

Warmup

1. Write the number six hundred thirty-two trillion, 7 hundred billion.

2. Calculate the powers of 10 from 10^1 to 10^{10} .

$10^1 = \underline{\hspace{2cm}}$

$10^5 = \underline{\hspace{2cm}}$

$10^9 = \underline{\hspace{2cm}}$

$10^2 = \underline{\hspace{2cm}}$

$10^6 = \underline{\hspace{2cm}}$

$10^{10} = \underline{\hspace{2cm}}$

$10^3 = \underline{\hspace{2cm}}$

$10^7 = \underline{\hspace{2cm}}$

$10^4 = \underline{\hspace{2cm}}$

$10^8 = \underline{\hspace{2cm}}$

- 3.** Arrange these numbers in order from least to greatest: 6.5, 0.65, 0.065

#4 *and* #5
Fill in the
missing
factor.

4. $500 = 5 \cdot \underline{\hspace{2cm}}$

5. $8645 = 8.645 \cdot \underline{\hspace{2cm}}$

- I. Scientific Notation
- II. Expanding Numbers Written in Scientific Notation
- III. Writing Numbers in Scientific Notation

Homeschool



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Pre-Algebra and Geometry I

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Scientific Notation:

Scientific Notation is used to write really large and really small numbers. To write a number in scientific notation write the number as a factor of a value times a power of ten.

The factor
is between
1 and 10

$$3.45 \times 10^4$$

A power of 10 tells how
many places to move the
decimal point.

4. $500 = 5 \cdot \underline{\hspace{2cm}}$

$$3254 = 3.254 \times \underline{\hspace{2cm}}$$

5. $8645 = 8.645 \cdot \underline{\hspace{2cm}}$

$$8,245,654 = \underline{\hspace{2cm}}$$

II. Expanding Numbers Written in Scientific Notation

According to NASA the volume of the earth is $1.08321 \times 10^{12} \text{ km}^3$



Expand the numbers:

$$5.16 \times 10^7 =$$

To Expand Scientific Notation

expand the exponent, then multiply by the factor or move the decimal based on the exponent.

A positive exponent, means move the decimal to the right.

$$4.23 \times 10^3$$
$$4.230. = 4230$$

3 places

$$6.12 \times 10^2 =$$

$$9.21 \times 10^8 =$$

$$8. 4.25 \times 10^{15} =$$

III. Writing Numbers in Scientific Notation

According to NASA the mass of the earth in Kg is
5,972,400,000,000,000,000,000,000

To write in Scientific Notation

count how many places the decimal moves to write the factor between 1 and 10. Write the number as the exponent.

$$\begin{array}{r} 19,000,000 \\ 1.9000000 = 1.9 \times 10^7 \\ \leftarrow 7 \text{ places} \end{array}$$

Write the numbers in scientific Notation

$$465,000,000 =$$

$$610,000 =$$

645,000,000,000=

10. 7,200,000,000 =