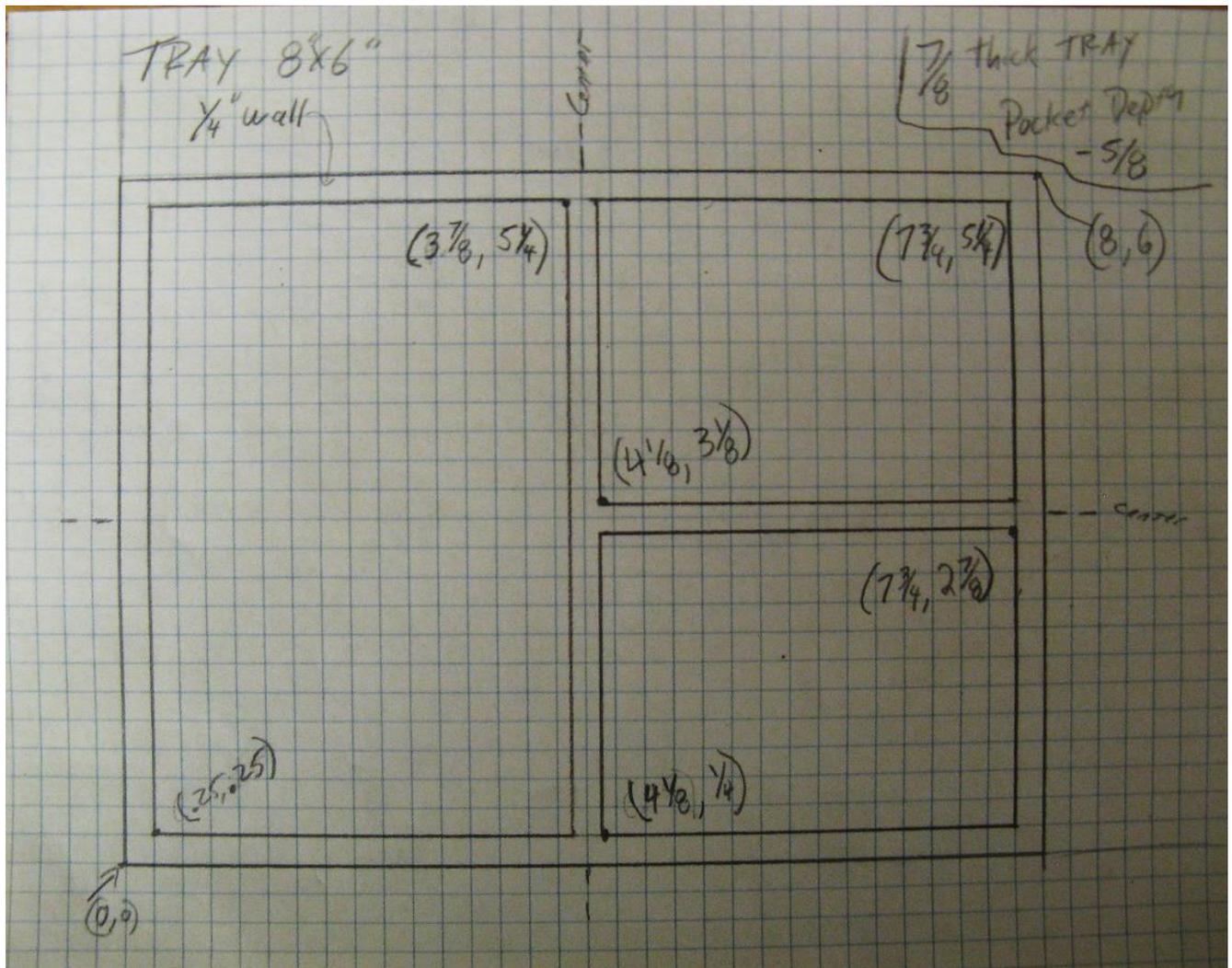


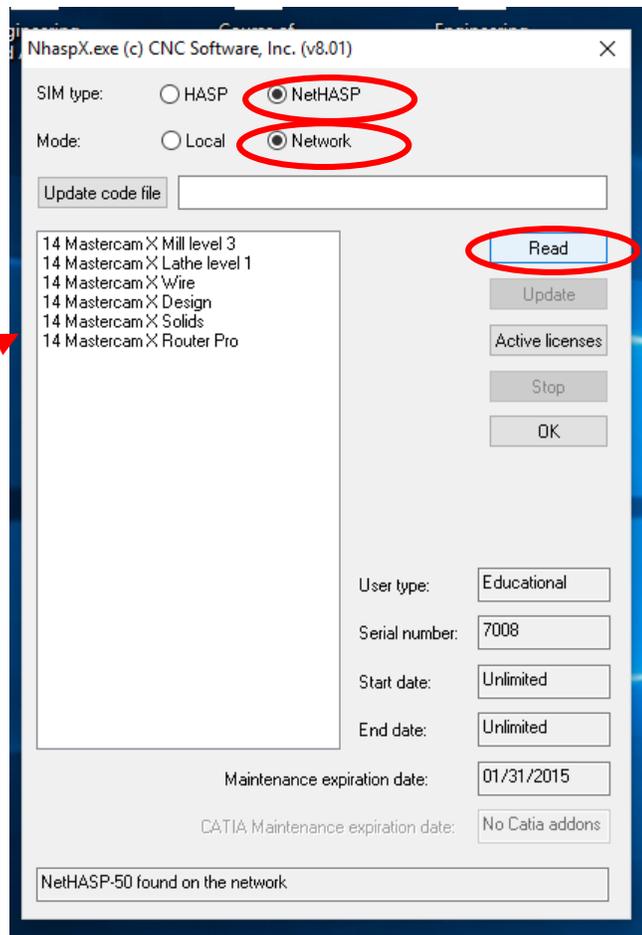
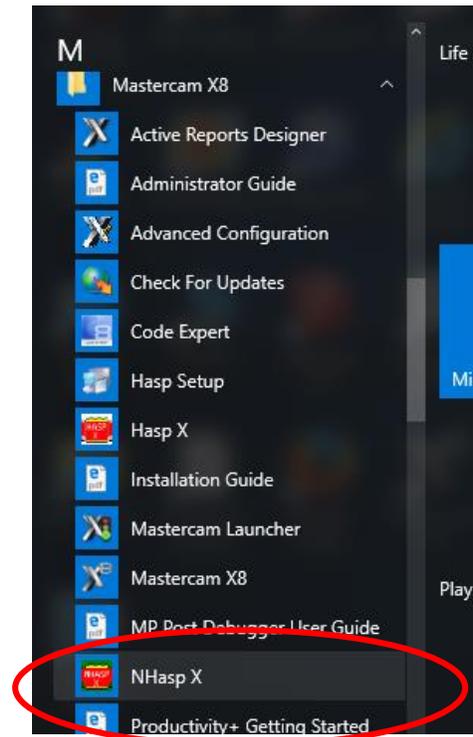
Box Tray Geometry in MasterCAM

First thing is to figure out what you are making. The best way is to get graph paper and draw out the tray full size or draw the pockets right on your work piece. Then you can figure out what coordinates to use when you enter your geometry (lines, rectangles, and circles)...Using the measurements from your plans, you will draw your geometry. This geometry must be drawn in the 1st quadrant of the coordinate system, so positive x and y. The placement of the geometry matters since we will later be cutting out the part using the CNC Router. The CNC Router uses the coordinates from where you draw the geometry. Below is the example I will use. Make sure you design a tray to fit your box correctly.



