DIY Face Shield - Emergency PPE Made Using an A4 Printer and Laminator

by MrCurreyTeach

The DIY Face Shield is emergency PPE (Personal Protective Equipment) that can be produced by anyone using an A4 printer and laminator.

If you are struggling to access PPE due to the shortages brought on by the Covid-19 outbreak, this could be used as an emergency solution to help protect you, or someone working in an environment where they risk infection.

This face shield should only be used if you have no other option. It should always be inspected by the user, and sanitized before use.

To download the instructions and pattern files to make this, use the links below the supplies section of these instructions. No sign up is required to view the files in this section. (Pattern version 13/04/20)

Who could use this?

- Health workers, carers and frontline workers with no other access to PPE
- People who work face to face with the public (delivery drivers, supermarket workers, etc)
- Those wishing to support their communities by producing and supplying PPE to an organisation in need (though you should seek permission from potential recipients first).

What's the difference between this, and other DIY face shields out there?

- Anyone with a printer and laminator can make this shield.
- No extra components or materials are required (the shield is designed to hold itself together)
- All you need is a pair of scissors, a sheet of A4 paper, a printer, a laminator and 2 pouches.
- It does not require advanced production equipment, such as a 3D printer or laminator.

Follow updates about this project on Twitter: https://twitter.com/curreymr (@curreymr)

Important notices (Disclaimer and Safety information):

This is a concept. It may be used where the need arises, but it should never replace the use of approved equipment. Please utilise this design as required, and provide any thoughts or feedback you may have.

This face shield has been designed to be used where there is no alternative equipment available, or in an emergency. While designed to provide protection against fluid particles this item is not clinically tested, nor is not intended to replace clinically approved equipment where available. Where required, it must be worn in conjunction with other directed safety equipment.

This is a disposable product. It is designed to be used once, and safely disposed of. Once assembled, the face shield is not designed to be taken apart, or have components replaced. Doing so will weaken the structure of the components and fixings.

These face shields are for personal production and use. Consideration should be given to the sanitation of your environment during production (wash hands, disinfect equipment and surfaces etc). If you are intending to produce these on behalf of someone else, or to provide to a community for their use, please seek approval to do so first.

Safety considerations during production:

Laminators can get very hot. Please take care when using yours, following the guidance outlined in your manufacturers instruction manual.

Take great care when cutting out the components, particularly when using a craft/sharp knife. Laminated paper can cause the blade to slip easily, so keep fingers clear and always cut on a cutting mat.

Supplies:

A4 printer

A4 laminator

2 x laminator pouches

1 x piece of A4 paper

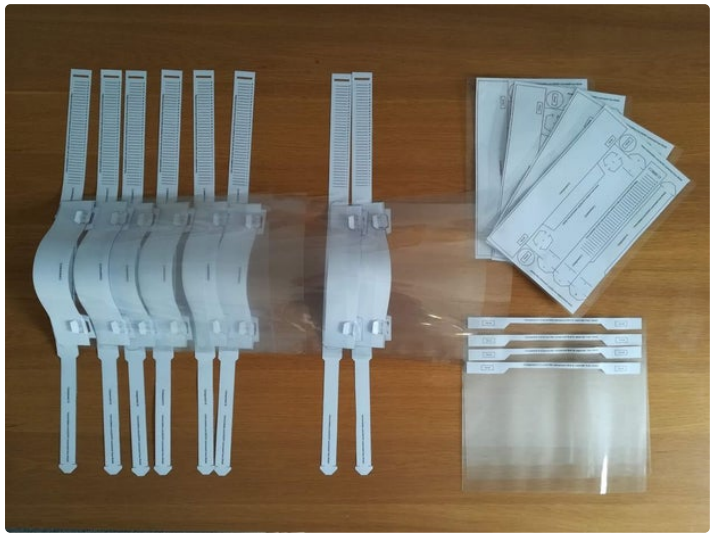
1 x pair of scissors

1 x craft knife (or any sharp knife)

1 x cutting mat (or similar such as a chopping board)

First time making this? Please download the instructions, and the labelled version of the PDF pattern using the links below.

