



HOW TO EASILY MAKE:

**A REUSABLE COTTON MASK
WITH
FILTER
INSERT**



**AND
A POLYPROPYLENE
MASK**

...AT HOME

DISCLAIMER:

This mask design is NOT A SUBSTITUTE FOR AN N95 MASK. If you have access to an N95 mask you should always wear an N95 mask.

ALL FILTERS EXPIRE AND BECOME INEFFECTIVE AFTER A TIME, even the N95 filters. Therefore, these and all mask filters are one use only. The filters suggested in this design are made from Non-Woven Polypropylene, which has been shown to provide some protection.

NON-WOVEN POLYPROPYLENE is a synthetic fiber that is widely considered to only serve for a single use. The current advice on washing or sterilizing Polypropylene is to wash it in hot soapy water and then boil it to sterilize it as you would a baby's bottle. This does not however suggest that the fabric maintains its original effectiveness as every time a synthetic fabric is washed or encounters heat it undergoes stress and can breakdown the structure of the fabric, reducing its effectiveness overtime. Having said this, Covid-19 has been proven to survive on fabrics (and plastics) for quite some time, so I would advise against using Non-Woven Polypropylene from reusable shopping bags if they have not been treated. I would also advise against using old shopping bags that you have in your home for two reasons – first is if they are too old or have been used extensively, the fabric will not be as effective due to stress and overuse – second is that these bags if unwashed and unsterilized have been proven to already carry a range of bacteria such as (but not limited to) E.coli and salmonella, which you would not want in contact with your face.

This mask design DOES NOT GUARANTEE PROTECTION from any virus or other infection or allergy, and the original designer cannot be held accountable for any unwelcome outcome from wearing the mask.

PRIOR to making masks for medical staff or others, you should first CONTACT the potential recipients to SEE IF THEY WANT OR NEED MASKS and if they would accept this design or if they would prefer another. There are many masks designs out there, and some workplaces work with or prefer a particular style or fit.

I have two main reasons for designing this mask:

- Medical masks have been sold out in stores for some time and I was looking for a way of protecting my family and also not using resources that should be first going to our medical staff on the front line. I also see it as something that I can create to aid my community and our medical services if the need arises.
- The designs online provided some protection but didn't seem to have a clean seal around the face, meaning there were always gaps.

Having said this, I am not a medical expert, fabric technician or expert seamstress, however I have tried to take online advice from researchers in these fields. The intention was to make a mask that covered the mouth and nose well and could be constructed from easily sourced materials.

Fitting your mask

It is extremely important that prior to inserting your filter or putting on your mask, you thoroughly wash your hands.

You should then correctly fit your mask and ensure that it is comfortable. What you want to avoid is an ill-fitted mask or one that causes irritation, because you want to avoid touching your face and a poor fitting mask will only increase the chances of you touching your face (according to some sources, this might actually be worse for you than not wearing any mask at all).

When you come to remove your mask, you should thoroughly wash your hands first, then remove your mask and discard it or wash it and then thoroughly wash your hands again before touching anything else.

IMPORTANT!

FOR ANY MASK TO BE MOST EFFECTIVE YOU NEED TO:

- | | |
|-------|--|
| DO | WASH YOUR HANDS BEFORE PUTTING ON YOUR MASK |
| DO | WASH YOUR HANDS BEFORE REMOVING YOUR MASK AND AFTER YOU HAVE FINISHED TOUCHING YOUR MASK |
| DO | MAKE SURE THAT YOUR MASK IS COMFORTABLE AND FITTED CORRECTLY THE FIRST TIME THAT YOU PUT IT ON |
| DO | CHANGE YOUR MASK REGULARLY |
| DO | WASH YOUR COTTON MASK AFTER EVERY USE |
| DO | CHANGE YOUR FILTERS REGULARLY |
| DO | WEAR A MASK IF YOU ARE SICK OR SYMPTOMATIC OR HAVE BEEN IN CONTACT WITH SOMEONE CONFIRMED TO HAVE COVID-19 |
| | |
| DON'T | TOUCH YOUR FACE/MASK OR READJUST YOUR MASK WHILST WEARING IT |
| DON'T | TAKE YOUR MASK OFF WITH UNCLEAN/UNSANITISED HANDS |
| DON'T | WEAR YOUR MASK IF IT IS WET, SOILED OR PERFORATED |
| DON'T | TOUCH THE FRONT OF YOUR MASK – IT IS CONTAMINATED |

ARGUABLY, INCORRECT MASK USE CAN BE WORSE THAN NOT WEARING A MASK AT ALL. SO BE SAFE GUYS!

