

Addition and Subtraction of Scientific Numbers

I. Same exponents:

A. Steps:

- 1) Group the coefficients
- 2) Place the "common" base and exponent next to the expression from step one.
- 3) Combine the coefficients. (Add or subtract)
- 4) Make Sure your final answer is in scientific notation.
(Coefficient ≥ 1 and < 10)

B. Examples: Perform the indicated operation. Write your answer in scientific notation.

1) $(2.56 \times 10^3) + (6.964 \times 10^3)$ $(2.56 + 6.964) \times 10^3$ 9.524×10^3	2) $(9.49 \times 10^5) - (4.863 \times 10^5)$ $(9.49 - 4.863) \times 10^5$ 4.627×10^5
3) $(3.5 \times 10^6) + (6.31 \times 10^6)$ $(3.5 + 6.31) \times 10^6$ 9.81×10^6	4) $(2.5 \times 10^3) - (1.275 \times 10^3)$ $(2.5 - 1.275) \times 10^3$ 1.225×10^3
* Use parentheses when putting into the calculator	* To make scientific: 2^{nd} [DRG] [>] SCF [=]

II. Different exponents:

A. Steps:

1) Take the scientific number with the Smaller exponent and convert it to the larger by moving the decimal point to the left. (We do this so that the final answer will then already be in proper scientific notation.)

2) Follow the same steps from part I.

****The exponents MUST be the same in order to add or subtract****

B. Examples: Perform the indicated operation. Write your answer in scientific notation.

$$\begin{aligned} 1) & (3.1 \times 10^5) + (3.38 \times 10^4)^{\uparrow 1} \\ & (3.1 \times 10^5) + (.338 \times 10^5) \\ & (3.1 + .338) \times 10^5 \\ & \boxed{3.438 \times 10^5} \end{aligned}$$

$$\begin{aligned} 2) & (4.67 \times 10^3) - (8.9 \times 10^2)^{\uparrow 1} \\ & (4.67 \times 10^3) - (.89 \times 10^3) \\ & (4.67 - .89) \times 10^3 \\ & \boxed{3.78 \times 10^3} \end{aligned}$$

$$\begin{aligned} 3) & (3.45 \times 10^3)^{\uparrow 1} + (4.65 \times 10^4) \\ & (.345 \times 10^4) + (4.65 \times 10^4) \\ & (.345 + 4.65) \times 10^4 \\ & \boxed{4.995 \times 10^4} \end{aligned}$$

$$\begin{aligned} *4) & (7.45 \times 10^{-3})^{\uparrow 2} + (2.6 \times 10^{-1}) \\ & (.0745 \times 10^{-1}) + (2.6 \times 10^{-1}) \\ & (.0745 + 2.6) \times 10^{-1} \\ & \boxed{2.6745 \times 10^{-1}} \end{aligned}$$

$$\begin{aligned} *5) & (3.2 \times 10^{-5}) - (4.9 \times 10^{-8})^{\uparrow 3} \\ & (3.2 \times 10^{-5}) - (.0049 \times 10^{-5}) \\ & (3.2 - .0049) \times 10^{-5} \\ & \boxed{3.1951 \times 10^{-5}} \end{aligned}$$