Exponential Notation

- ✓ 0806.2.1 Recognize and use exponential notation.

When using Exponential Notation, there are two kinds of exponents: positive and negative

Positive Exponent:

2.35×10^{8}

Negative Exponent:

3.97×10^{-7}

When changing exponential notation to standard notation, the exponent tells you if you should move the decimal:

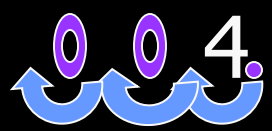
With a positive exponent, move the decimal to the right:

$4.08 \times 10^3 = 4.0\,8\,0$

Don't forget to fill in your zeroes!

When changing scientific notation to standard notation, the exponent tells you if you should move the decimal:

With a negative exponent, move the decimal to the left:

$4.08 \times 10^{-3} =$ 

Don’t forget to fill in your zeroes!

An easy way to remember this is:

- If an exponent is positive, the number gets larger, so move the decimal to the right.

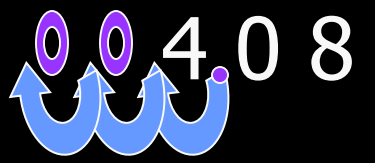
- If an exponent is negative, the number gets smaller, so move the decimal to the left.

The exponent also tells how many spaces to move the decimal:

$4.08 \times 10^{3} = 4.0\,8\,0$

In this problem, the exponent is +3, so the decimal moves 3 spaces to the right.

The exponent also tells how many spaces to move the decimal:

$4.08 \times 10^{-3} =$ 

In this problem, the exponent is -3, so the decimal moves 3 spaces to the left.

Try changing these numbers from Scientific Notation to Standard Notation:

1) 9.678×10^{4} 96780

2) 7.4521×10^{-3} .0074521

3) $8.513904567 \times 10^{7}$ 85139045.67

4) 4.09748×10^{-5} .0000409748

When changing from Standard Notation to Scientific Notation:

1) First, move the decimal after the first whole number:

3 2 5 8.

2) Second, add your multiplication sign and your base (10).

3 . 2 5 8 x 10

3) Count how many spaces the decimal moved and this is the exponent.

3 . 2 5 8 x 10 ^{3}

3 2 1

When changing from Standard Notation to Scientific Notation:

4) See if the original number is greater than or less than one.

- If the number is greater than one, the exponent will be positive.

$$348943 = 3.489 \times 10^{5}$$

- If the number is less than one, the exponent will be negative.

$$.0000000672 = 6.72 \times 10^{-8}$$

Try changing these numbers from Standard Notation to Scientific Notation:

1) 9872432 9.872432×10^{6}

2) .0000345 3.45×10^{-5}

3) .08376 8.376×10^{-2}

4) 5673 5.673×10^{3}