\times} 10^{19}$$

factorpower of 10

1.84467440700000000000.

factor
 \times factor

product


base

factor ≥ 1 but < 10

5.34×10^4 scientific notation
53400 = 53,400 standard form

$$7.42 \times 10^5$$

$$7.42000 = 742,000$$

$$0.061 \times 10^{-2}$$

$$3.714 \times 10^2$$

$3.714 = 371.4$

place the
decimal
point
after

first non-zero number

$$6.17 \times 10^2$$

$$3.725 \underbrace{000}_\rightarrow$$

$$3.725 \times 10^6$$

Very large numbers
positive exponent

$$0.\underbrace{000}3.16$$

$$3.16 \times 10^{-4}$$

Very small numbers
negative exponent

14,140,000

1.414×10^7

0.00876

8.76×10^{-3}

0.114

1.14×10^{-1}