Instructions for NWPP mask or Outer mask

STEP 1: ACQUIRE MATERIAL AND PREP.

You will need:

- 1x reusable non-woven polypropylene bag OR non-woven polypropylene landscaping fabric (make sure it is non-woven) - If you are using a non-woven polypropylene bag, you will need to unpick all seams carefully so as not to damage the material

STEP 2: PREWASH and DRY and IRON

Clean the non-woven polypropylene:

- Handwash in hot water with antibacterial soap
- Boil in water for 5 minutes to sanitize
- Hand dry or air dry in your tumble dryer (only if you have the air-dry setting – you will destroy the fabric otherwise)
- Iron on a VERY LOW synthetic setting – you will melt the fabric if it is too hot, so test it on a test piece first. If you do melt the test piece, and it sticks to your iron wipe it off quickly with a damp cloth whilst the iron is still hot.

STEP 3: CUT OUT PATTERN

SEE pattern attachments

Cut out:

- 210mm x 2 of NWPP edge trimming (you can use the preexisting trimming from your NWPP bag or make your own – see pattern)
- 100mm x 2 of NWPP edge trimming (you can use the preexisting trimming from your NWPP bag or make your own – see pattern)
- At least one rectangle 210 x 180mm of NWPP (make sure that this piece has no holes in it from previous needle punctures). If you are making this as your **only** mask, then use no less than 3 rectangles, and sew them together along the edges.
- Elastic: 2 x 200mm pieces and 2 x 50mm pieces
- 400mm x 2 of NWPP edge trimming for the head ties (or cut two rectangles to make edging that are 400x25mm)

STEP 4: SEWING

See pattern instructions and video.

40mm

40mm

10mm

20mm

10mm

60mm

210 x 180 mm - CUT ONE - NWPP

NWPP MASK DESIGN -
CUT ONE OF THESE OUT OF CLEAN NWPP

—— CUT LINE
- - FOLD LINE

ALSO CUT FOUR EDGING STRIPS (MEASUREMENTS BELOW)
CUT TWO EDGING STRIPS THAT ARE 400 x 25mm TO MAKE HEAD STRAPS
(PATTERN THE SAME AS EDGING BELOW, BUT LONGER)
CUT FOUR 50mm PIECES OF ELASTIC

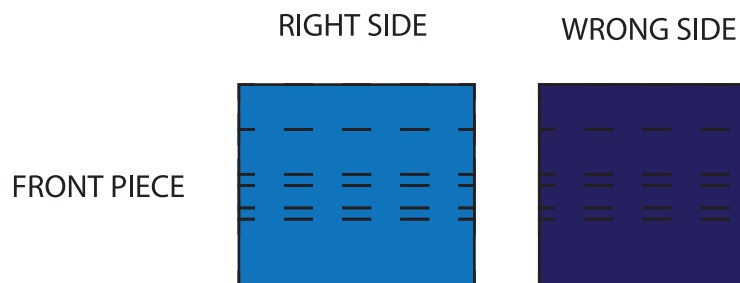
210 x 25 mm - CUT TWO - NWPP - FOR EDGING

5.5mm
7mm
7mm
5.5mm

100 x 25 mm - CUT TWO - NWPP - FOR EDGING

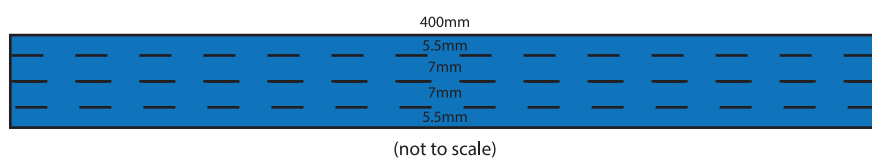
5.5mm
7mm
7mm
5.5mm

BLUE SECTION IS NOT A PART OF THE PATTERN



STEP 1: CUT OUT YOUR NWPP FABRIC
HOWEVER MANY LAYERS YOU WANT TO USE.

