Scientific Notation

Power	As a Rational Number
$\times 10^{10}$	
$\times 10^{9}$	
$\times 10^{8}$	
$\times 10^{7}$	
$\times 10^{6}$	
$\times 10^{5}$	
$\times 10^{4}$	
$\times 10^{3}$	
$\times 10^{2}$	
$\times 10^{1}$	
$\times 10^{0}$	
$\times 10^{-1}$	
$\times 10^{-2}$	$\times 0.01$
$\times 10^{-3}$	
$\times 10^{-4}$	
$\times 10^{-5}$	
$\times 10^{-6}$	
$\times 10^{-7}$	
$\times 10^{-8}$	
$\times 10^{-9}$	
$\times 10^{-10}$	

1 200 000 in scientific notation is 1.2×10^6

Number	Scientific Notation
700	
4 300	
756 000	
6 400 000	
534 000 000	
0.673	
0.0056	
0.0000004	
0.0000000000845	

Represent these in Scientific Notation

345

7000

20 000

3 000 000

244 000 000

892 000 000

9 560 000 000

150 000 000 000

5808

0.000 063

5300

29 979 280 000

0.000 000 000 913

0.060 30

30 000 000 000

0.70

58

4

42 000

500

7 780 000

0.000 03

12

0.004 00

0.000 000 444

0.000 000 001

Write these in Scientific Notation.

If a satellite travels 62 000 000 miles from Earth.

In Australia, the people eat approximately 2 240 000 000 pounds of bread in a year.

Scientists discovered that the size of the Antarctic Ocean is 20 330 000 km^2.

The charge of a proton is 0.000 000 000 000 000 16 C.

The mass of earth is 5 980 000 000 000 000 000 000 000 kg

The width of the classroom is 6 m

A charge of 0. 000 000 000 000 000 000 16 C

96 740 m

500 000 000 Hz

227 000 000 000 km

0.000 000 008 s

1 990 000 000 000 000 000 000 kg

0.000 000 000 000 000 000 000 000 911 kg

Write these in Standard Notation.

Change each of the following back to its non-exponential form:

$$6 \cdot 10^{6}$$

$$4.4 \cdot 10^{4}$$

$$1.23 \cdot 10^{-4}$$

$$7.256\,41 \cdot 10^{3}$$

$$3.10 \cdot 10^{-5}$$

$$5.196 \cdot 10^{4}$$

$$8.4 \cdot 10^{-8}$$

$$6.67 \cdot 10^{0}$$

The volume of Lake Rason is approximately $2.56 \cdot 10^{5}$ km^3.

The speed of light is approximately $3.0 \cdot 10^{8}$ m/s.

A computer can perform $4.66 \cdot 10^{8}$ calculations per second.

We know that there are $3.4 \cdot 10^{9}$ particles of dust per cubic meter.

The sun is $1.5 \cdot 10^{11}$ meters from Earth.

To avoid confusion about the number of significant digits in a measurement, convert the measurement to scientific notation. When this is done, the digits in the decimal part of the number represent the significant digits.

Add or subtract. Use the correct amount of significant digits.

$8.8 \cdot 10^{6} + 4.6 \cdot 10^{6}$

$3.3 \cdot 10^{-4} + 8.1 \cdot 10^{-5}$

$5.48 \cdot 10^{-2} - 2.11 \cdot 10^{-2}$

$6.23 \cdot 10^{-9} - 8.5 \cdot 10^{-10}$

$2.2 \cdot 10^{4} + 3.3 \cdot 10^{5}$

$1.6 \cdot 10^{10} - 4.1 \cdot 10^{9}$

Multiply and divide. Use the correct amount of significant digits.

$(2 \cdot 10^{7})(2 \cdot 10^{4})$

$\frac{6.3 \cdot 10^{-2}}{3 \cdot 10^{-4}}$

$(2.5 \cdot 10^{4})\,(8.0 \cdot 10^{-2})$

$\frac{(4 \cdot 10^{6})}{(2 \cdot 10^{3})}$

$(2.5 \cdot 10^{8})\,(4.0 \cdot 10^{-3})$

$\frac{(7.2 \cdot 10^{-6})}{(1.2 \cdot 10^{5})}$

$\frac{1.3 \cdot 10^{2}}{3 \cdot 10^{1}}$

$\frac{(6.0 \cdot 10^{-5})}{(1.5 \cdot 10^{-9})}$

$\frac{4 \cdot 10^{6}}{2 \cdot 10^{3}}$