Face Shield pattern file updated: 13/04/20



https://www.youtube.com/watch?v=atd0HvkAfps&t=

Step 1: Pre-production

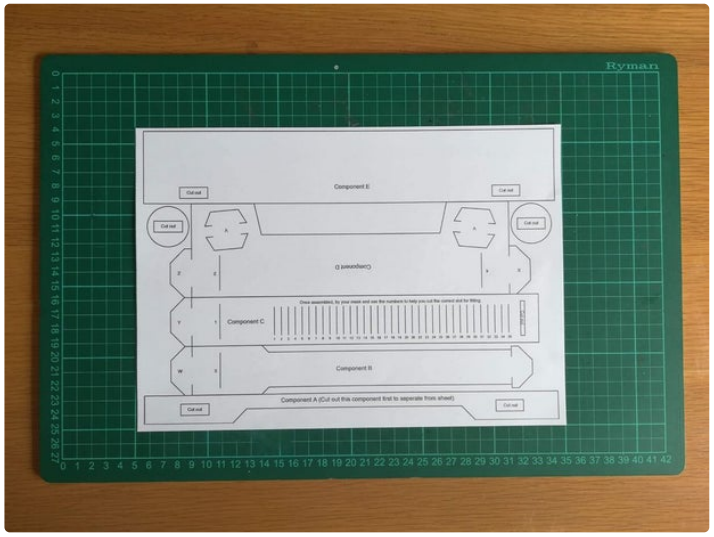
1. Gather all of your production materials together
2. Download the face shield pattern by downloading the PDF files from this page
3. Print the face shield pattern on your A4 printer.*

Notes:

**In your printer options, make sure your printer is set to print the document at 'actual size,' so it is not 'scaling to fit' as this may adjust the size of the components in the pattern.*

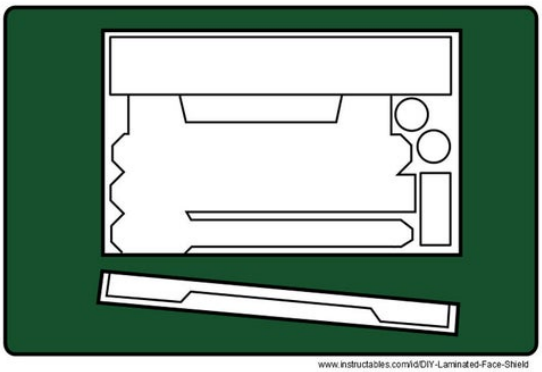
To save time and materials, you may want to prototype this face shield by making some practice versions without laminating the components.

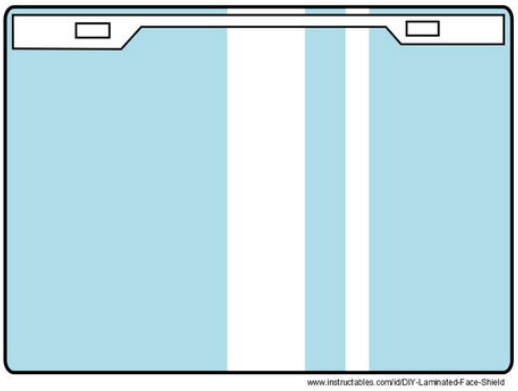
Once you are confident you can build this face shield, a version can be downloaded with no labelled components or instructions.

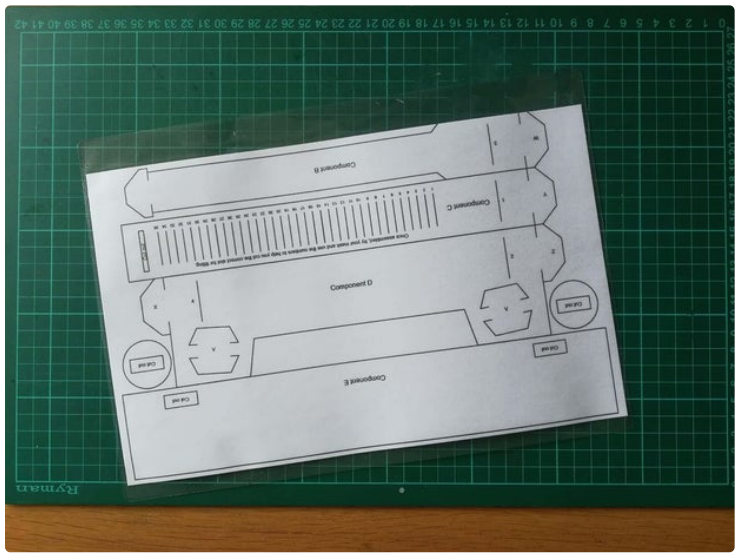


Step 2: Laminating the Components

1. Cut Component A from the main sheet and put to one side.
2. Place the sheet containing the rest of the components into a laminating pouch and run through the laminator.
3. Carefully cut around the outside edge of Component A, and place in a landscape pouch, so that it is approximately 2mm away from the top. This will form the visor section of the facemask.
4. Carefully run the laminating pouch containing Component A through the laminator.







