Addition

Addition builds on Counting.

It is faster to see a pile of 5 and a pile of 3 and think “5 and 3 is 8” than it is to count 1,2,3,4,5,6,7,8.

You developed the idea of Addition from instinct. Education simply took what you had and gave it a few words. The sentence fragment “5 and 3 is 8” became “5 plus 3 equals 8”.

Addition is about more than just numbers. We can add vectors, and hopefully you can see how we do it just by looking at the example below:

$$\begin{bmatrix}1\\3\end{bmatrix}+\begin{bmatrix}2\\4\end{bmatrix}=\begin{bmatrix}3\\7\end{bmatrix}$$

The two top numbers add together to make the top number in the answer. The two bottom numbers add together to make the bottom number in the answer. This process is called component-wise addition.

Another example is provided below, where we add matrices. Each matrix contains four components and you should see the component-wise addition.

$$\begin{bmatrix}1&2\\3&4\end{bmatrix}+\begin{bmatrix}2&3\\4&5\end{bmatrix}=\begin{bmatrix}3&5\\7&9\end{bmatrix}$$

One more rule about Addition, you must add things of the same type together and the result will be a thing of the same type. In the first example we added two vectors to make a vector. In the second example we added two matrices to make a matrix.

Don’t worry if you haven’t studied vectors or matrices. The intent here was to show component-wise addition and the requirement that addition be done on like objects.