STEP 2: CUT 4 x 50mm PIECES OF ELASTIC.
CUT 400x25mm PIECES OF 100% COTTON.
PREPARE AND SEW STRAPS AS SHOWN.



Pin the elastic like shown and fold to the centre.



Fold other side to the centre.



Fold in half and pin into place.

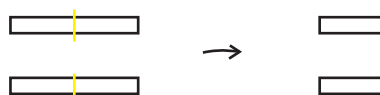


Sew where indicated in yellow below.



Do this twice.

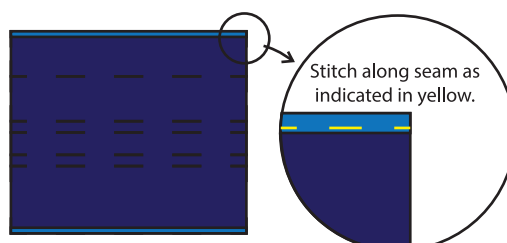
Take the two left over pieces of elastic and fold them each in half.



You will end up with this:

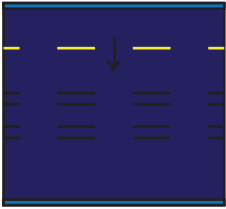


STEP 3: EDGE THE TOP AND THE BOTTOM




STEP 4: FOLD AS SHOWN.

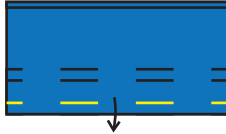
A.




B.




C.



D.




E.




F.

Now untuck the top front flap and lay it on top.




G.

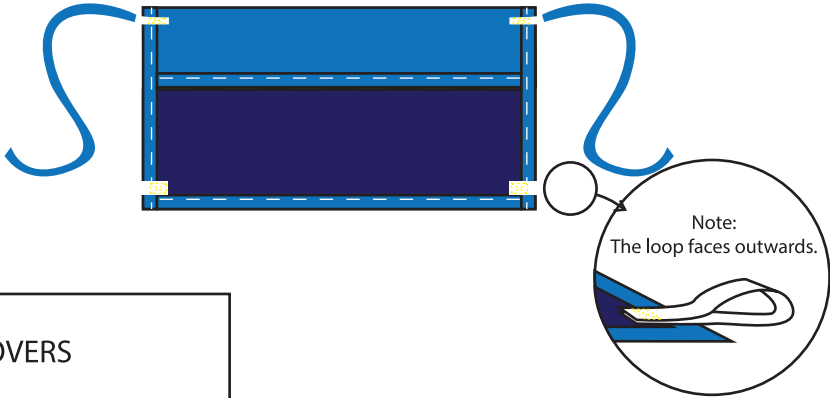
Now pin in place where shown.



STEP 5: SEW EDGING ONTO THE SIDES.



STEP 6: SEW ON AND REINFORCE STRAPS AND ELASTIC LOOPS.



Note:
The loop faces outwards.

STEP 7: SEW ON ELASTIC COVERS FOR COMFORT



AND YOU ARE FINISHED!

Instructions for NWPP filter insert

STEP 1: ACQUIRE MATERIAL AND PREP.

You will need:

- 1x reusable non-woven polypropylene (NWPP) bag or NWPP landscaping fabric (make sure that it is non-woven polypropylene) - If you are using a non-woven polypropylene bag, you will need to unpick all seams carefully so as not to damage the material

STEP 2: PREWASH and DRY and IRON

NWPP:

- Handwash in hot water with antibacterial soap
- Boil in water for 5 minutes to sanitize
- Hand dry or air dry in your tumble dryer (only if you have the air-dry setting – you will destroy the fabric otherwise)
- Iron on a VERY LOW synthetic setting – you will melt the fabric if it is too hot, so test it on a test piece first. If you do melt the test piece, and it sticks to your iron wipe it off quickly with a damp cloth whilst the iron is still hot.

