

Do Now

Rewrite each of the following as a power of 10.

You can use negative exponents:

- 1) 100 4) $\frac{1}{10}$
- 2) 10 5) $\frac{1}{100}$
- 3) 1

7.10

Scientific Notation



Distance from Earth to the Sun

150,000,000 km



Size of Bacterium

0.0000625 cm

Scientific Notation

This is way of writing very big or small numbers in an easier way.

$$150 = 1.5 \times 100 = 1.5 \times 10^2$$

$$1,500 = 1.5 \times 1000 = 1.5 \times 10^3$$

$$15,000 = 1.5 \times 10000 = 1.5 \times 10^4$$

Scientific Notation

A number is expressed in scientific notation when it is in the form

$$a \times 10^n$$

where a is between 1 and 10 and n is an integer

Scientific Notation

This is way of writing very big or small numbers in an easier way.

150,000,000

Something you should know...

The relationship between decimals and negative exponents....

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

$$.01 = \frac{1}{100} = \frac{1}{10^2} = 10^{-2}$$

$$.001 = \frac{1}{1000} = \frac{1}{10^3} = 10^{-3}$$

Something you should know...

The relationship between decimals and negative exponents....

$$.0001 = \frac{1}{10000} = \frac{1}{10^4} = 10^{-4}$$

$$.00001 = \frac{1}{100000} = \frac{1}{10^5} = 10^{-5}$$

Scientific Notation

This is way of writing very big or small numbers in an easier way.

$$.062 = 6.2 \times .01 = 6.2 \times \frac{1}{100} = 6.2 \times \frac{1}{10^2} = 6.2 \times 10^{-2}$$

$$.0062 = 6.2 \times .001 = 6.2 \times \frac{1}{1000} = 6.2 \times \frac{1}{10^3} = 6.2 \times 10^{-3}$$

$$.00062 = 6.2 \times .0001 = 6.2 \times \frac{1}{10000} = 6.2 \times \frac{1}{10^4} = 6.2 \times 10^{-4}$$

Scientific Notation

This is way of writing very big or small numbers in an easier way.

0.0000625

Scientific Notation

Write the following in scientific notation:

- 1) 64,830,000,000,000
- 2) 0.00000000089
- 3) 118,000,000,000,000
- 4) 0.000000000000025
- 5) 67

Decimal Form

Write the following in decimal form:

6) 2.5×10^3

7) 3.94×10^{-4}

8) 6.47×10^6

9) 7.83×10^{-7}

10) 2.5×10^2

Multiplying and Dividing Scientific Notation

11) $\frac{9.3 \times 10^{12}}{3.0 \times 10^4}$

12) $\frac{3.2 \times 10^9}{2.0 \times 10^3}$

Multiplying and Dividing Scientific Notation

13) $(6.2 \times 10^5)(3.5 \times 10^8)$

14) $(2.5 \times 10^3)(6.0 \times 10^2)$

Expanded Form

Write the following in expanded notation using powers of 10.

15) 7532

16) 0.4856

Expanded Form

Write the following in expanded notation using powers of 10.

17) 32.09