

Calculate with Scientific Notation

SN2

Add and Subtract Steps:

- 1) Write the numbers in standard notation
- 2) Line up by place value
- 3) Add or Subtract
- 4) Write the sum or difference in scientific notation

EX: $3.4 \times 10^8 - 9.7 \times 10^6$

$$\begin{array}{r}
 340,000,000 \\
 - 9,700,000 \\
 \hline
 330,300,000
 \end{array}$$

$3.4 \times 10^8 = 340,000,000$

$$\begin{array}{r}
 340,000,000 \\
 - 9,700,000 \\
 \hline
 330,300,000
 \end{array}$$

$330,300,000 = 3.303 \times 10^8$

If the powers of ten are the same, you can just add or subtract the constants and keep the same power of ten.

EX: $5.2 \times 10^{12} + 3.8 \times 10^{12}$

$$\begin{array}{r}
 5.2 \\
 + 3.8 \\
 \hline
 9.0
 \end{array}$$

9×10^{12}

Multiply and Divide Steps:

- 1) Multiply or divide the constants
- 2) If multiplying, add the exponents on the powers of 10
If dividing, subtract the exponents on the powers of 10
- 4) Write the product or quotient in scientific notation

EX: $2 \times 10^6 \cdot 6 \times 10^8$

$$\begin{array}{l}
 \cancel{2} \times \cancel{10^6} \cdot \cancel{6} \times \cancel{10^8} \\
 12 \times 10^{14} \\
 1.2 \times 10^{15}
 \end{array}$$

$$1.2 \times 10^{15} \quad \begin{array}{l} \leftarrow \text{calculator} \\ \downarrow 1.2 \times 10^{15} \end{array}$$

EX: $\frac{1.2 \times 10^7}{6 \times 10^{13}} = .2 \times 10^{-6} = 2 \times 10^{-7}$