STEP 3: CUT OUT PATTERN

SEE pattern attachments

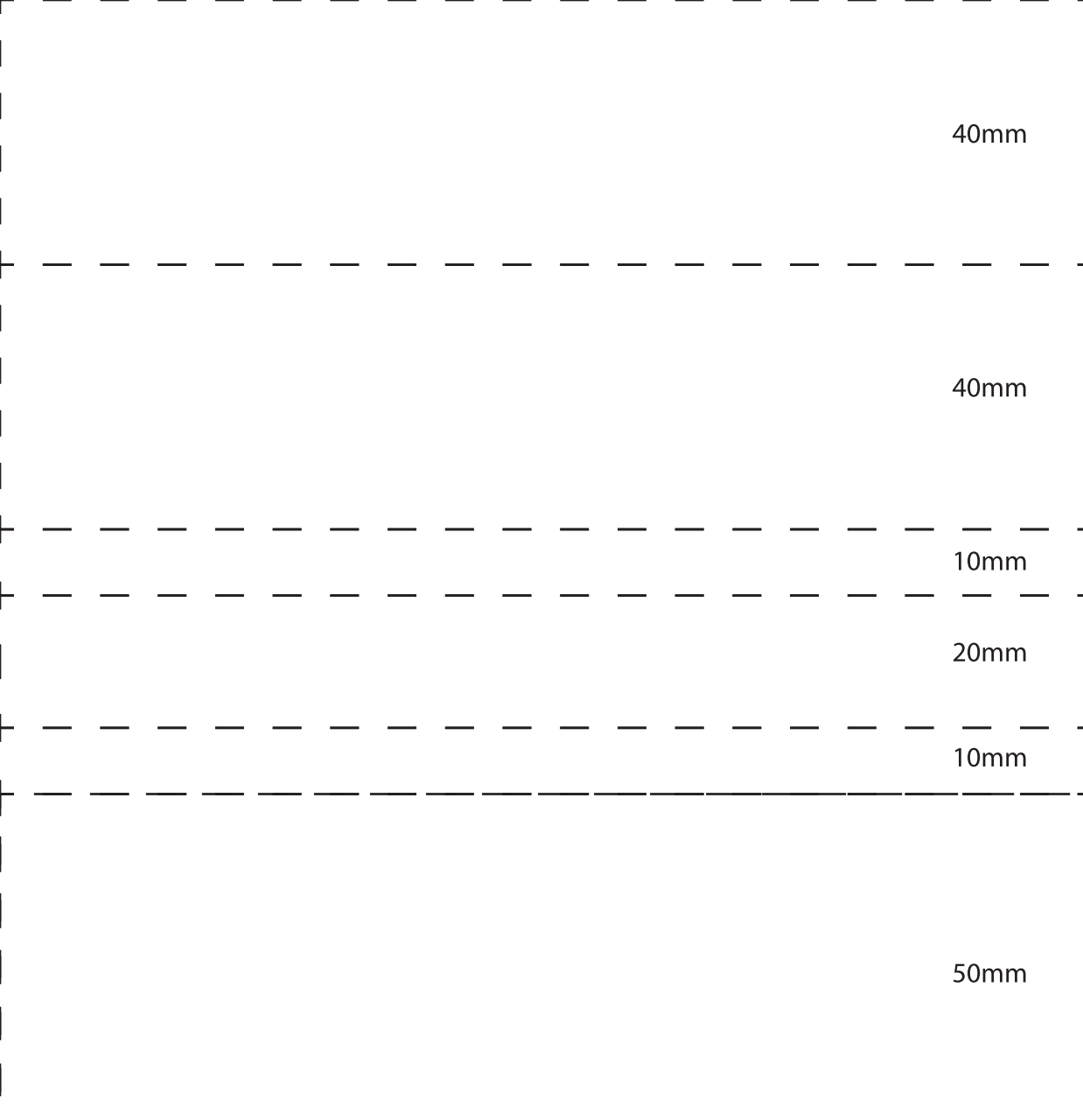
Pin the pattern to the fabric and cut out all pieces.

NWPP: Cut a rectangle that is 165x170 mm (make sure that this piece has no holes in it from previous needle punctures) (you can insert up to 3 filters into your cotton mask lining, but I would recommend no less than 1 – change your filters regularly to maximize protection – judge how many filters you insert on how difficult/easy it is to breath – you want it to be comfortable to wear for a long time)

STEP 4: FOLD AND IRON

See NWPP mask pattern instructions step 4 for how to fold.

Once pinned in place, iron on a VERY LOW synthetic setting and press it under a book whilst making cotton mask.