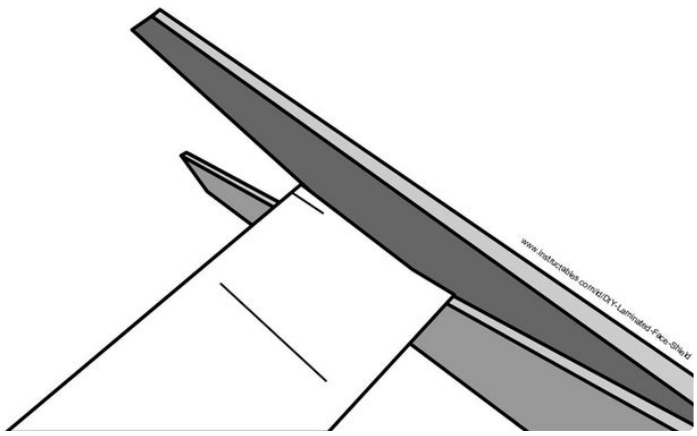
Step 3: Cutting Out the Components

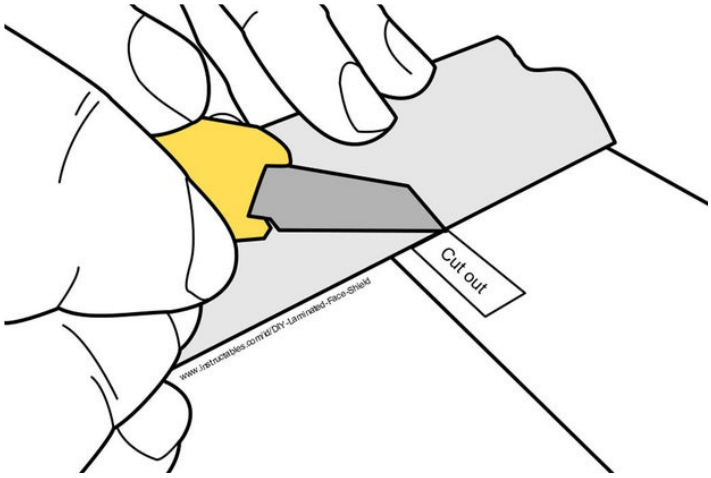
1. Neatly cut around the outside edges of Components B – E.

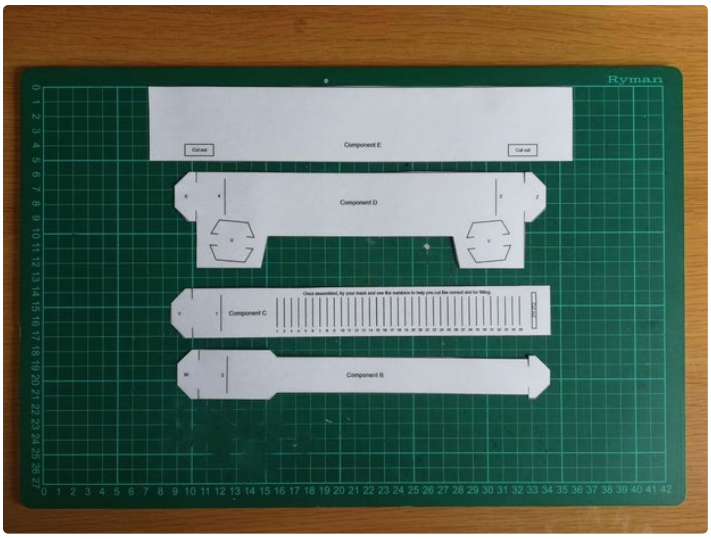
Note: You will need to cut all of the black lines. This includes the indented lines at the base of the fixing tabs, which will be used to join the head band together (see images).

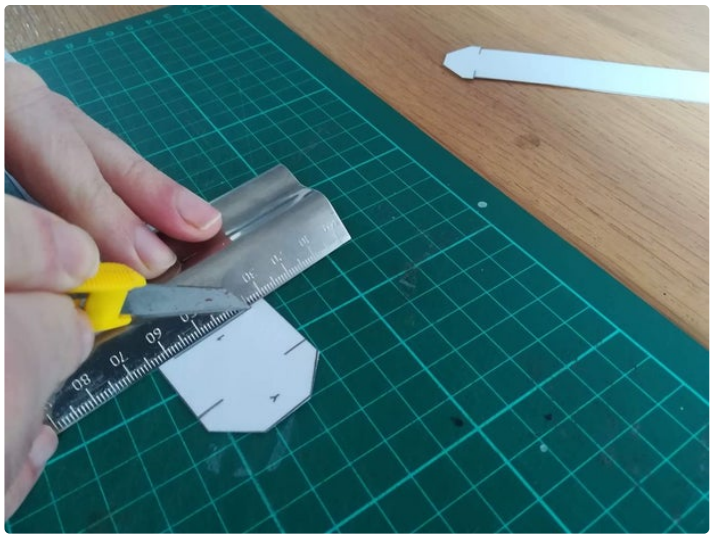
1. Carefully using your sharp knife on your cutting mat to:
    1. Remove all of the sections that display 'cut out' (including Component A)
    2. Cut the straight black lines (1-4), near the base of the fixing tabs, on Components B,C and D
    3. Cut the lines for the 4 large tabs on Component D

