To add two matrices A and B we simply add element by element.

$$\begin{pmatrix} 1 & -5 & 0 \\ 3 & 1 & 1 \\ 7 & -2 & 0 \end{pmatrix} + \begin{pmatrix} 0 & 3 & -2 \\ 2 & 8 & 5 \\ 2 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 1+0 & -5+3 & 0-2 \\ 3+2 & 1+8 & 1+5 \\ 7+2 & -2+0 & 0+1 \end{pmatrix} = \begin{pmatrix} 1 & -2 & -2 \\ 5 & 9 & 6 \\ 9 & -2 & 1 \end{pmatrix}$$

$$(1 \quad 3 \quad 5) + (2 \quad 1 \quad 0) = (3 \quad 4 \quad 5)$$

$$\begin{pmatrix} 2 \\ 34 \\ -2 \end{pmatrix} + \begin{pmatrix} 2 \\ -3 \\ 5 \end{pmatrix} = \begin{pmatrix} 4 \\ 31 \\ 3 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix} + \begin{pmatrix} 1 & 3 \\ -5 & 1 \end{pmatrix} = \begin{pmatrix} 3 & 6 \\ -1 & 1 \end{pmatrix}$$

As matrices must be added element by element, we will be able to add matrices only when they have the same number of rows and columns. It is not possible to add two matrices such as:

$$\begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix} ; \begin{pmatrix} 1 & -5 & 0 \\ 3 & 1 & 1 \\ 7 & -2 & 0 \end{pmatrix}$$

Addition of matrices is commutative. This means that no matter the order in which you add them, the result will always be the same:

$$\begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix} + \begin{pmatrix} 1 & 3 \\ -5 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 3 \\ -5 & 1 \end{pmatrix} + \begin{pmatrix} 2 & 3 \\ 4 & 0 \end{pmatrix} = \begin{pmatrix} 3 & 6 \\ -1 & 1 \end{pmatrix}$$

In the usual addition of integers, we know that adding zero to a number does not change the value of that number.

The same applies to the zero matrix (the one whose elements are all zero).

$$\begin{pmatrix} 2 & 1 & 5 \\ 3 & 9 & 2 \\ 1 & 7 & 2 \end{pmatrix} + \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix} + \begin{pmatrix} 2 & 1 & 5 \\ 3 & 9 & 2 \\ 1 & 7 & 2 \end{pmatrix} = \begin{pmatrix} 2 & 1 & 5 \\ 3 & 9 & 2 \\ 1 & 7 & 2 \end{pmatrix}$$