165 x 170 mm - CUT AT LEAST ONE - NWPP

NWPP FILTER INSERT DESIGN
TO FOLD THIS PATTERN, FOLLOW STEP 4 OF THE
NWPP MASK INSTRUCTIONS - PG 2 OF 2

—— CUT LINE
- - FOLD LINE

BLUE SECTION IS NOT A PART OF THE PATTERN

Instructions for Cotton Mask with filter pocket

STEP 1: ACQUIRE MATERIAL AND PREP.

You will need:

- 2x different coloured cotton fabrics (must be 100% cotton) – one for the inside of the mask and a separate colour for the outside
- 1x reusable non-woven polypropylene (NWPP) bag or NWPP landscaping fabric (make sure that it is non-woven polypropylene) - If you are using a non-woven polypropylene bag, you will need to unpick all seams carefully so as not to damage the material
- elastic 5mm width or less

STEP 2: PREWASH and DRY and IRON

Cotton:

- Hot Gentle cycle on washing machine with detergent
- Tumble dry to preshrink the cotton
- Iron on HOT cotton setting

STEP 3: CUT OUT PATTERN

SEE pattern attachments

Pin the pattern to the fabric and cut out all pieces.

You will need:

Cotton Inside colour: Cut a rectangle that measures 210x220 mm

Cotton Outside colour: Cut a rectangle that measures 210x220mm

Cotton (any colour): Cut two rectangles that are 400x25mm for the head ties

Elastic: Cut four 50mm pieces

STEP 4: SEWING

See pattern instructions and video.

10mm



This sewing line is for a paperclip nose piece insert.

40mm

40mm

10mm

20mm

10mm

60mm

30mm

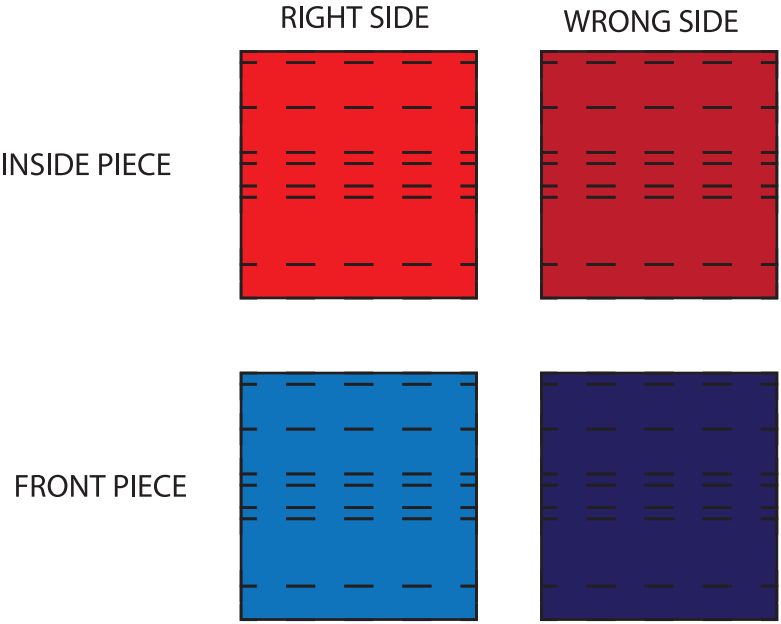
210 x 220 mm - CUT ONE - EACH COTTON COLOUR

COTTON MASK DESIGN -
CUT TWO OF THESE OUT OF TWO DIFFERENT
COLOURED COTTON (100%) FABRICS

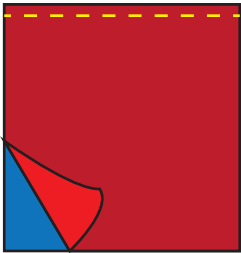
400 x 25 mm - CUT TWO - COTTON- FOR STRAPS
(PATTERN THE SAME AS EDGING ON NWPP MASK DESIGN PATTERN PAGE, BUT LONGER)
CUT FOUR 50mm PIECES OF ELASTIC

