

## HOW TO MAKE FACE MASKS THAT CAN BE STERILIZED

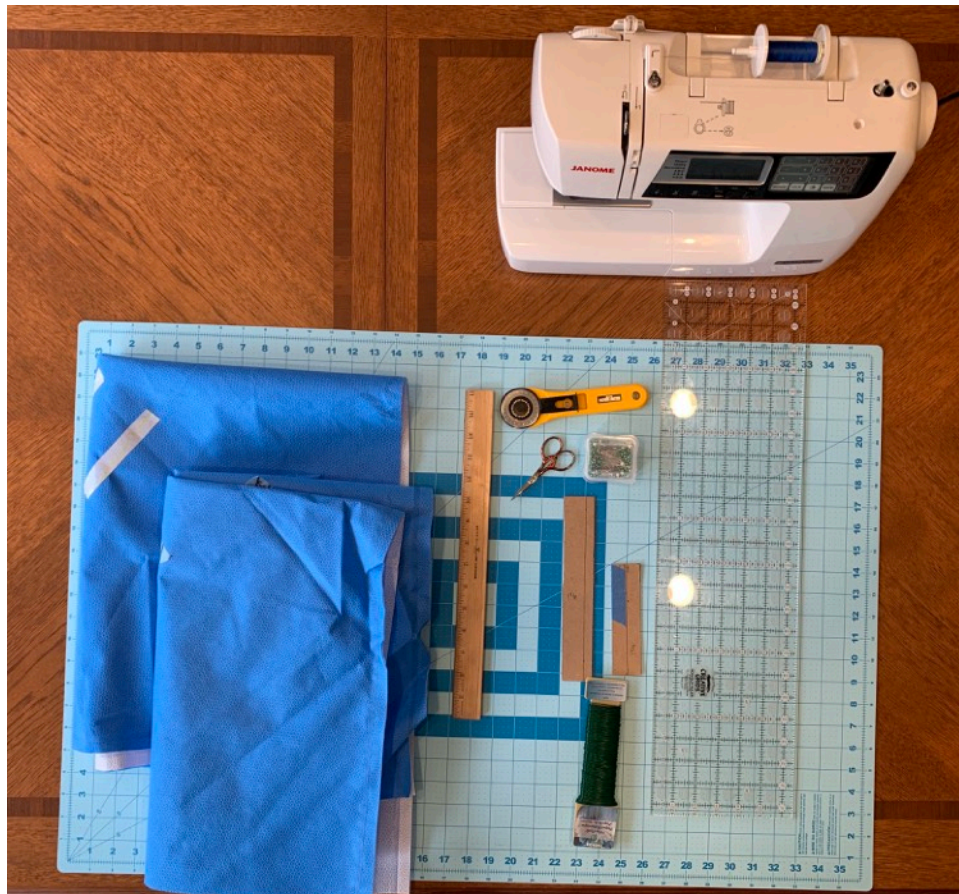
Updated 6 Apr 2020 - Dr. Sandra Roberts

Makes: **25 masks** with 7 extra sets of ties.

By using Surgical Wrap Material for construction, these masks could be sterilized by autoclave, or other common methods.

### MATERIALS NEEDED; **PLEASE DO NOT USE IRON AS THIS WILL DAMAGE MATERIAL**

- \* Two 36 inch x 36 inch sheets of surgical wrapping material
  - \* if you have a different size sheet either cut to size or modify instructions to suit
- \* Floral wire (or equivalent) - I used 22 or 24 gauge. Cut twenty five, 6 inch segments (one per mask required, two per mask optional)
- \* Cardboard to make templates: first template should be 1 1/4 inches wide by 5 inches long, second template should be 1 3/8 inches wide by 8 inches long.
- \* Ruler
- \* Cutting mat (nice but optional)
- \* Scissors and optional Rotary Cutter
- \* Sewing Machine
- \* Thread