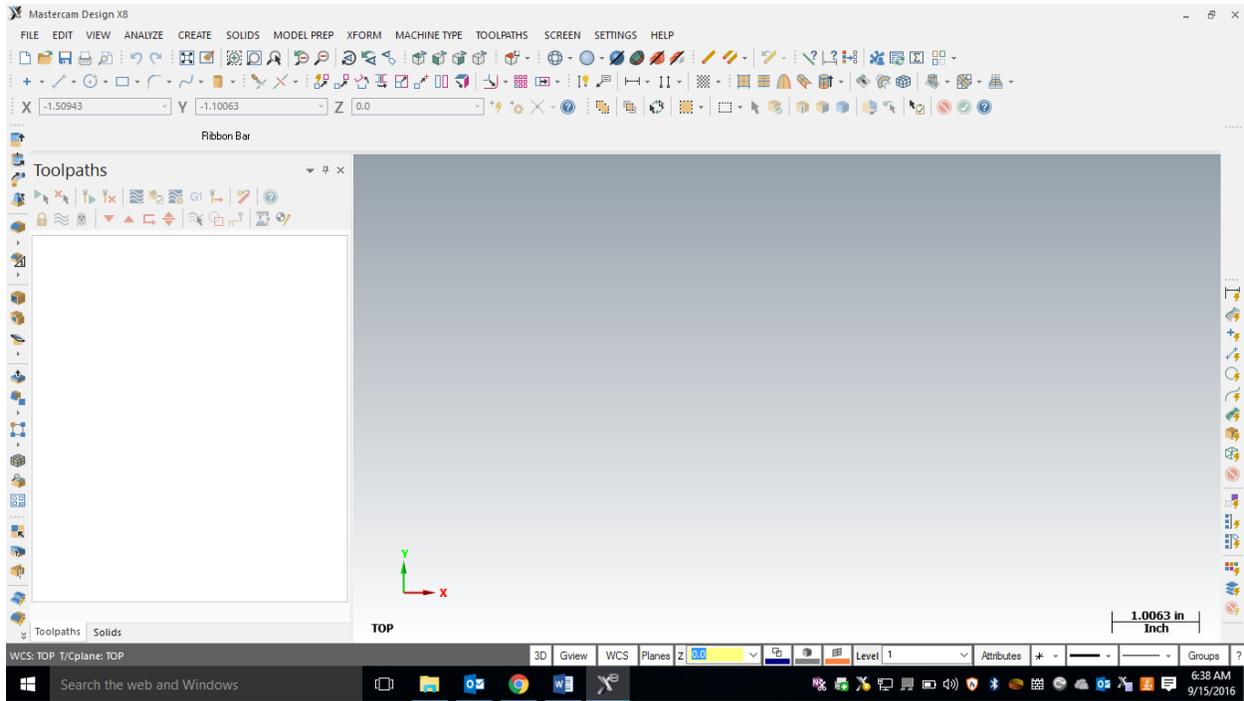
Please draw your pockets full size before you start. Your instructor will not help you unless you have a drawing to work from.

Check to make sure the nethasp is working/turned on to network.
Go to ALL APPS/Mastercam x8/nethasp