—— CUT LINE
— — FOLD LINE
—— SEW LINE

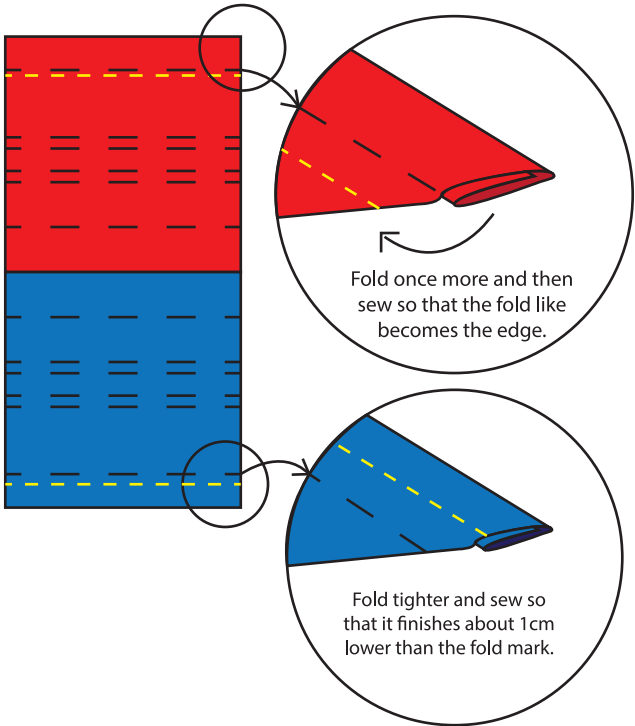
BLUE SECTION IS NOT A PART OF THE PATTERN



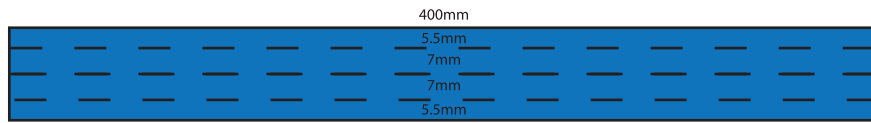
STEP 1: PIN RIGHT SIDES TOGETHER
AND SEW WHERE MARKED IN YELLOW



STEP 2: OPEN,
PIN AND SEW EDGE SEAMS



STEP 3: CUT 4 x 50mm PIECES OF ELASTIC.
CUT 400x25mm PIECES OF 100% COTTON.
PREPARE AND SEW STRAPS AS SHOWN.



(not to scale)

Pin the elastic like shown and fold to the centre.



Fold other side to the centre.



Fold in half and pin into place.



Sew where indicated in yellow below.



Do this twice.

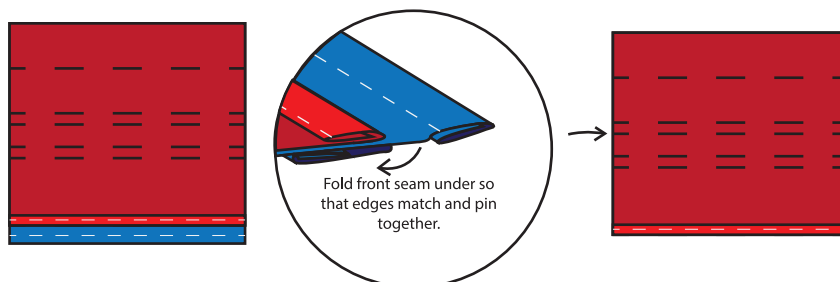
Take the two left over pieces of elastic and fold them each in half.



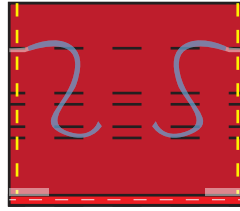
You will end up with this:



STEP 4: PUT RIGHT SIDES TOGETHER AGAIN.
FOLD UP THE FRONT PIECE SEAM AND PIN IT IN PLACE.

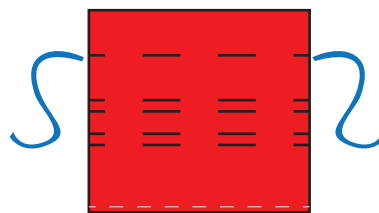


STEP 5: PIN SMALL ELASTICS AND STRAPS INTO PLACE
IN BETWEEN THE TWO LAYERS WHERE SHOWN BELOW.
PIN AND SEW WHERE MARKED IN YELLOW.