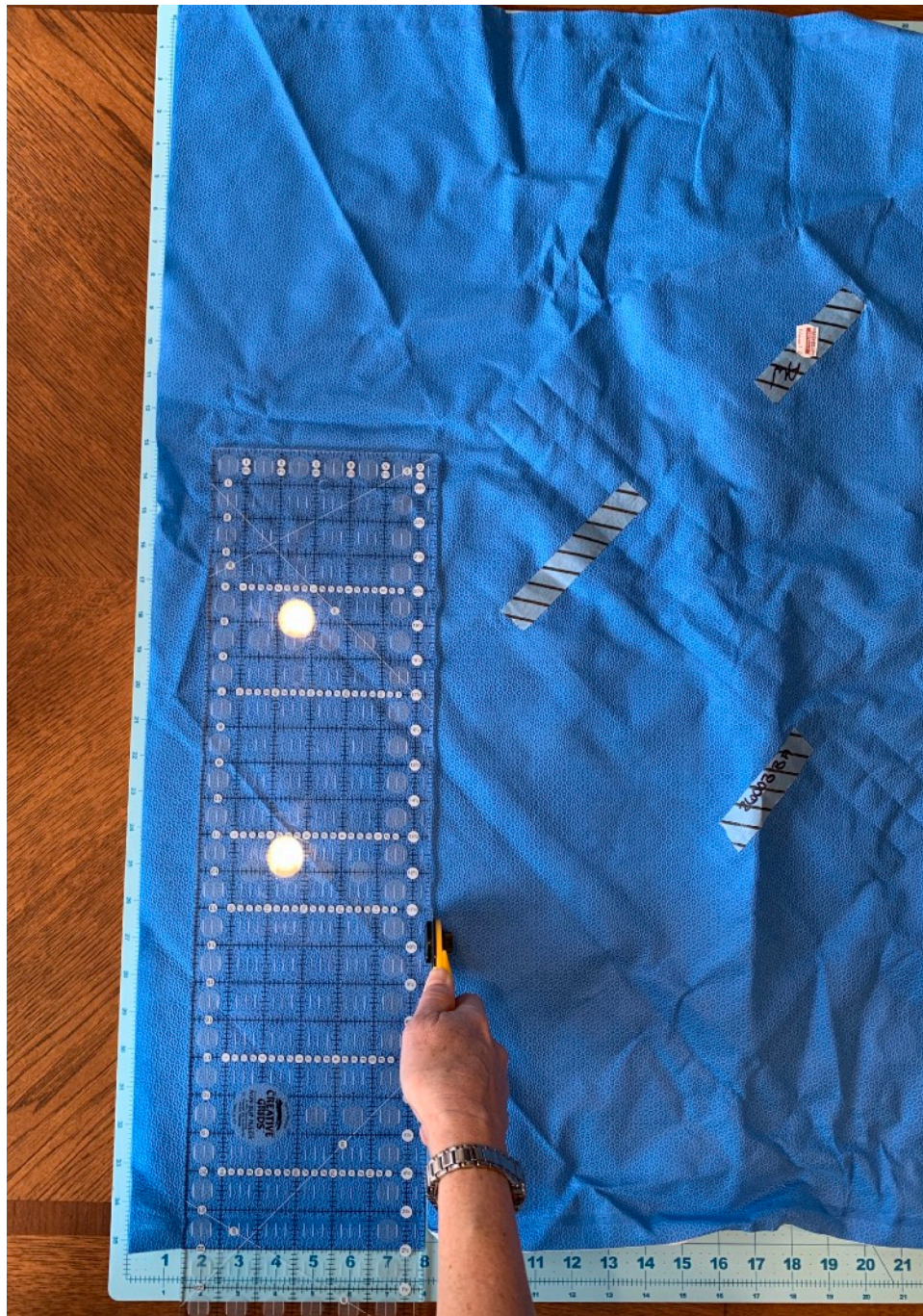
### **STEP 1.**

The surgical wrap, if previously used, will have tape on the surface. This tape is not covering any holes; however, removing the tape may damage the material. If you choose to do so, remove tape gently.

Take the first sheet of surgical wrapping material and place it with the heat sealed seams (if present) on the top and the bottom. Cut it from top to bottom into 8 inch strips. Each sheet should yield four strips that are 8 inches wide and approx. 36 inches long. (There will be some leftover material - save for Step Five)

### **STEP 2.**

Take the second sheet of surgical wrapping material and cut one more additional 8 inch strip. You should now have five, 8 inch x 36 inch strips.

