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Step 3: Lay Out the Top Plate

You will need:
- 1/2" Foamcore
- Sharpie or Pencil
- C-Thru Ruler

The top plate is the key structural component of the Foamcore CNC's XY stage. By the end of this step, you will have the top plate marked and ready to cut.

Please refer to the attached PDF cut pattern while doing this step.

This step will guide you through marking the 1/2" foamcore according to the cut pattern.

Technique 1: Marking a Square.

1) Mark along the lower edge of the foamcore at 14-1/2".
2) Similarly mark along the left edge of the foamcore at 14-1/2".
3) Align the ruler perpendicular to the left edge of the board at the vertical mark which you just created. Now mark 14-12" out into the center of the board. Just create a tick, don't draw a line yet. We are preparing to draw our first vertical line.
4) Now run the ruler from the tick created in sub-step 1 with the tick which you just created. Draw a vertical line connecting the two ticks.
5) Just to be sure, mark along the new vertical line at 14-1/2."
6) Now connect the tick in sub-step 2 with the most recent tick with a horizontal line.

You have just drawn a 14-12" square! The reason it's so many steps is to ensure that it ends up actually square and not skewed.

Technique 2: Drawing Construction Lines.

All of the dimensions in the cut pattern are what are called "ordinate" dimensions meaning that they are all relative to a common zero point. Use these dimensions to first mark ticks along the perimeter of the square. For each dimension you should mark ticks on opposite sides. This will make the lines you draw perpendicular to the edges of the square.

When you are finished, your layout should look like the second and last pictures in this step.

You will use these technique throughout this instructable.