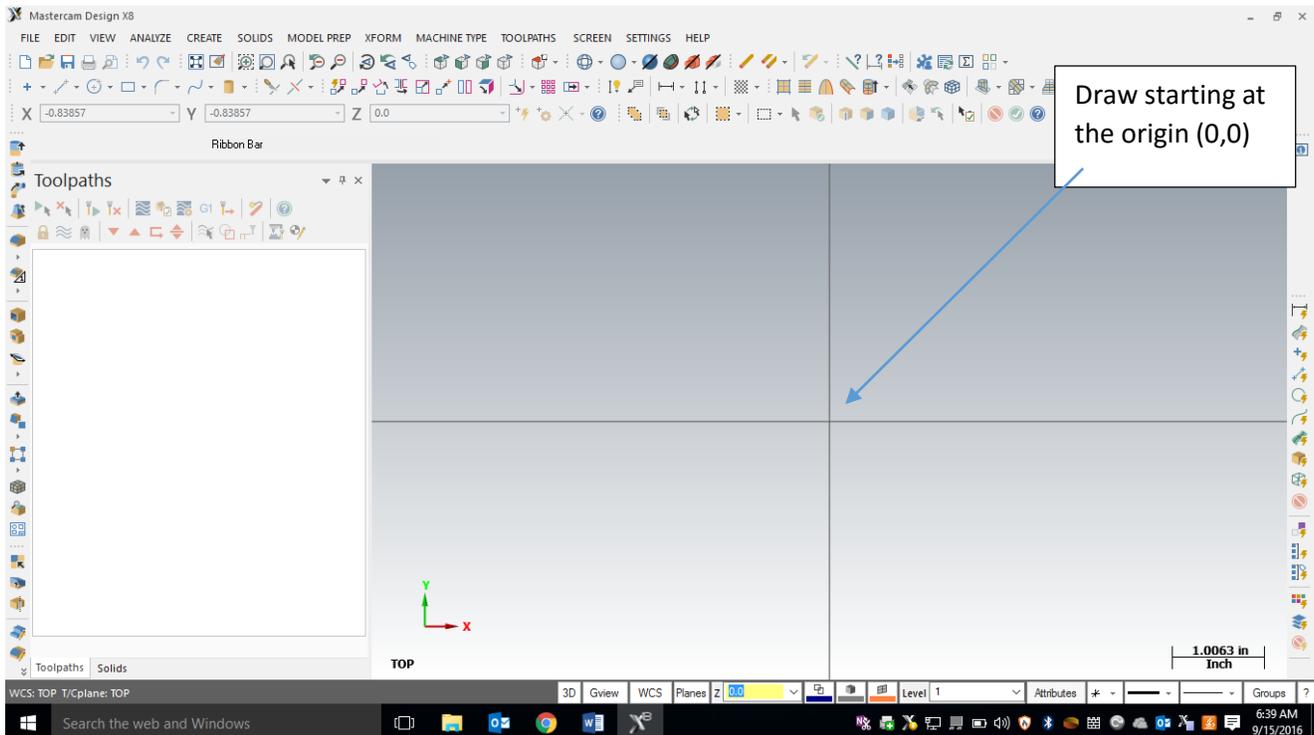


After the computer "reads" the nethasp, these programs should show up. If not ask your instructor.

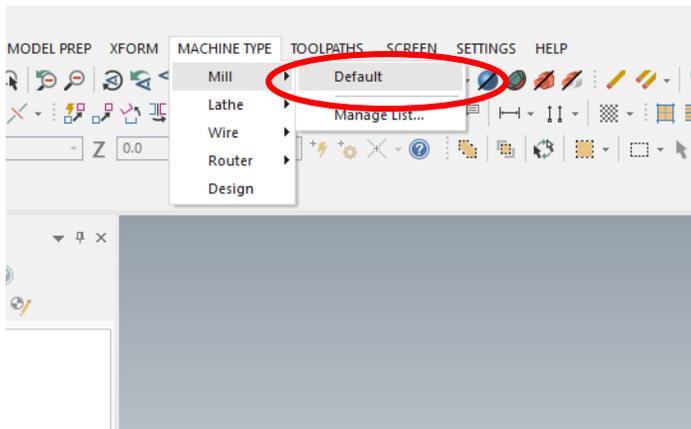
After you check that, please open the MasterCAM application, it should look something like below.



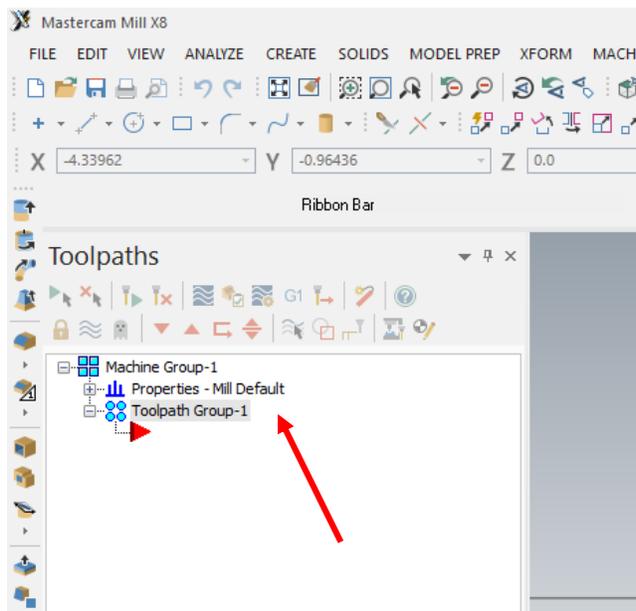
F9 will display the x/y axis such as:



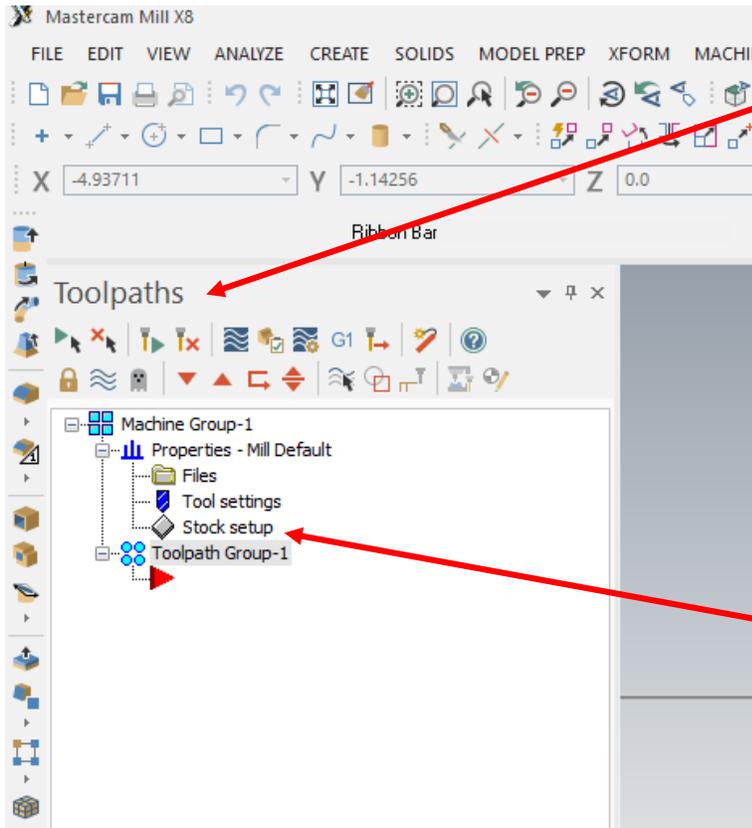
To start a project, we need to set our specific CNC router and set up the stock sizes. MasterCAM can write NC code for different manufacturers of CNC equipment. Our router is called a Forest Scientific Velocity 3 axis mill. MasterCAM will write the correct type of code as long as we pick the correct machine definition. Currently the only computer with this machine definition is the one hooked to the CNC router, so please just pick the default, then your instructor will change it at the CNC machine. This is a critical first step, without a machine definition, the CNC router will crash....litterly the tool bit will dive into the table top. **Goto Machine Type/Mill/Default.**



The result: there should be one machine group (“Machine Group -1”) that says “Properties – Mill Default”, if there is other Machine Groups, right-click and delete them.

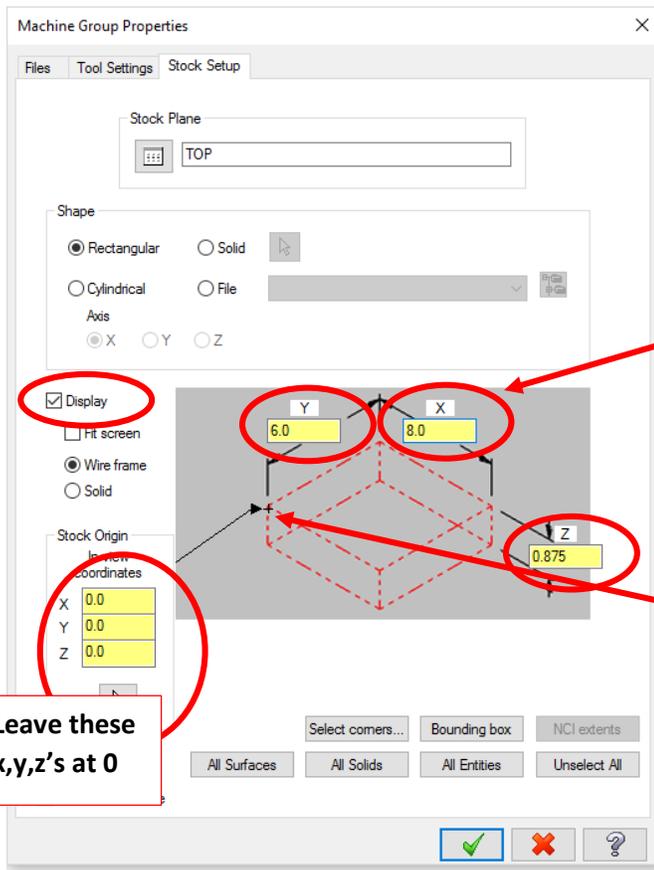


Stock Setup



The Toolpath Operations Manager is the tool palette that is docked on the left of the screen. It is titled "Toolpaths." This displays all the specific information about the tool paths (what the CNC router will cut).

Expand the properties tab in the Toolpath manager. Then click on stock setup.



Setup the stock:
 Enter the measurements for your tray
Y
X
Z

I'm using 6 x 8 x .875, but you need to enter the values for your tray.