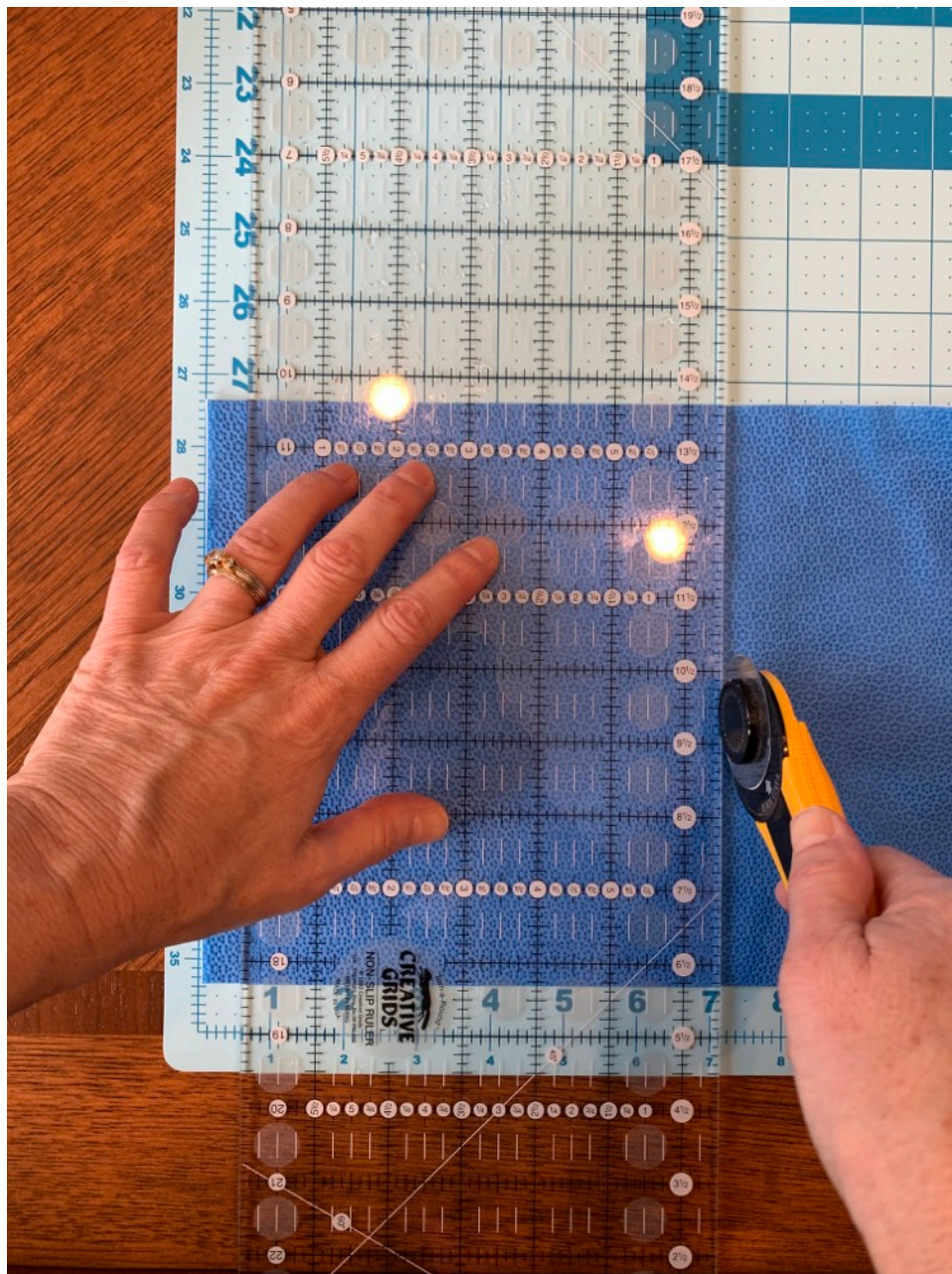




### **STEP 3.**

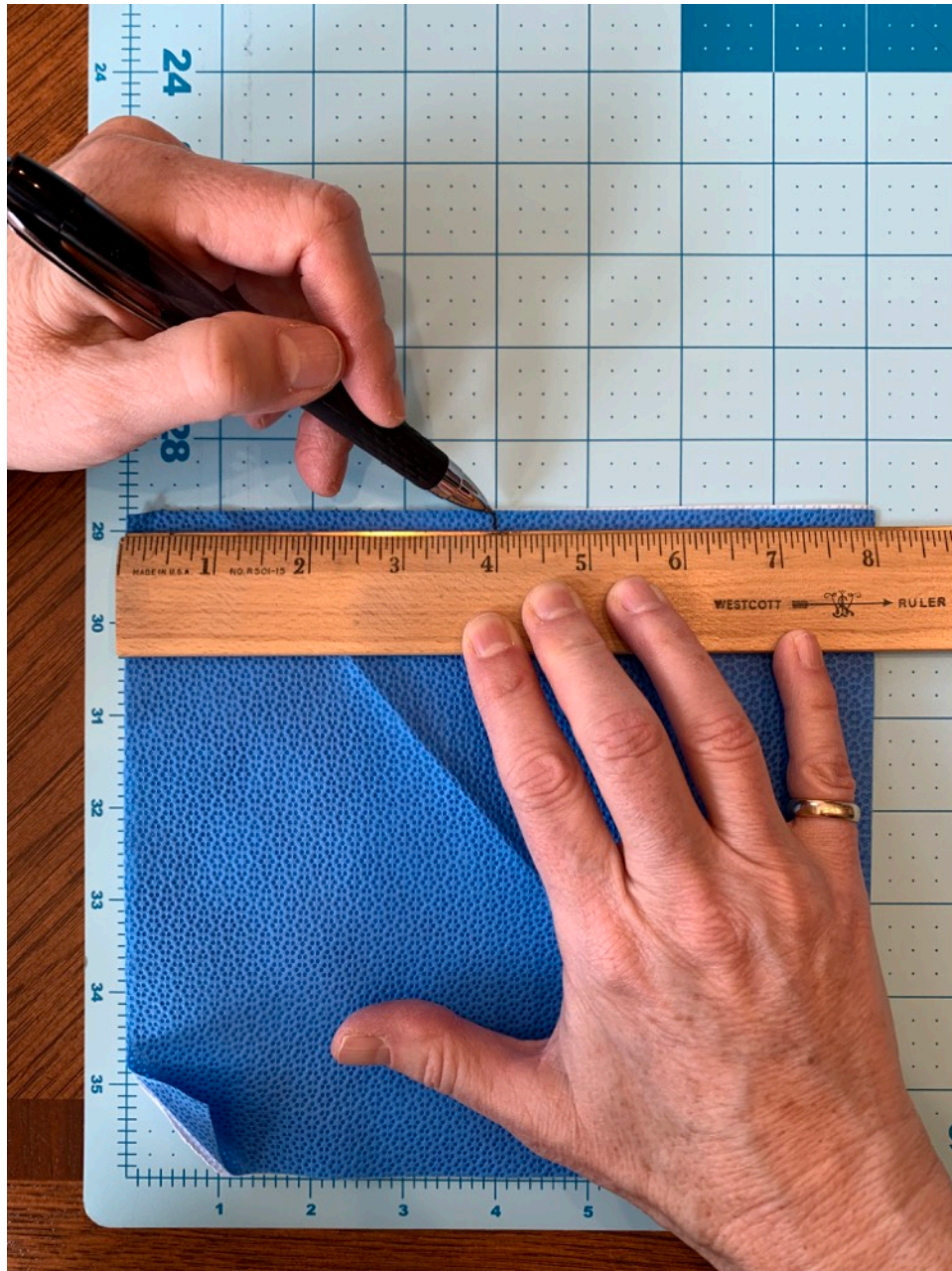
Take a strip of material produced in Step One and cut it into segments that are 7 inches wide. If you are using a double ply surgical sheet, each strip should produce 5 pieces that have both a blue and white layer.\*\* When you finish cutting up all the 8 inch strips, you should have 25 “unsewn masks” each with a blue and white layer. You will always keep these two layers together as you move through the next steps. Each “mask” should measure 8 inches wide by 7 inches high.

\*\* NOTE: If you have a SINGLE PLY sheet you will only have ONE LAYER... when finished cutting all 8 inch strips, you should have 50 “unsewn masks”.



**STEP 4.**

Mark the blue side of the “masks” in the center of each 8 inch edge. This will be 4 inches in from either side.