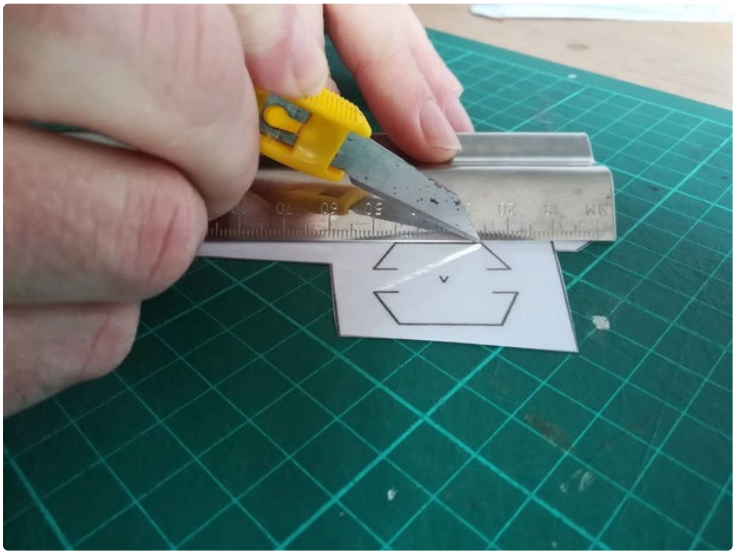
Note: Be careful to keep your cutting straight, and to make sure you don't cut too far over the black lines.







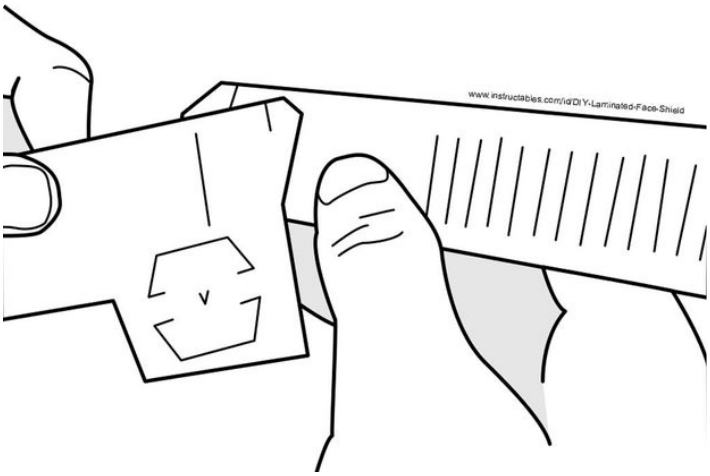


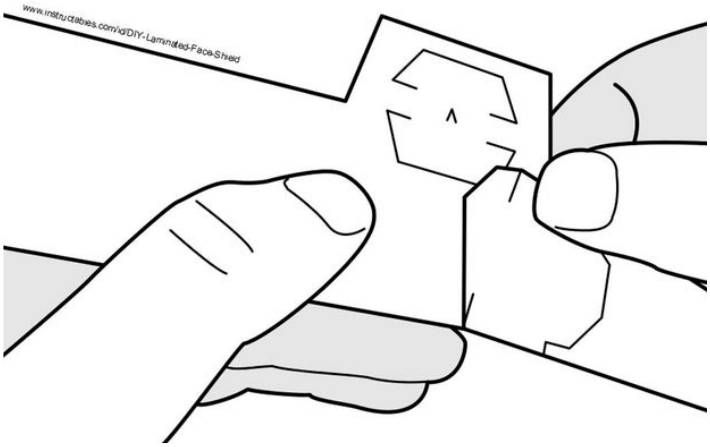


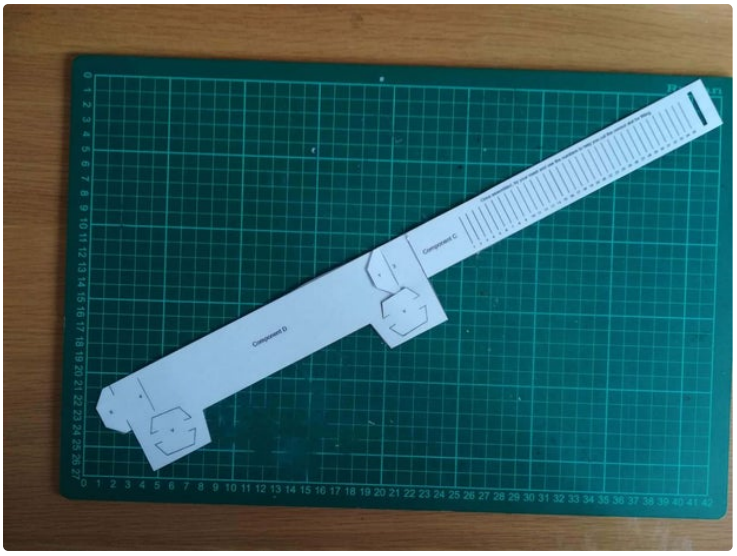
Step 4: Headband Part 1 (Thick Strip)

- Attach Component C to the side of Component D.
- Insert the arrow marked Z through slot 1
- Insert the arrow marked Y through slot 2

Note: To avoid ripping the slit, 'hook' the fixing tab through using the small slit you made at the end of the tab. This will help it to to pass through.



