How-To: Addition, Subtraction, and Scalar Multiplication

To add matrices, you simply add up the corresponding elements.

Ex: $\begin{bmatrix} 2 & 1 & 3 \\ -1 & 0 & 4 \end{bmatrix} + \begin{bmatrix} 1 & 3 & -2 \\ 0 & 5 & -1 \end{bmatrix} = \begin{bmatrix} 2+1 & 1+3 & 3-2 \\ -1+0 & 0+5 & 4-1 \end{bmatrix} = \begin{bmatrix} 3 & 3 & 1 \\ -1 & 5 & 3 \end{bmatrix}$

Subtraction is the same way.

$\begin{bmatrix} 6 & 1 \\ 0 & -3 \end{bmatrix} - \begin{bmatrix} 2 & -2 \\ 1 & 4 \end{bmatrix} = \begin{bmatrix} 6-2 & 1+2 \\ 0-1 & -3-4 \end{bmatrix} = \begin{bmatrix} 4 & 3 \\ -1 & -7 \end{bmatrix}$

Note: The matrices have to have the same dimension to add or subtract:

$\begin{bmatrix} 4 \\ 0 \\ 5 \end{bmatrix} + \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ = NOT POSSIBLE

Scalar Multiplication: (Mutiplying by a number)

This is like the distributive property.

$2 \begin{bmatrix} 6 & 1 \\ 0 & -3 \end{bmatrix} = \begin{bmatrix} 2 \times 6 & 2 \times 1 \\ 2 \times 0 & 2 \times -3 \end{bmatrix} = \begin{bmatrix} 12 & 32 \\ 0 & -7-6 \end{bmatrix}$