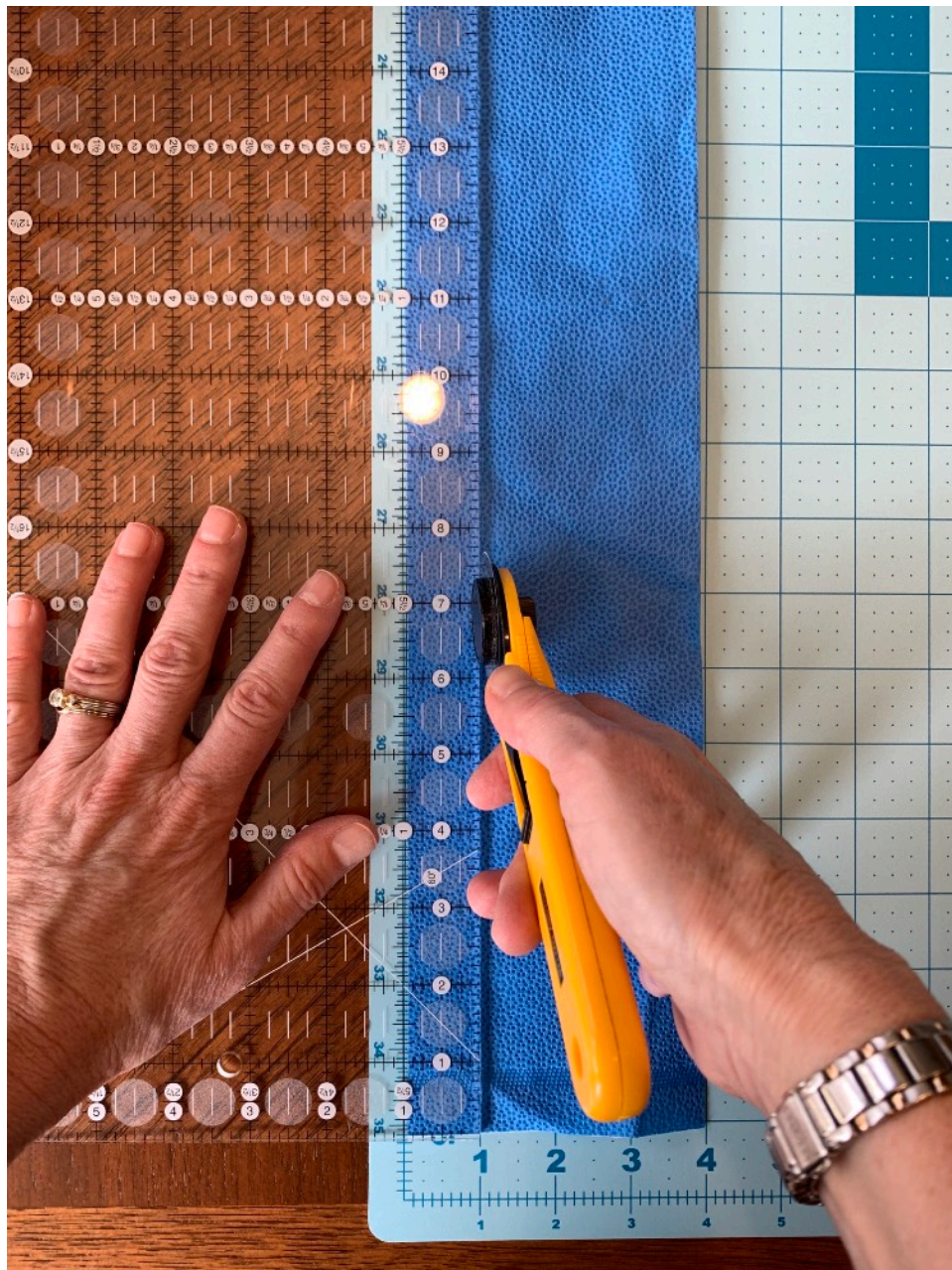




### **STEP 5.**

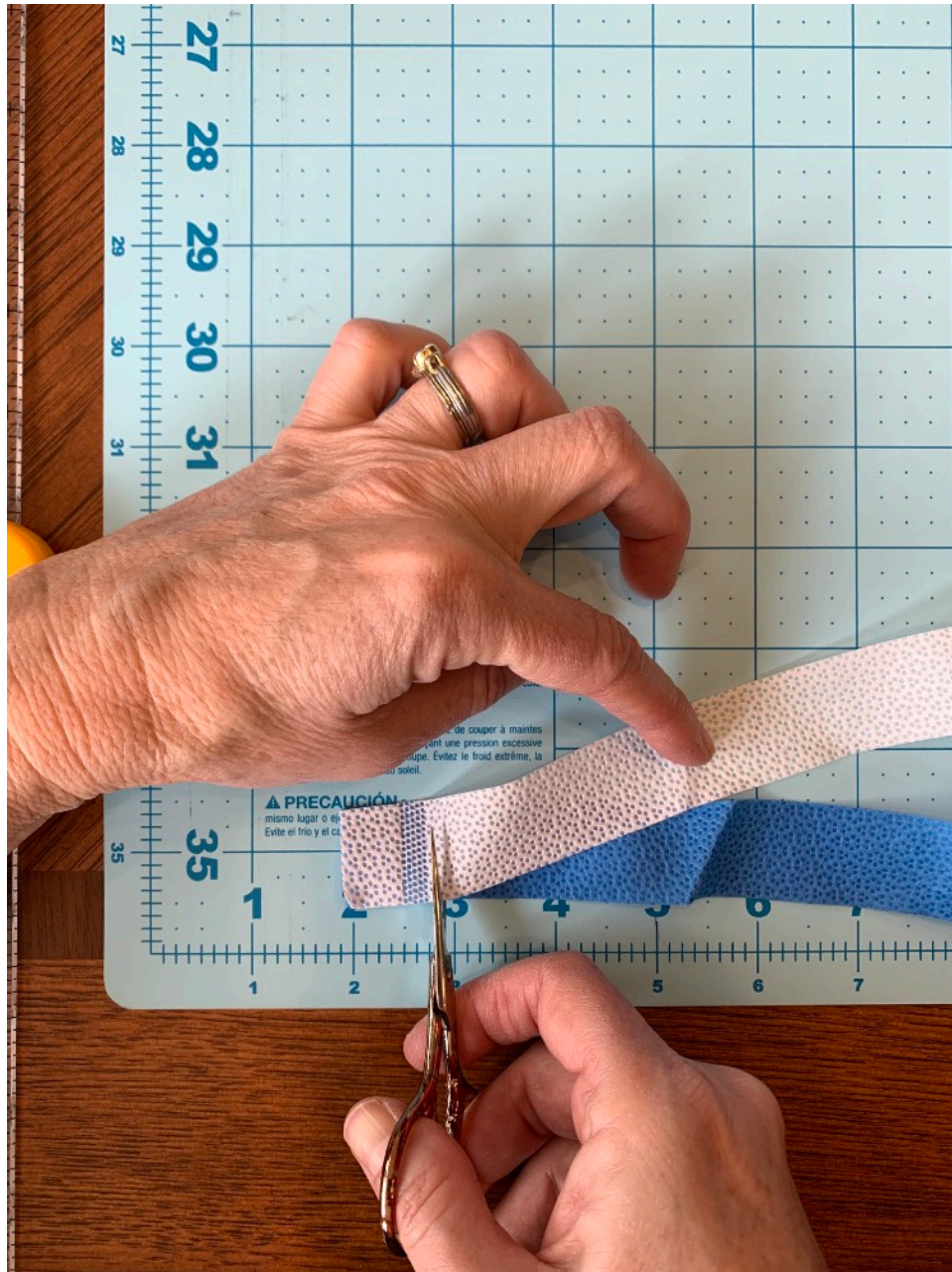
Take the leftover surgical material from Step One and place it with the heat sealed seams (if present) on the top and bottom. Cut it from top to bottom into 1 inch strips. You should get four, 1 inch x 36 inch strips total. Then, take the second sheet of material from Step Two, place heat seal seams (if present) on top and bottom. Cut an additional twenty one, 1 inch strips. You should now have a total of twenty five, 1 inch x 36 inch strips.\* \* Each strip should still have the blue and white material fused together. (There will be a leftover piece of material measuring 7 inches, this can be used later to make additional ties).

\* \* NOTE: If you are using SINGLE PLY wrapping material you will only have BLUE STRIPS and you should cut twice as many - 50 total.