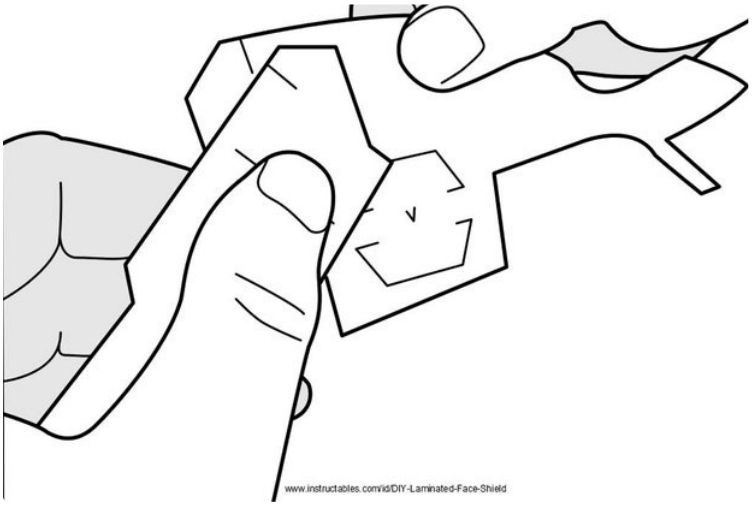


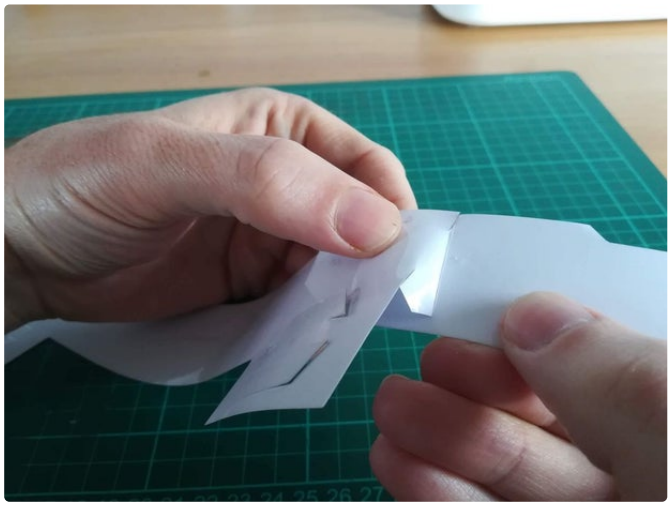


Step 5: Headband Part 2 (Thin Strip)

- Attach Component B to the side of Component D.
- Insert the arrow marked X through slot 3
- Insert the arrow marked W through slot 4

Note: To avoid ripping the slit, 'hook' the fixing tab through using the small slit you made at the end of the tab. This will help it to to pass through.





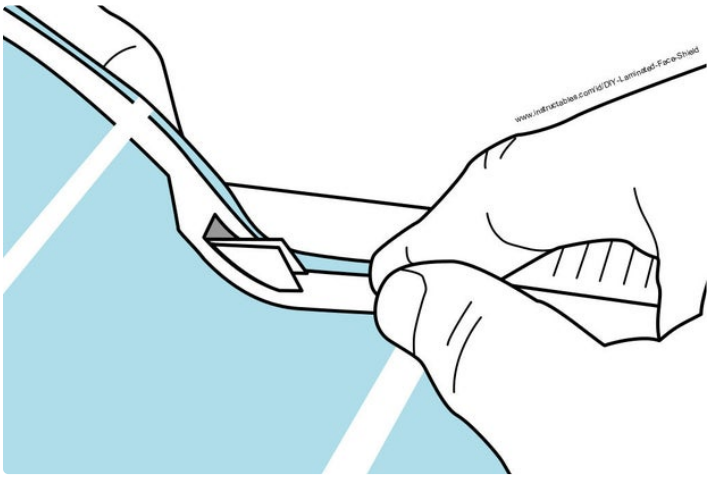
Step 6: Attaching the Visor and the Top Guard

