

8-2 Scientific Notation

Scientific Notation is used to write really big and really small numbers. It is always expressed in the form:

$$a \times 10^n$$

Circle the numbers that are in proper scientific notation form:

34×10^4

5.6×10^{-2}

0.2×10^3

6.125×10^{-25}

Notice:

If you have a really BIG NUMBER, then the exponent is _____

If you have a really SMALL NUMBER, then the exponent is _____

Write each number in scientific notation

1. 34,500,000

2. 0.000017

3. 189,500,000

Write each number in standard form.

4. 5.4×10^4

5. 6.13×10^{-8}

6. -1.388×10^{10}

When examining several numbers in scientific notation, how are we supposed to know which of the numbers is largest? To do this, we must examine:

1.

If the numbers have the same exponent, then...

2.

Order the following numbers in order from least to greatest.

1. 5.4×10^4 3.2×10^6 7.8×10^3 2.4×10^4

2. 2.45×10^{-9} 1.234×10^{-4} 9.83×10^{-8} 7.4×10^{-9}

If you ever need to evaluate expressions in scientific notation, you should USE YOUR CALCULATOR

Simplify each expression. Write each answer in proper scientific notation.

1. $\frac{9.6 \times 10^{17}}{3.2 \times 10^8} =$

2. $(5.12 \times 10^{-6})(7.3 \times 10^{-7}) =$

3. Find the sum of 7.42×10^{-4} and 1.38×10^{-4} .

4. Subtract 5.4×10^6 from 5.7×10^7 .

Express the following numbers in scientific notation.

1. distance of the earth from the sun: 93,000,000 miles
2. diameter of a fiber optic tube: 0.0025 cm
3. weight of a feather: 0.0125 oz

Write each number in standard form.

4. distance light travels in one light-year: 5.9×10^{12} miles.
5. weight of an elephant: 3.96×10^5 pounds
6. diameter of a thin electrical wire: 4.9×10^{-4} of an inch
7. Order the numbers from least to greatest.

9×10^{-7} , 8×10^{-8} , 7×10^{-6} , 6×10^{-10}

_____, _____, _____, _____

8. Write the answer in scientific notation: $(8 \times 10^{-5})(7 \times 10^{-3})$