**STEP 6. (Skip this step if using SINGLE PLY wrapping sheets)**

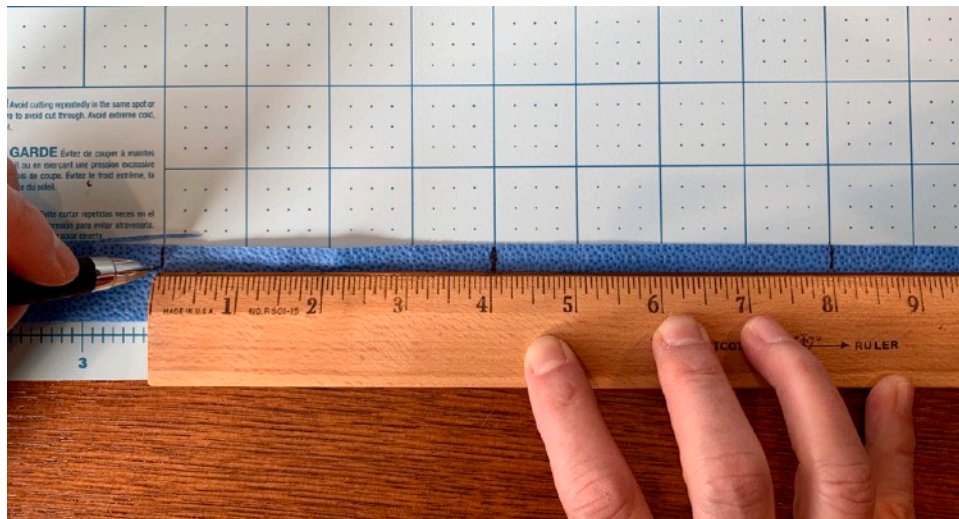
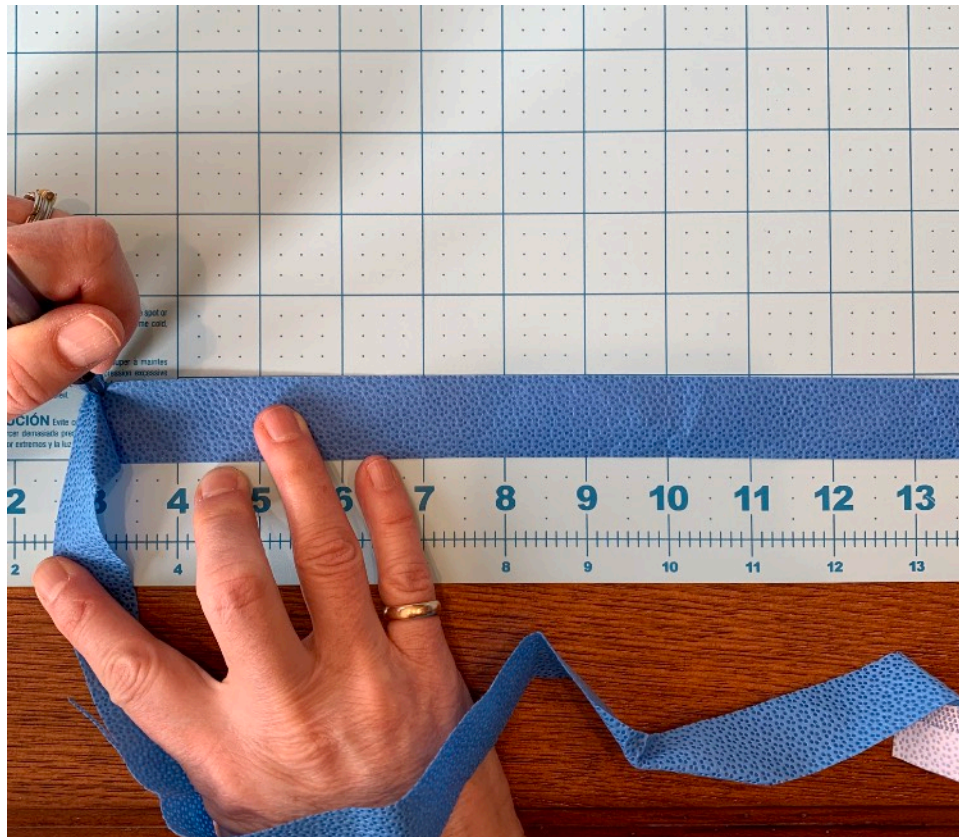
Take a 1 inch strip of sheeting material from Step Five, and cut the white part away from the blue part at each heat seal. You should then have a blue piece of material 1 inch wide and about 36 inches long, and a white piece of material 1 inch wide and about 34 inches long. Repeat this process for every strip generated in Step Five. When finished, you should have 25 blue strips and 25 white strips - 50 total.





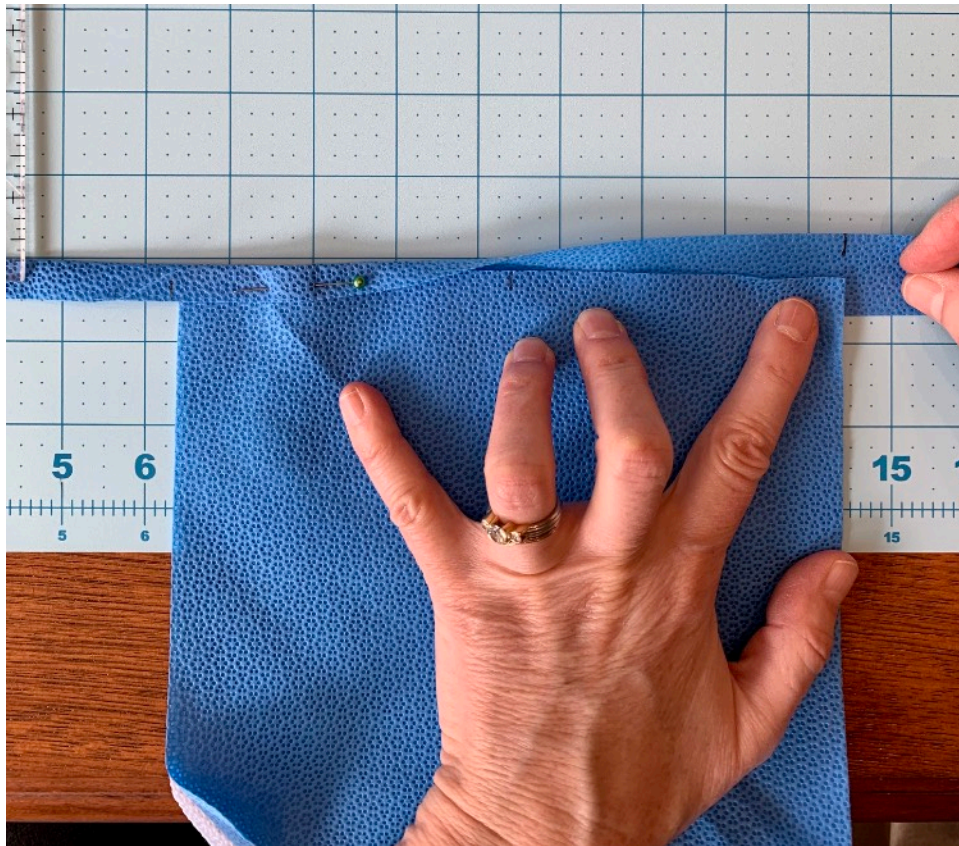
## **STEP 7.**

Take a strip made in Step Six, fold in half by bringing the ends together, and make an easily visible mark on the inner center of the strip. Then make a mark 4 inches on either side of center. Repeat for all of the blue and white strips produced in Step Six. (SINGLE PLY INSTRUCTIONS: Do this step for all 50 the blue strips produced in Step Five).



