

“Scientific notation” is useful to represent numbers which are very large or very small, which often occur in the sciences, hence the name.

For instance, the earth weighs about **13,170,000,000,000,000,000,000,000** pounds, or in scientific notation, **1.317×10^{25}** pounds.

Computer calculation speeds are often measured in nanoseconds. One nanosecond is **0.000000001** seconds, or in scientific notation, **1.0×10^{-9}** seconds.

We will work with more manageable numbers to illustrate the concept.

Convert to scientific notation:

$$94,310,000$$

$$9.431 \times 10^7$$

$$4927.15$$

$$4.92715 \times 10^3$$

$$0.0000623$$

$$6.23 \times 10^{-5}$$

$$6.23 \times \frac{1}{100,000}$$

$$\frac{6.23}{100,000}$$

Convert to standard notation:

$$8.56 \times 10^4$$

$$8.5600$$

$$85,600$$

$$3.0 \times 10^7$$

$$3.0000000$$

$$30,000,000$$

$$4.052 \times 10^{-6}$$

$$000004.052$$

$$.000004052$$