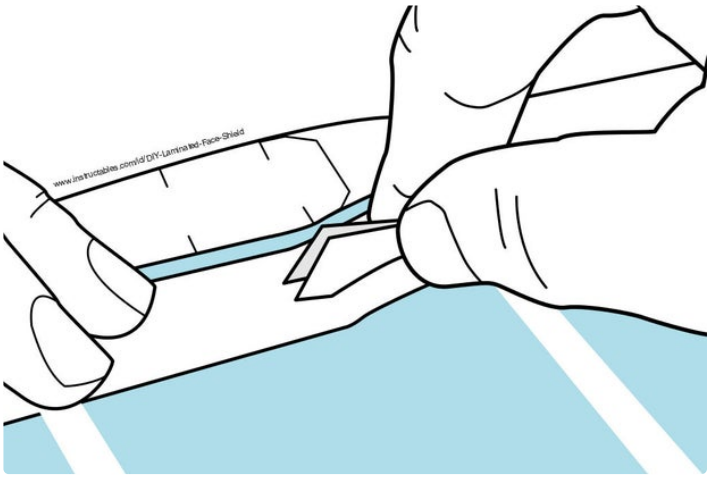
The visor:

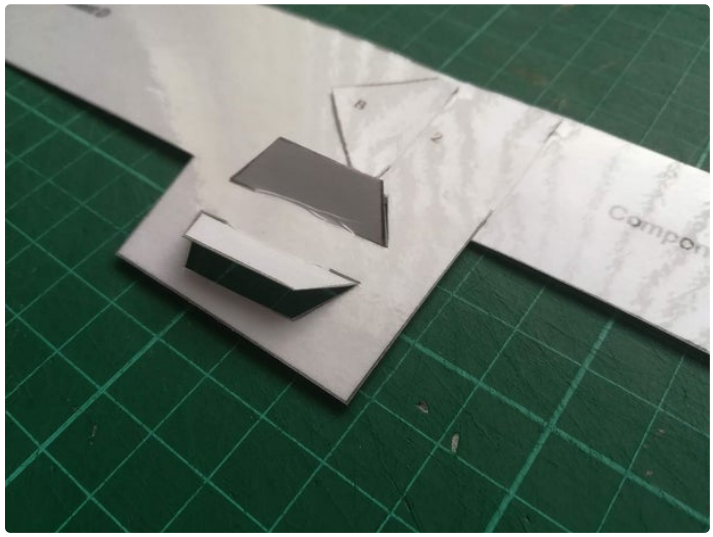
1. Carefully bend up the large tabs (marked V) attached to Component D.
2. Attach Component A to the headband by inserting these tabs through the hole. It helps to pinch them together (see images), pulling the tabs up through the hole, and pushing the hole across to the other side.
3. Gently pull the hole across, and back down over the top of the tabs, until it 'pops' underneath the tabs.

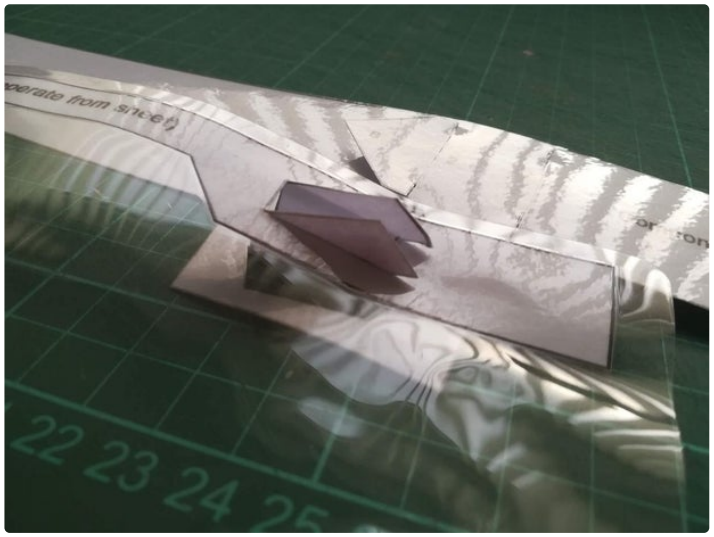
The top guard:

1. Attach Component E to the tabs on the front of Component D (follow the same process as you did when fitting the visor).









Step 7: Sizing and Securing

Sizing:

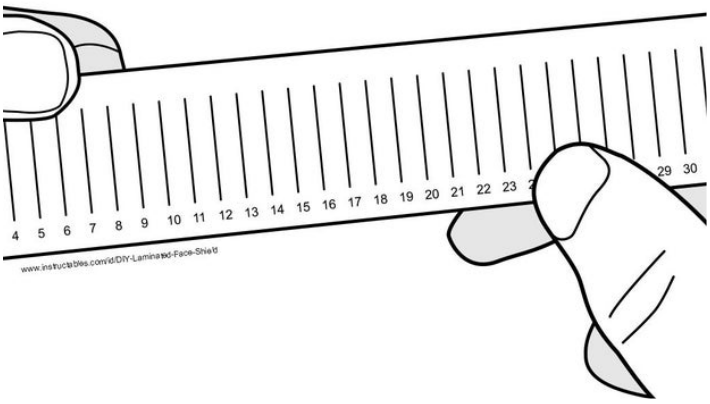
1. Place the facemask on your head, and feed the tail of Component B through the slot at the end of Component C until it fits.
2. Hold both ends together while removing the face shield to mark the appropriate number slot to cut with your knife.

