

Scientific Notation

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Writing **very large** or **very small** numbers can be simplified with scientific notation. A number can be written in scientific notation if it is between 1 and 10 and is multiplied by a power of 10.

EXAMPLES:

1, 200
grams

We can look at this large number as 1.2 multiplied by 10 three times.
The power is therefore 3.

1.2×10^3
1.2kg

8, 723, 000
metres

We can look at this large number as 8.723 multiplied by 10 six times.
The power is therefore 6.

8.723×10^6
8.723Mm

0.00315
seconds

We can look at this small number as 3.15 divided by 10 three times.
The power is therefore -3.

3.15×10^{-3}
3.15ms

Prefix	Symbol	Scientific Notation	Value	Example
Tera	T	10^{12}	1,000,000,000,000	2TB
Giga	G	10^9	1,000,000,000	100GB
Mega	M	10^6	1,000,000	6MV
Kilo	k	10^3	1,000	18kg
Base Unit		10^0	1	25m
Centi	c	10^{-2}	0.01	3cm
Milli	m	10^{-3}	0.001	4mm
Micro	μ	10^{-6}	0.000001	8 μ A
Nano	n	10^{-9}	0.000000001	50.67ns
Pico	p	10^{-12}	0.000000000001	22.8pg



Instructions: Write each number in scientific notation (include prefixes).

	Number	Base Unit	Scientific Notation
1	2220	metres	2.22×10^3 2.22km
2	0.0626	metres	
3	0.00912	grams	
4	0.032	seconds	
5	4118	metres	
6	9639	metres	
7	7,735,000	seconds	
8	0.0015	grams	
9	0.0383	metres	
10	1123	seconds	
11	6,408,000	metres	
12	0.0000068	grams	
13	1,738,000	seconds	
14	0.000000002204	seconds	
15	9,335,090,000	grams	
16	8,375,919,000,000	metres	



Instructions: Write each number in standard form (include prefixes).

	Scientific Notation	Standard Form
1	3.32×10^2	
2	1.378×10^{-3}	
3	4.997×10^3	
4	1.008×10^{-5}	
5	8.903×10^4	
6	3.56×10^{-4}	
7	7.5×10^6	
8	9.03×10^5	
9	8.227×10^7	
10	1.4678×10^{-8}	
11	7.785×10^9	
12	4.0347×10^{-6}	
13	8.8808×10^5	
14	6.4521×10^{-9}	
15	7.80903×10^8	
16	4.99109×10^6	

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Instructions: Write each number in scientific notation (include prefixes).

	Number	Base Unit	Scientific Notation
1	0.0043	seconds	
2	4350	metres	
3	3,307,000	metres	
4	0.0221	seconds	
5	8,175,000	grams	
6	9639	metres	
7	3,160,000,000	grams	
8	0.00000178	metres	
9	0.0912	metres	
10	4,483,010,000	grams	
11	8,755,500	metres	
12	0.00000201	grams	
13	5,550,300,000	seconds	
14	6,680,100,000,000	grams	
15	0.00000000421	metres	
16	0.00000000000081	grams	



Instructions: Write each number in standard form (include prefixes).

	Scientific Notation	Standard Form
1	7.42×10^2	
2	4.031×10^{-1}	
3	1.15×10^4	
4	8.997×10^{-3}	
5	1.586×10^3	
6	1.68×10^5	
7	1.929×10^{-4}	
8	7.136×10^{-5}	
9	6.382×10^{-6}	
10	9.8901×10^9	
11	4.251×10^{-8}	
12	3.3308×10^7	
13	5.1411×10^8	
14	8.9568×10^{10}	
15	5.8395×10^{-11}	
16	1.3067×10^{12}	