### **STEP 8.**

Take a blue strip from Step Seven and lay it flat with the marked side facing up. Take a mask from Step Four and place it blue side up. (If you are using SINGLE PLY MATERIAL, please put TWO “mask” pieces together). Match the center mark on the mask with the center mark on the strip. Fold/sandwich the strip in half over the top of the mask. Be sure to check that the inner and outer mask layers stay aligned. Make sure the center mark on the strip stays lined up with the center mark on the mask. The edges of the mask material should now also line up with the other two marks on the strip. Both layers of the mask, inner and outer material should be enfolded in the strip of edging material. Pin the strip to the mask.





### **STEP 9.**

Take the strip/mask combo produced in Step Eight and turn it so the pinned strip is on the right side of the mask. The blue part of the mask should still be face up. Starting at the very top of the strip, fold the edges in half and sew together using a 1/4 or scant 1/4 inch seam from the folded edge. Continue sewing down the strip and over the top of the mask - STOPPING about 1/8 of an inch BEFORE the second edge of the mask.



### **STEP 10.**

Finish the seam with a reverse or auto lock stitch. Cut the thread and remove the partially finished mask from the machine. The strip should now be attached to the mask, and a slight pocket should now exist at the top. The “second half” of the strip will not yet be sewn together.

### **STEP 11.**

Take a 6 inch strip of wire and insert it into the newly created pocket at the top of the mask. Do this gently or the end of the wire will poke out of the pocket. Push the wire in far enough so there is at least 1/4 inch at the edge of the mask that is “wire-free”. Feel the opposite edge of the mask to make sure the wire is at least 1/4 of an inch away from this end as well.





## **STEP 12.**

Taking care not to sew on the newly inserted wire, place the mask back in the sewing machine and start sewing again. Begin a little before the place where you stopped in Step 10 and continue sewing until the strip is completely finished. You should now have a mask with a blue strip/tie attached. A wire should be encased along the top of the mask.



### **STEP 13.**

Flip the mask so the attached strip is on the bottom and the blue colored sheet is still face up. Take the remaining white strip ( for double ply) or blue strip ( for single ply) and repeat Steps 8 and 9. Do not stop sewing at the edge of the mask as you do not have to insert a wire in the bottom unless you would like to enhance the fit. You should now have a mask with two attached strips or ties. If you are using double ply material, you should have a blue tie on the top and a white tie on the bottom. If you are using single ply material you should have a blue tie on both top and bottom. At this point, the mask should measure about 8 inches wide by 7 inches high. Both ties should extend 18 inches from center on either side (about 36 inches from end to end of the tie). If your tie is much shorter than this, it will fit fewer people. You should have a wire in the top tie and an optional wire in the bottom.

