SCIENTIFIC NOTATION

Name _____

Scientists very often deal with very small and very large numbers, which can lead to a lot of confusion when counting zeros! We have learned to express these numbers as powers of 10.

Scientific notation takes the form of $M \times 10^n$ where $1 \leq M < 10$ and "n" represents the number of decimal places to be moved. Positive n indicates the standard form is a large number. Negative n indicates a number between zero and one.

Example 1: Convert 1,500,000 to scientific notation.

We move the decimal point so that there is only one digit to its left, a total of 6 places.

$1{,}500{,}000 = 1.5 \times 10^6$

Example 2: Convert 0.000025 to scientific notation.

For this, we move the decimal point 5 places to the right.

$0.000025 = 2.5 \times 10^{-5}$

(Note that when a number starts out less than one, the exponent is always negative.)

Convert the following to scientific notation.

1. 0.005 = _____
2. 5,050 = _____
3. 0.0008 = _____
4. 1,000 = _____
5. 1,000,000 = _____
6. 0.25 = _____
7. 0.025 = _____
8. 0.0025 = _____
9. 500 = _____
10. 5,000 = _____

Convert the following to standard notation.

1. 1.5×10^3 = _____
2. 1.5×10^{-3} = _____
3. 3.75×10^{-2} = _____
4. 3.75×10^2 = _____
5. 2.2×10^5 = _____
6. 3.35×10^{-1} = _____
7. 1.2×10^{-4} = _____
8. 1×10^4 = _____
9. 1×10^{-1} = _____
10. 4×10^0 = _____

Name _____ Date _____

Write each number in scientific notation.

0.07882 = _____

0.00000272338 = _____

118000 = _____

87200 = _____

0.00002786 = _____

0.000000664 = _____

450 = _____

74171.7 = _____

770 = _____

0.0000085 = _____