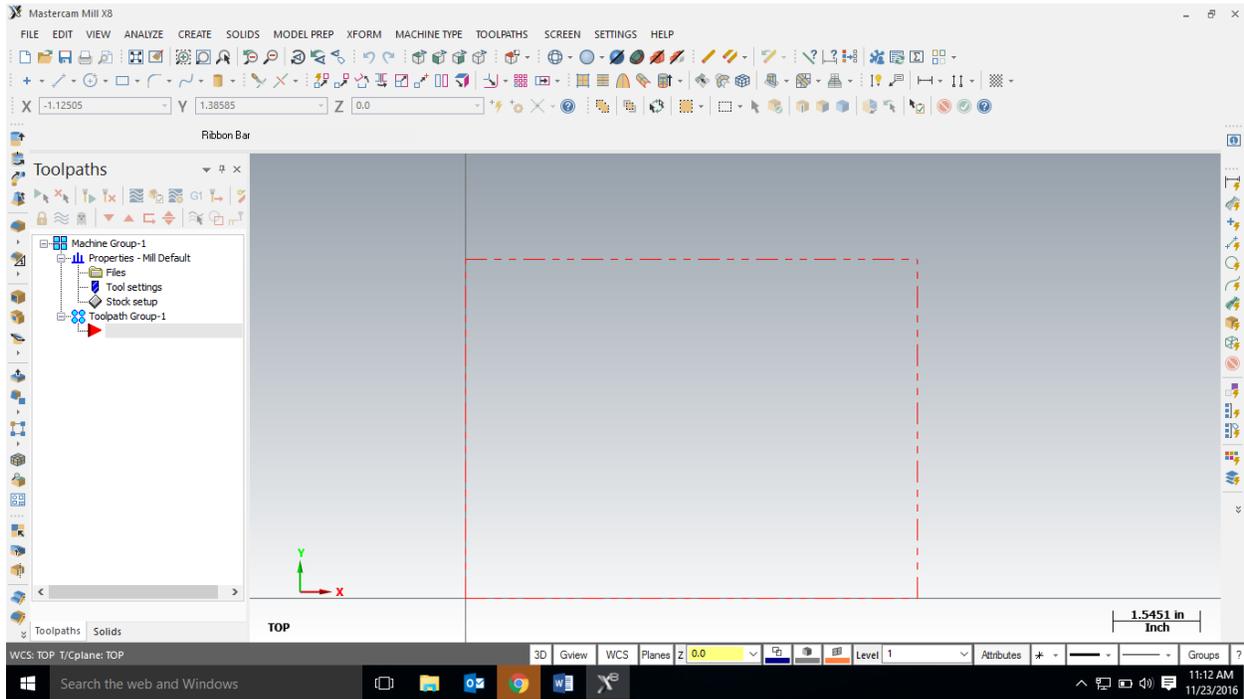
Set the stock origin by clicking on this corner.

Check "Display"

Click the Green Check Mark (OK)

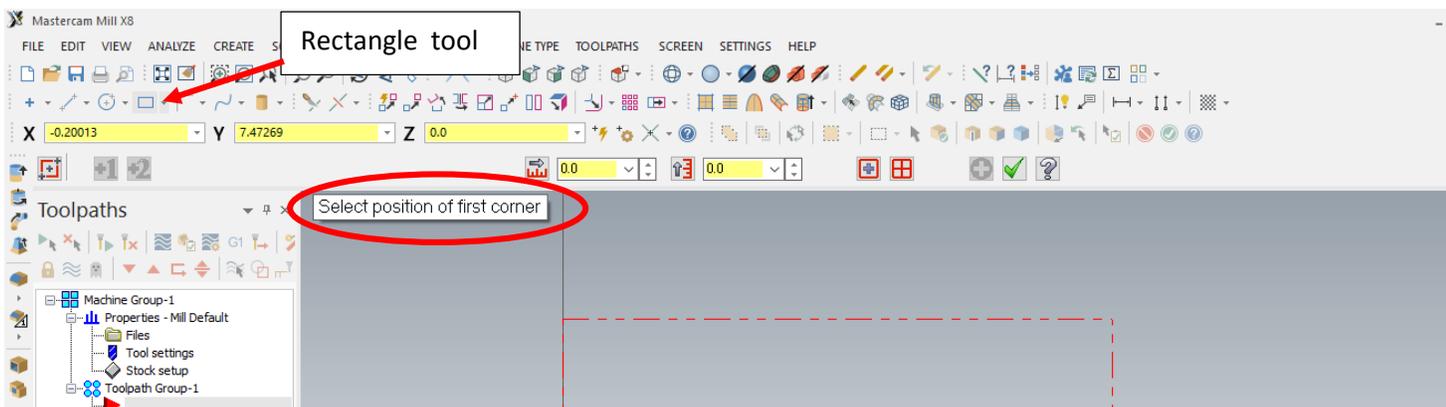
Leave these x,y,z's at 0

After you click ok in the stock setup, you should see a red dashed red rectangle that represents your stock. Zoom in or out so that you see the whole piece. Zoom with the scroll wheel on the mouse, and use the arrow keys to move left/right/up/down.