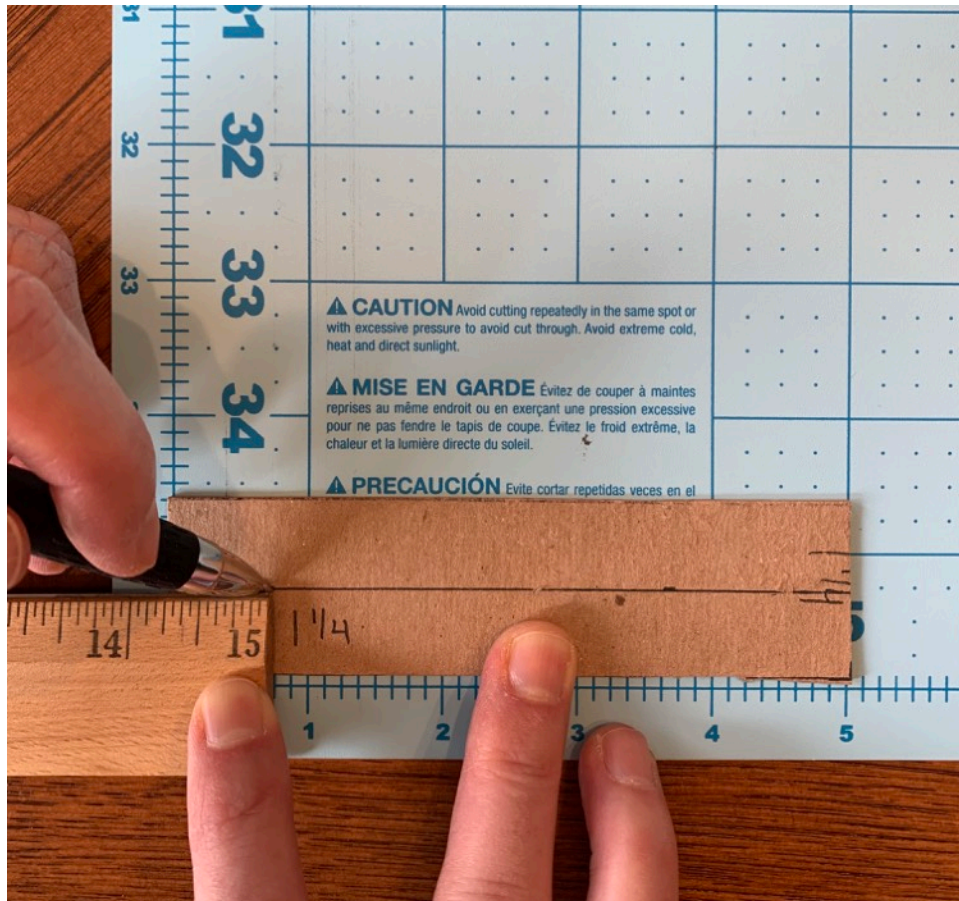




## LET'S GET READY TO FOLD THE MASK !!!

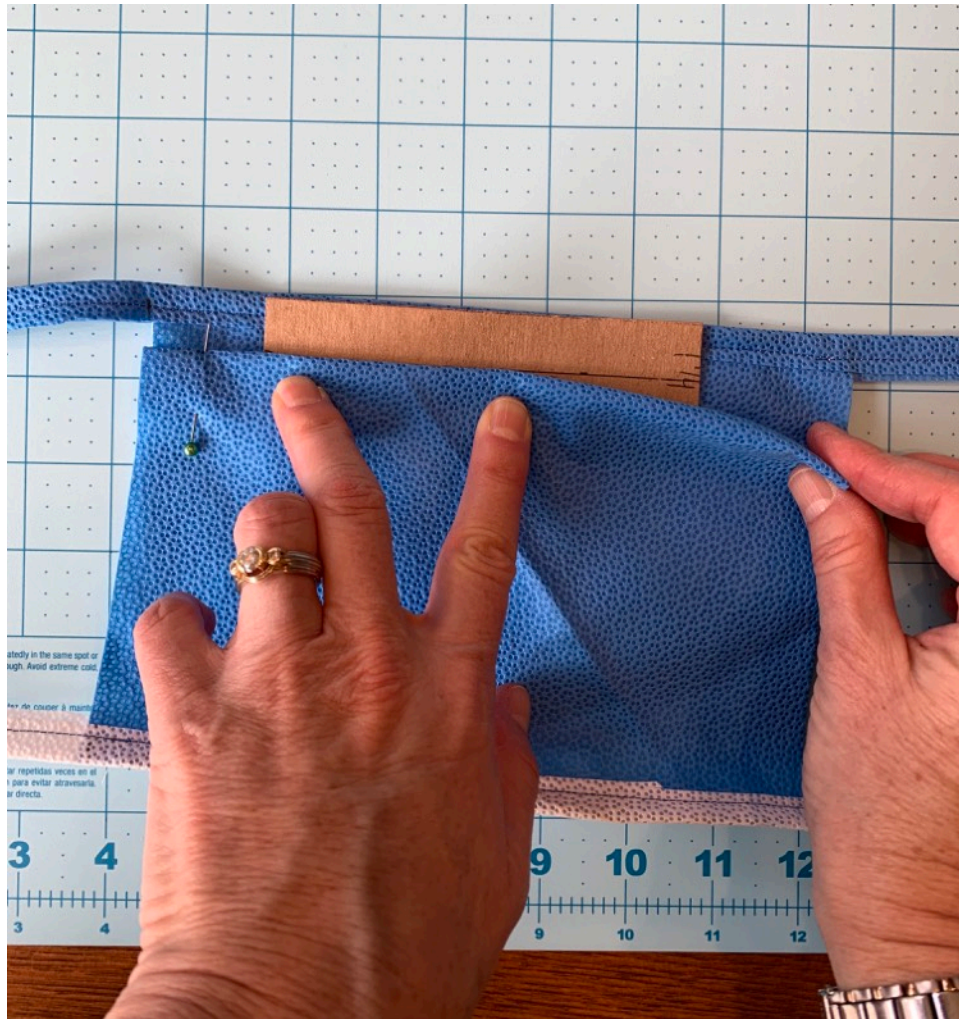
### STEP 14.

Pick up the cardboard template that is 1 1/4 inches wide and 5 inches long. Draw a line, lengthwise down the center of the template. You should now have a 5 inch long template with a 5 inch long line running all the way across the center of the cardboard. We will now call this the TOP TEMPLATE.



### **STEP 15.**

Place your mask blue/outer side up with the blue tie on top and the white tie on bottom. Take the long edge of TOP TEMPLATE and place on top of the mask. The edge of the template should be even with the BLUE TOP PART of the mask. Hold the template in place so it doesn't shift. Pinch the fabric just below the template and bring the fold up to meet the middle line on the template. You should now have a fold that is  $\frac{5}{8}$  of an inch wide on either side of the mask. Make sure the sides of the fold are square to the edge. Pin in place. Remove template.





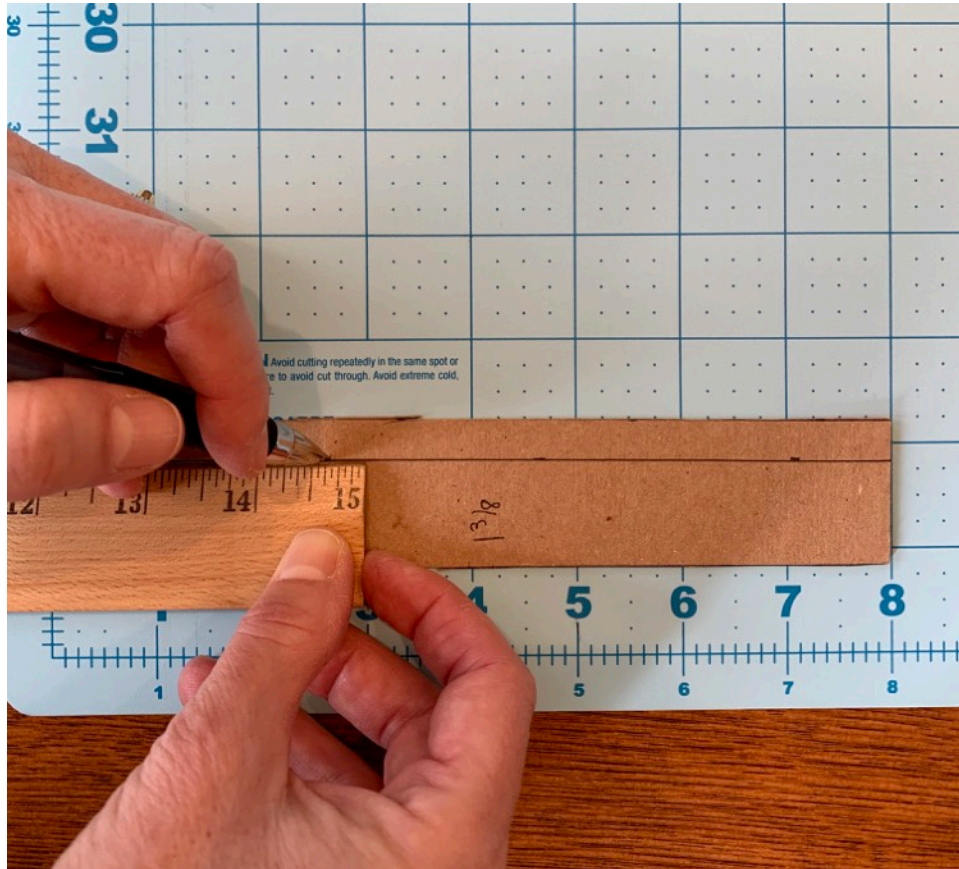
### **STEP 16.**

For each edge of the mask, sew the fold down in place using a 1/4 seam. The blue part of the mask should still be face up. You should now have a mask with a fold in place about 1/2 inch from the top of the mask.



### **STEP 17.**

Pick up the second cardboard template that is  $1 \frac{3}{8}$  inches wide and 8 inches long. Draw a line, lengthwise down the template,  $\frac{3}{8}$  of the inch from the top. When finished, you should have a template with a line  $\frac{3}{8}$  of an inch from the top, extending the full 8 inch length of the template. We will now call this the **BOTTOM TEMPLATE**.