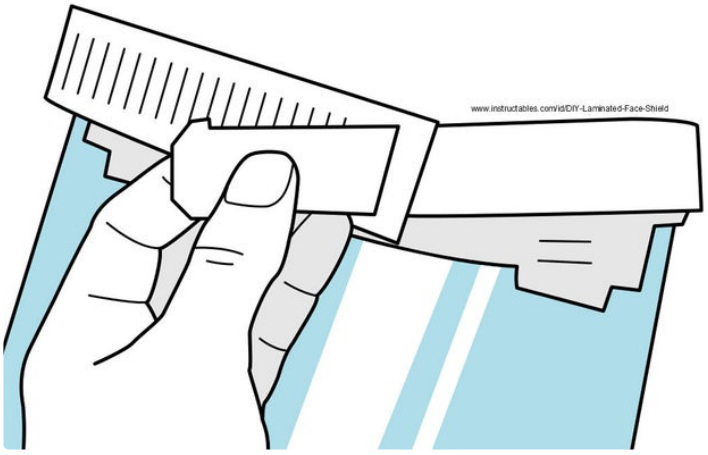
Tip: Once together in a good fit, you could tape around Components B and C for an extra secure fitting.

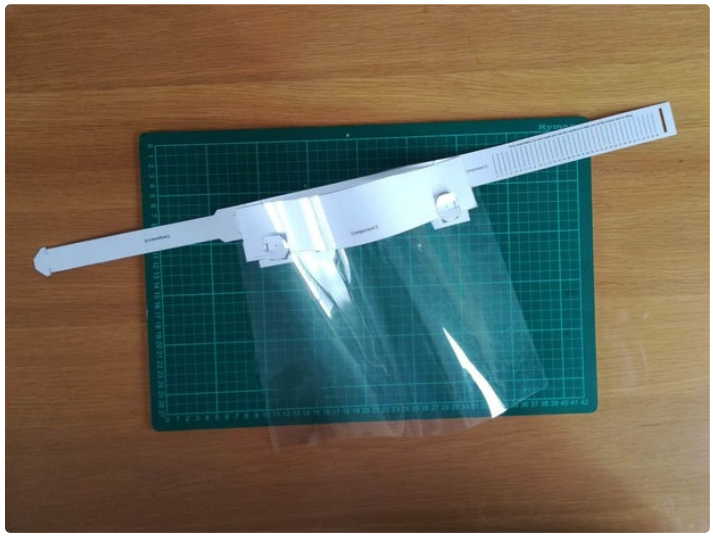
Securing:

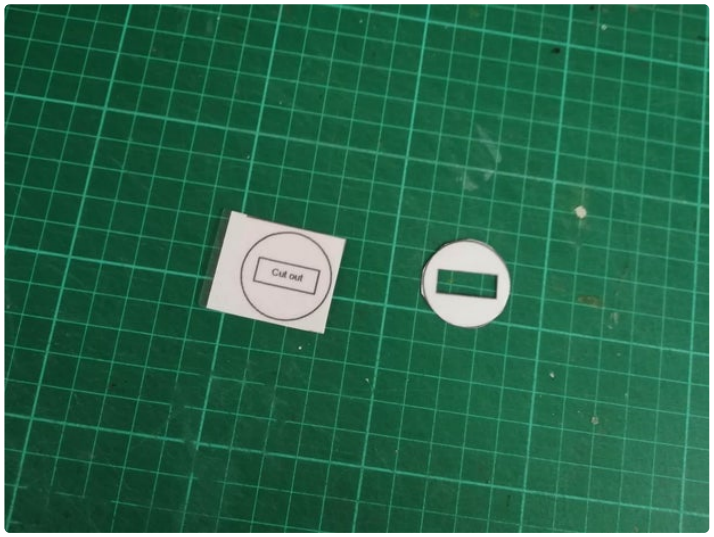
If you feel the visor element of your face shield is unstable, use the 2 discs to help secure it.

1. Cut around the outside of the disc
2. Use your knife to remove the rectangle labelled 'Cut out'
3. Following the same process you did when fitting the visor and top guard, attach the discs to the tabs (marked V) on top of the visor components, on the front of Component D.









