Scientific Notation versus Standard Form

Standard form
10, 5, 3, 1,642, .000052

scientific notation
4×10^6 3.78×10^2
4.0×10^6

-1.23×10^{-8}

367.5×10^4 NOT
scientific notation

Numbers that are in Scientific Notation have:

1. they have a base of 10 with an exponent.
   - positive exponent means a very large number
   - negative exponent means a very small number

2. The coefficient has to be greater than 1 but less than 10.

$$1.67 \qquad -6.83$$

.067   12.3
decimal is NOT
in the correct
place

standard to scientific

$$37,000. \rightarrow 3.7 \times 10^4$$

$$6,489,000 \rightarrow 6.489 \times 10^6$$

$$.000362 \rightarrow 3.62 \times 10^{-4}$$

$$409 \rightarrow 4.09 \times 10^2$$

$$5 \rightarrow 5 \times 10^0$$

$$.00000000000000782 \rightarrow 7.82 \times 10^{-13}$$

Scientific to Standard

$5.12 \times 10^{4} \rightarrow 51{,}200$

$4.12 \times 10^{-8} \rightarrow 0.0000000412$

$-3.067 \times 10^{8} \rightarrow -306{,}700{,}000$

$-3.067 \times 10^{-8} \rightarrow -.00000003067$