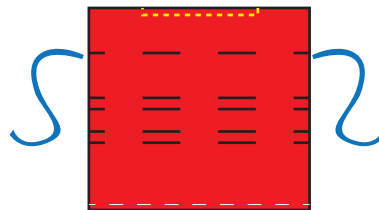


Straps and elastic
are in between
the two layers of
fabric

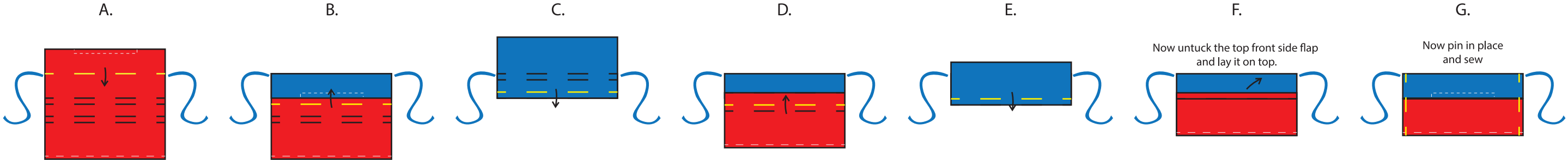
STEP 6: FLIP RIGHT SIDE OUT.



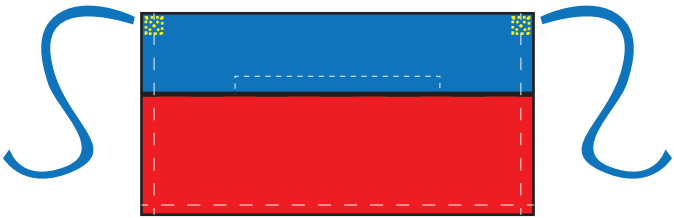
STEP 7: SEW PAPERCLIP HOLDER.



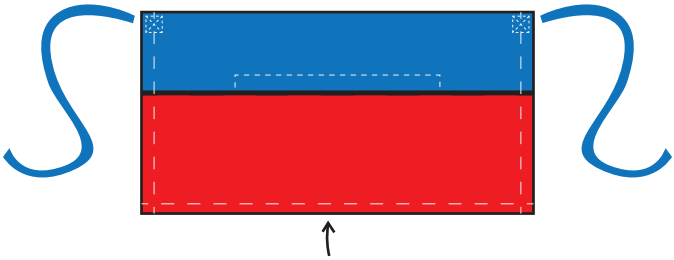
STEP 8: FOLD AS SHOWN.



STEP 9: SEW REINFORCEMENT FOR THE STRAPS.



STEP 10: INSERT YOUR FILTER.



AND YOU ARE FINISHED!

OTHER USEFUL RESOURCES:

Great Facebook Group to join if you want to get involved:

<https://www.facebook.com/groups/opensourcecovid19medicalsupplies/>

Loads of Great information on mask making:

<https://makermask.org/>

Crowdsourced list of hospitals that are requesting handmade face masks using specific patterns, and links to those patterns:

[https://docs.google.com/document/d/18bl_Elz24ajVpEF-](https://docs.google.com/document/d/18bl_Elz24ajVpEF-Dj-5Q3W4gzLd9o_TzFIWOEylUXYQ/edit?fbclid=IwAR3RJsfZOjgUokgtfhkGwPeJGZURXQNAARG8So)

[Dj-5Q3W4gzLd9o_TzFIWOEylUXYQ/edit?fbclid=IwAR3RJsfZOjgUokgtfhkGwPeJGZURXQNAARG8So](https://docs.google.com/document/d/18bl_Elz24ajVpEF-Dj-5Q3W4gzLd9o_TzFIWOEylUXYQ/edit?fbclid=IwAR3RJsfZOjgUokgtfhkGwPeJGZURXQNAARG8So)
[h2Jsu7R1ICc3pBNLk8q9l#heading=h.89dcw0iib1yv](https://docs.google.com/document/d/18bl_Elz24ajVpEF-Dj-5Q3W4gzLd9o_TzFIWOEylUXYQ/edit?fbclid=IwAR3RJsfZOjgUokgtfhkGwPeJGZURXQNAARG8So)

Loads of Great information on materials to use:

<https://smartairfilters.com/en/blog/best-materials-make-diy-face-mask-virus/?fbclid=IwAR0vLhAtnPYPbBeVrLOkZwkHpusyE0z6xxn53IsWSQJhyxPgK6OYc-ItQh8l>

We sewed buttons on our headbands because our ears were breaking down. It helps alot.



If you would like to modify the design for a button headband (like the one to the left), I suggest extending the elastic to make a loop instead of a single strand.