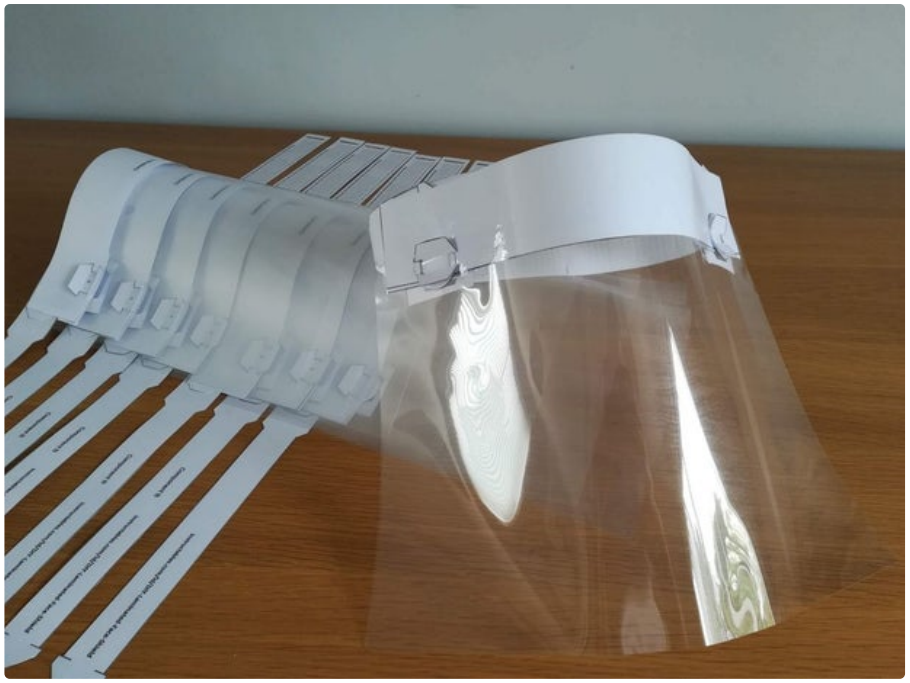
Step 8: Your Face Shield Is Ready to Use

Once complete, conduct as visual inspection of your face shield to ensure that:

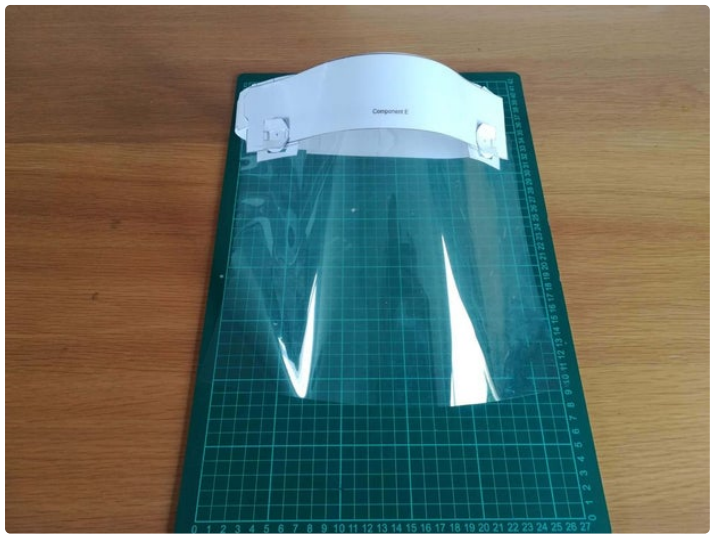
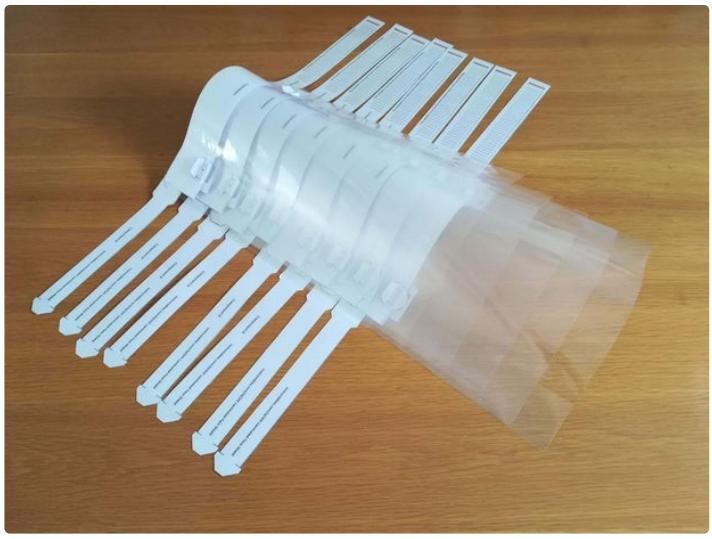
- The tabs holding the head band together are properly fitted and secure
- The visor and top guard are securely fitted to the head band
- There are no rips or tears in the structure of the head band or visor
- There are no tears, rips, cuts or holes in the visor.

If you have made this face shield, I would love to know, including any feedback you may have.

Please mark the Instructable as I have made this, or contact me to let me know either through the facility on this site or by emailing mrcurreyteach@gmail.com





Thanks for sharing your face shield design :)

No problem! I hope you find it useful.