Vectors can be represented through their components.

If we have a vector A, we can decompose it into its components in the x and y-directions by finding the vectors, one along x and one along y, that add up to the vector A. This is the same thing as finding the projections of the vector A along the x and y-axes.

Here is the projection of the vector onto the x-axis, its x-component.

And here is the projection onto the y-axis, the y-component.

This particular vector could be written as A is equal to minus 2i hat plus minus 2j hat.

A generic vector in two dimensions can be written as A is equal to Ax, the x-component of A, times i hat, the unit vector along x, plus Ay, the y-component, times j hat, the unit vector along y.

If the vector is in three dimensions, we will also have an Az times k hat.

What if we have the vector minus 3i hat plus 2j hat?

First we find the vector minus 3 times vector i hat and add this to the vector 2 times j hat.

We can draw this vector anywhere.

It doesn't have to start at the origin.