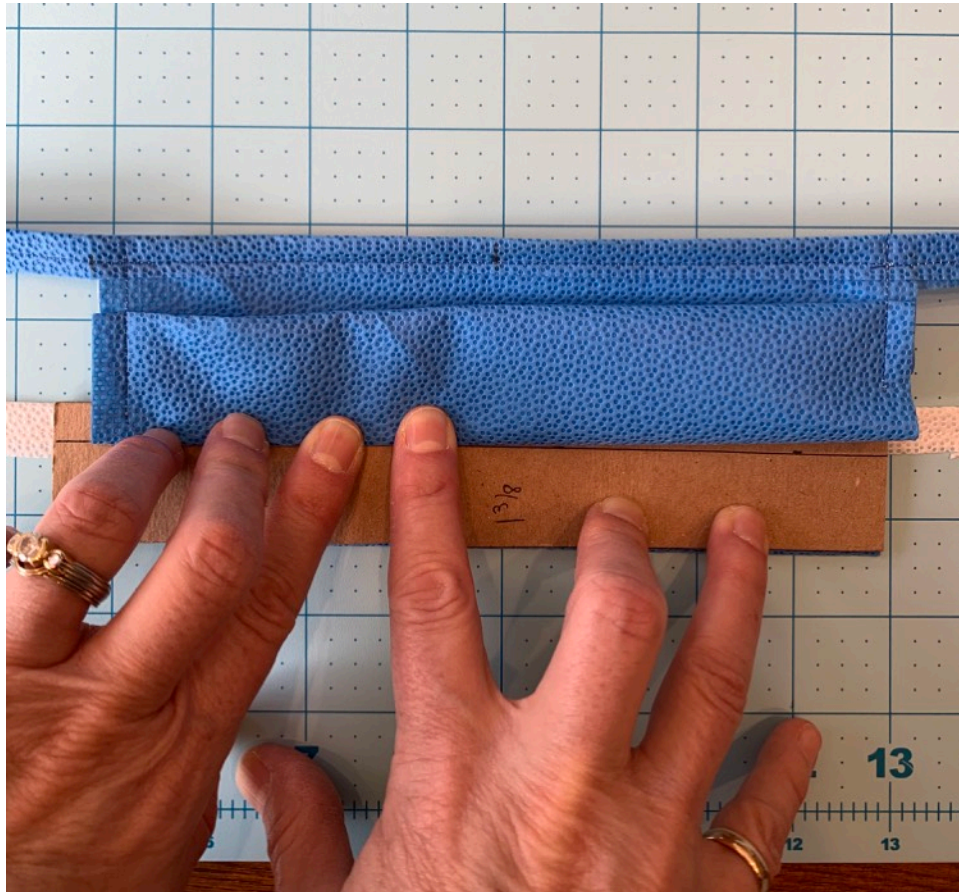
### **STEP 18.**

Flip the mask over. (If using double ply material, the white inner side is facing up and the white tie is on the bottom. If using single ply material, the inner layer will be blue). Place the BOTTOM TEMPLATE on top of the mask, 1  $\frac{3}{8}$  inch up from the bottom. Fold the bottom part of the mask up so the bottom edge of the mask is now even with the top of the template. You should have just made a fold of material that is 1  $\frac{3}{8}$  inch wide. Remove the template, and pin the sides in place. Sew both edges of this fold in place using a  $\frac{1}{4}$  inch seam.



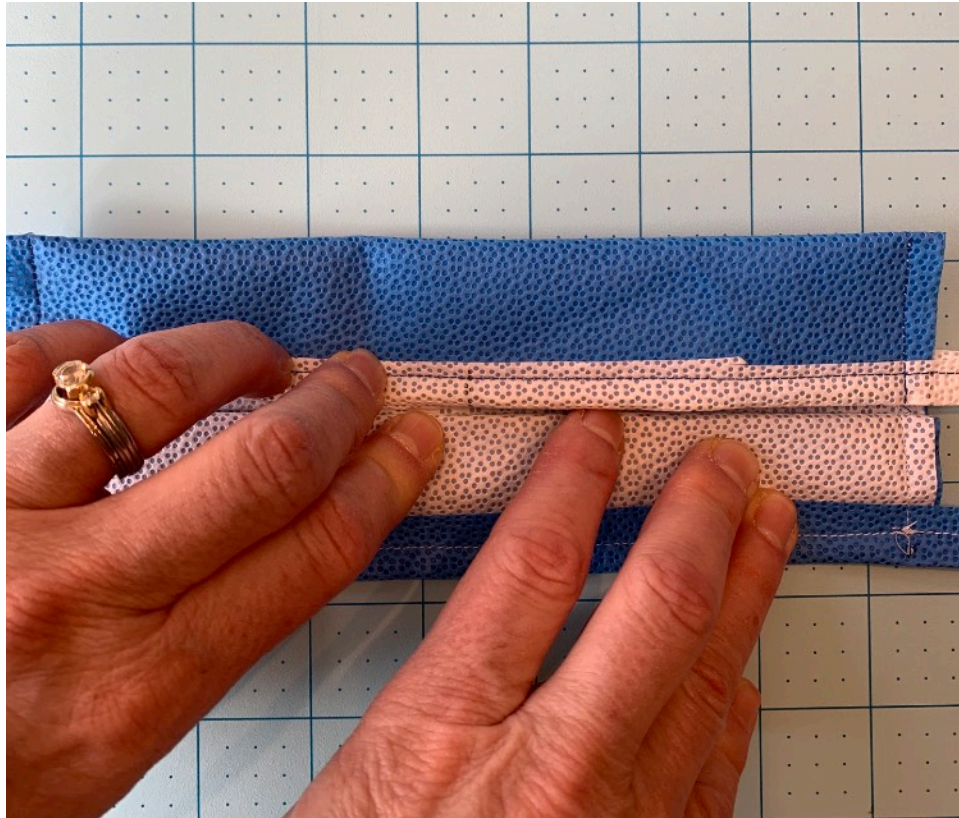
### **STEP 19.**

Turn the mask over so the blue/outer side is facing up and the white tie is on the bottom. Place the BOTTOM TEMPLATE on the mask, even with the bottom edge. The line on the template should be on top. Now here's the tricky part: Pinch the fabric just above the template and bring that fold down to the line.





Remove the template. Holding/pinning the fold in place, check underneath the mask. The inner folds should be touching but not overlapping.



Place the top/blue side up again. Sew this fold using a 1/4 seam that runs from the top to the bottom of the mask on both sides.

## **STEP 20.**

Make an additional side seam on either edge that parallels the seams you made in Step 19. You should now have a completed mask!! Please note that the lower tie should extend out from the mask at approximately the mid point. If the fold/tie is lower than this, the mask is closer to the face and more difficult to wear comfortably.



Please send them to your local Health Care Providers or First Responders!

**NOTE: These masks are obviously not medical grade, nor certified to perform, but instead are intended to be used as a best effort when health care providers have no mask at all.**

**PLEASE DO NOT SELL THESE MASKS FOR A PROFIT**

**THANKS SO MUCH FOR YOUR HELP AND SUPPORT.**

**TOGETHER WE ARE STRONGER.**