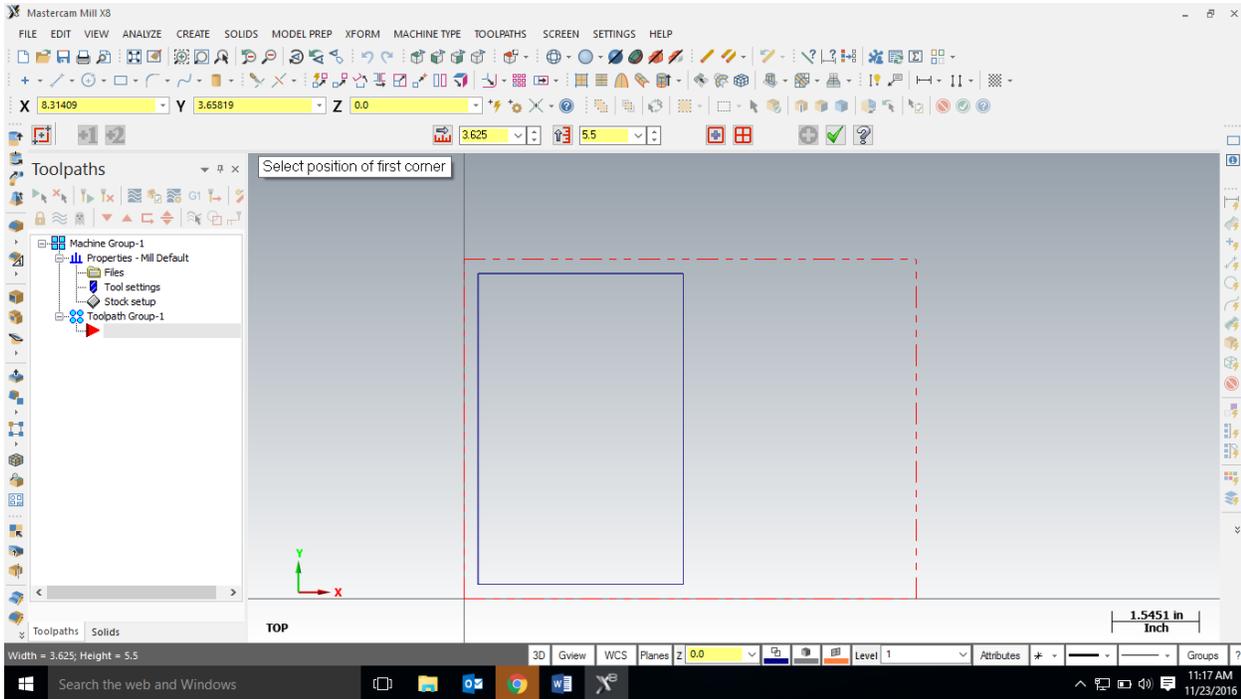
Entering Geometry

It's time to start drawing some geometry, I'm going to use the measurements from the first drawing on this document. You must use measurements that work for your application. Please draw out your tray before you enter the geometry. The coordinates are needed to make sure your layout is correct. For my tray I can use the rectangle tool. It will be 3 rectangles placed at the correct locations using the coordinates from 2 corners of each rectangle. For the example I will get the rectangle tool, then enter the coordinates from the 2 corners: (.25,.25) and ($3\frac{7}{8}$, $5\frac{3}{4}$). When MCAM prompts for the first corner, just start typing and the values will populate a window that automatically pops up.



Hit return to enter your values for the rectangle, MCAM will sketch the rectangle first (light blue). Hit enter again to draw the rectangle (dark blue).

Result:



In my case I want two more rectangles so I will stay in the rectangle tool until those are drawn. You can tell you are still in the rectangle tool because the rectangle tool options are still active and the prompt says “select position of the first corner.” So for the example, I will enter $(4 \frac{1}{8}, \frac{1}{4})$ and $(7 \frac{3}{4}, 2 \frac{7}{8})$ for the second rectangle. Then the last set of coordinates for the example are: $(4 \frac{1}{8}, 3 \frac{1}{8})$ and $(7 \frac{3}{4}, 5 \frac{3}{4})$. Then we are finished with the rectangle tool.

Result:

