

# *Scientific Notation*

## Lesson Essential Question:

⇒ How can we convert between motion units?

## Objective:

⇒ Apply concepts of unit conversion and scientific notation

# Scientific Notation

- Scientists use scientific notation to write very small and very large numbers.
- The most common number that is raised to an exponent is 10
- <http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10/index.html>

# Scientific Notation

$$5.48 \times 10^5 \leftarrow$$


The diagram shows the scientific notation  $5.48 \times 10^5$ . A horizontal arrow points to the right from the exponent 5. Two vertical arrows point upwards from the decimal point and the digit 1 in the coefficient 5.48.

# Scientific Notation

$$5.48 \times 10^5$$

↑ coefficient      ↑ base      ← exponent

# Scientific Notation

When the exponent is positive, that means the number is greater than 1.

When the exponent is negative, that means the number is smaller than 1. (it is a decimal)

Write 7,030,000 in scientific notation:

First write the coefficient.

It must be a number between 1 and 10

7.03

Then count how many places the decimal point was moved

6

That is the exponent we put on the 10

$7.03 \times 10^6$

Write 0.00065 in scientific notation:

First write the coefficient.

It must be a number between 1 and 10

6.5

Then count how many places the decimal point was moved

4

That is the exponent we put on the 10

BUT since the number is a decimal, we write a negative sign in front of it.

$6.5 \times 10^{-4}$



# Scientific Notation

Write these numbers in scientific notation:

1. 62,000

2. 0.000,000,25

3. 830,000

4. 0.13

# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

5.48  


Move the decimal point 5 places to make the number bigger

# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

548 0  


Move the decimal point 5 places to make the number bigger



# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

548 0 0  


Move the decimal point 5 places to make the number bigger

# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

548 000  


Move the decimal point 5 places to make the number bigger

# Scientific Notation

$$5.48 \times 10^5$$

This number written in standard form would be:

548,000

Move the decimal point 5 places to make the number bigger

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

**136** Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

0136  


Move the decimal point 4 places to make the number smaller



# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

00136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

000136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

.0 0 0136  


Move the decimal point 4 places to make the number smaller

# Scientific Notation

$$1.36 \times 10^{-4}$$

This number written in standard form would be:

**.000136** Move the decimal point 4 places to make the number smaller

# Scientific Notation

Write these numbers in standard notation.

1.  $6 \times 10^{-4}$

2.  $1.5 \times 10^5$

3.  $1.37 \times 10^3$

4.  $5.5 \times 10^{-3}$