

# Scientific Notation

You can write numbers using **scientific notation**.  
Numbers in scientific notation are made up of two factors.

The first factor is a number greater than or equal to 1 and less than 10.

$$2.3 \times 10^5$$

The second factor is a power of 10.

Here are some examples of numbers in **scientific notation** and **standard form**:

$$4.3 \times 10^8 = 430,000,000$$

$$7.215 \times 10^{-3} = 0.007215$$

$$6 \times 10^{-5} = 0.00006$$

$$1 \times 10^7 = 10,000,000$$

$$5.5 \times 10^1 = 55$$

$$8.64 \times 10^0 = 8.64$$

You can convert between **scientific notation** and **standard form**.

## SCIENTIFIC NOTATION to STANDARD FORM

Move the decimal point in the first factor. The exponent in the second factor tells you the number of places and direction to move the decimal point.

If the exponent is **positive**, move the decimal point to the **right**.

$$\begin{array}{l} 5.9 \times 10^5 \\ 5.90000 \\ \text{~~~~~} \\ 590,000 \end{array}$$

$$\begin{array}{l} 4.27 \times 10^{-4} \\ 0004.27 \\ \text{~~~~} \\ 0.000427 \end{array}$$

If the exponent is **negative**, move the decimal point to the **left**.

## STANDARD FORM to SCIENTIFIC NOTATION

To find the first factor, move the decimal point until you get a number that is greater than or equal to 1 and less than 10. To find the exponent on the second factor, count the number of places you moved the decimal point and note the direction you moved it.

If you moved the decimal point to the **left**, the exponent will be **positive**.

$$\begin{array}{l} 3,180,000 \\ 3.180,000 \\ \text{~~~~~} \\ 3.18 \times 10^6 \end{array}$$

$$\begin{array}{l} 0.00906 \\ 0.00906 \\ \text{~~~~} \\ 9.06 \times 10^{-3} \end{array}$$

If you moved the decimal point to the **right**, the exponent will be **negative**.