Adding with Scientific Notation

1. Make sure exponents are the same
2. Add the decimals, don't forget to line them up. Keep the exponent
3. Make sure you have one digit in front of the decimal,

Example:

$(9.7 \times 10^6) + (5.4 \times 10^4)$

Step 1

$9.7 \times 10^{6-2} + 5.4 \times 10^4$

Step 2:

970×10^4

$+ \quad 5.4 \times 10^4$

975.4×10^4

Step 3:

9.754×10^6

Subtracting with Scientific Notation

1. Make sure all exponents are the same

2. Subtract decimals, lining up decimals, keep exponents the same.

3. Make sure you have one digit in front of the decimal

Example:

Step 1:

$(1.7 \times 10^8) - (7.2 \times 10^7)$

$1.7 \times 10^{8-1}$

Step 2:

17×10^7

$- 7.2 \times 10^7$

9.8×10^7

Step 3:

9.8×10^7

$$\begin{array}{r} {}^{6}\cancel{1}7.10 \\ 7.2 \\ \hline 9.8 \end{array}$$

Multiplying with Scientific Notation

1. Multiply the decimal numbers
2. Add exponents
3. Make sure you have one number in front of the decimal.

Example:

$(3.7 \times 10^6)(6.2 \times 10^4)$

Step 1:

$$\begin{array}{r} 3.7 \\ \times 6.2 \\ \hline 74 \\ 222 \\ \hline 22.94 \end{array}$$

Step 2: $22.94 \times (10^{6+4})$

Step 3: $22.94 \times 10^{10+1}$

2.294×10^{11}

Dividing with Scientific Notation

1. Divide the decimals
2. Subtract the exponents
3. Make sure you have one number in front of the decimal.

Example:

$(1.2 \times 10^8) \div (2.4 \times 10^3)$

Step 1

$$2.4 \overline{)1.20} \quad 0.5$$

$$\underline{120}$$

Step 2: $0.5 \times 10^{8-3}$

$0.5 \times 10^{5-1}$

Step 3: 5×10^4

$(6.5 \times 10^3)(3.2 \times 10^4)$

$(3.5 \times 10^4) + (2.68 \times 10^6)$

$(4.3 \times 10^5) - (3.8 \times 10^4)$

$(6.8 \times 10^5) \div (3.4 \times 10^6)$