

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. $0.005 =$ _____

6. $0.25 =$ _____

2. $5.050 =$ _____

7. $0.025 =$ _____

3. $0.0008 =$ _____

8. $0.0025 =$ _____

4. $1.000 =$ _____

9. $500 =$ _____

5. $1,000,000 =$ _____

10. $5,000 =$ _____

Convert the following to standard notation.

1. $1.5 \times 10^2 =$ _____

6. $3.35 \times 10^{-1} =$ _____

2. $1.5 \times 10^{-3} =$ _____

7. $1.2 \times 10^{-4} =$ _____

3. $1/5 \times 10^2 =$ _____

8. $1 \times 10^4 =$ _____

4. $1/5 \times 10^3 =$ _____

9. $1 \times 10^{-1} =$ _____

5. $1.2 \times 10^0 =$ _____

10. $4 \times 10^0 =$ _____